2.6.1

Programme Outcomes and Course Outcomes for all Programmes offered by the institution are stated and displayed on the website and communicated to teachers and students

An outcome-based education programme and enhancing employability of graduates through curriculum reform based on the learning outcomes, improving academic resources and learning environment including the quality of teaching has been taken by the institution with sustained efforts.

A quality or feature regarded as a characteristic of the graduates are adapted to ensure that all the UG and PG Programmes acquire the necessary skills and competencies that build the foundations for lifelong learning, including, critical, analytical, problemsolving and communication skills, as well as the ability to deal with change and diversity, in particular, the tolerance of different views and ideas.

The Programme Outcomes, Programme Specific Outcomes and Course Outcomes are stated in the respective curriculum and syllabi published for all the UG and PG Programmes offered by Yuvaraja'scollege and the same is available in the college website: http://ycm.uni-mysore.ac.in/iqac.php.

At the end of their programme of study these Learning outcomes specify what graduates completing a particular programme of study are expected to know, understand and what a student should be able to demonstrate upon completion of a course. They are expressed in terms of assessable and measurable knowledge, skills, abilities or attitudes that students attain by the end of the course.

UNIVERSITY OF MYSORE
YUVARAJA'SCOLLEGE,MYSORE
(AConstituentAutonomousCollegewithPotentialforExcellence)
(Accredited B++" Grade with CGPA 2.81 by NAAC)
JLB Road, Mysuru 570 005, Karnataka , INDIA

Undergraduate(Bachelor)andIntegratedM.Sc.IntegratedProgramsofferedinYuvaraja's College (Autonomous):

1. Bachelor ofScience(B.Sc.):
2. BachelorofComputerApplications(BCA):
3. BachelorofBusinessAdministration(B.B.A.):
4. M.Sc.Integrated(5Years)

Theobjectivesandoutcomesoftheaboveprogramsandprogramspecificsubjectsandcourses aregivenfurther.Followingtablesshowstheprogramsandprogramspecificsubjectsandthe coursesintroducedasperNEP2020 duringtheacademic year 2023-24 for undergraduate and 5 Year Integrated M.Sc.

Sl. No	Program	Program Code	NoofProgramspecific disciplines with code	ProgramSpecific code	PageNo. PSO & CO
1	B.Sc.	BSCNEPYCM	**CoreDisciplines:** Anytwo haveto beoptedasperintakefixation order from University. **(Fourteen)**:		
	B.Sc.	BSCNEPYCM	1.Biochemistry	BSCNEPBICYCM	4-13
	B.Sc.	BSCNEPYCM	2.Biotechnology	BSCNEPBITYCM	14-25
	B.Sc.	BSCNEPYCM	3.Botany	BSCNEPBOTYCM	26-35
	B.Sc.	BSCNEPYCM	4.Chemistry	BSCNEPCHEYCM	36-45
	B.Sc.	BSCNEPYCM	5. ComputerScience	BSCNEPCOMYCM	46-55
	B.Sc.	BSCNEPYCM	6. Electronics	BSCNEPELEYCM	56-64
	B.Sc.	BSCNEPYCM	7.EnvironmentalScience	BSCNEPENSYCM	65-75

	B.Sc.	BSCNEPYCM	8.Foodand Nutrition	BSCNEPFSNYCM	75-82
	B.Sc.	BSCNEPYCM	9.Geology	BSCNEPGEOYCM	82-95
	B.Sc.	BSCNEPYCM	10.Mathematics	BSCNEPMATYCM	106-121
	B.Sc.	BSCNEPYCM	11.Microbiology	BSCNEPMICYCM	122-127
	B.Sc.	BSCNEPYCM	12.Physics	BSCNEPPHYYCM	128-132
	B.Sc.	BSCNEPYCM	13.Sericulture	BSCNEPSERYCM	133-134
	B.Sc.	BSCNEPYCM	14.Statistics	BSCNEPSTAYCM	134-149
	B.Sc.	BSCNEPYCM	15.Zoology	BSCNEPZOOYCM	150-154
2	BCA	BCANEPYCM	16. ComputerApplications	BCANEPCAYCM	155-173
3	BBA	BBANEPYCM	17.BusinessAdministration	BBANEPBAYCM	174-198
4	M.Sc. Integrated	MSCINTNEPYCM	18.MolecularBiology	MSCINTNEPMBYCM	199-210
AbilityEnhancementDisciplines(AECC) Fourhavetobecompleted:Languagedisciplines: Compulsory(Two);One isEnglish andtheother canbe chosen					
	B.Sc.	BSCNEPYCM	English Thisisincludedasone of the four ability Enhancement compulsorycourses	BSCNEPENGYCM	211
AECC:MIL:Optionalanyone(outofeight)					
	B.Sc.	BSCNEPYCM	19.Kannada	BSCNEPKANYCM	214-221
	B.Sc.	BSCNEPYCM	20.Sanskrit	BSCNEPSANYCM	222-226
	B.Sc.	BSCNEPYCM	21.Hindi	BSCNEPHINYCM	227-232
	B.Sc.	BSCNEPYCM	Malayalam	BSCNEPMALYCM	233

	B.Sc.	BSCNEPYCM	Persian	BSCNEPPERYCM	---
	B.Sc.	BSCNEPYCM	Tamil	BSCNEPTAMYCM	235
	B.Sc.	BSCNEPYCM	French,	BSCNEPFREYCM	---
	B.Sc.	BSCNEPYCM	Arabic	BSCNEPARAYCM	---
CompulsorytwoAECC					
	B.Sc.	BSCNEPYCM	22.EnvironmentalStudies	BSCNEPESTYCM	239
	B.Sc.	BSCNEPYCM	23. DigitalFluency	BSCNEPDIGYCM	240
	B.Sc.	BSCNEPYCM	24.IndianConstitution	BSCNEPICNYCM	235
SkillEnhancementCourses(SEC):anyonehastobe opted					
	B.Sc BBA BCA M.Sc	BSCNEPYCM BBANEPYCM BCANEPYCM MSCINTNEPYCM	25.PhysicalEducation	BSCNEPPHEYCM BBANEPPHEYCM BBANEPPHEYCM MSCINTNEPMBYCM	244-247
	B.Sc.	BSCNEPYCM	FinancialLiteracy	---	---
	B.Sc.	BSCNEPYCM	Banking&Finance	---	---
	BBA	BBANEPYCM	CreativityandInnovation	---	---
	BCA	BCANEPYCM	BachelorofComputer Application	---	---

Bachelor ofScience (Basic/Hons.)DegreeinBiochemistry
ChoiceBased Credit System(CBCS)With Multiple EntriesAndExit Options under New Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourse ofStudy:I,II,III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks (C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1: Chemical Foundations of Biochemistry-1(4+0+0)	4	4	40	60
	DSCP-1:Volumetric Analysis (0+0+2)	4	2	25	25
	OE-1:Biochemistryin Health and Diseases (3+0+0)	3	3	40	60
II	DSC-2: Chemical Foundationsof Biochemistry-2(4+0+0)	4	4	40	60
	DSCP-2:Qualitativeand Quantitative Analysis (0+0+2)	4	2	25	25
	OE-2:Nutritionand Dietetics (3+0+0)	3	3	40	60
III	DSC=3BIO- ORGANIC CHEMISTRY	4	4	40	60
	DSCP-3:BIO-ORGANIC CHEMISTRY	4	2	25	25
	OE-1: BIOCHEMICAL TECHNIQUES	3	3	40	60
	OE-2:HORMONES-BIOCHEMISTRYAND FUNCTION	3	3	40	60

IV	DSC-4ANALYTICAL BIOCHEMISTRY	**4**	**4**	**40**	**60**
	DSCP-4ANALYTICAL BIOCHEMISTRY	**4**	**2**	**25**	**25**
	OE-1BIOCHEMICAL TOXICOLOGY	**3**	**3**	**40**	**60**
	OE-2: PLANT BIOCHEMISTRY	**3**	**3**	**40**	**60**

Sem	**Course Title**	**Credits Assigned**	**Instructional hours per week**		**Marks**		
			T	**P**	**IA**	**Exam**	**Total**
I	BiochemistryIn Health and Disease	03	03	-	40	60	100
	Biochemistryof Cell						
II	Nutrition And Dietetics	03	03	-	40	60	100
	Proteins And Enzymes						
III	BiochemicalTechniques	03	03		40	60	100
	Hormones-Biochemistry And Function						
IV	BiochemicalToxicology	03	03		40	60	100
	Plant Biochemistry						
V	Biochemistryof Biomolecules andNutrition	4	4		40	60	100
	QualitativeAnalysisof BiomoleculesandTheir Nutritional Aspects	2		4	25	25	50
	HumanPhysiology And Enzymology	4	4		40	60	100
	HumanPhysiologyandEnzymology	2		4	25	25	50
	A-MicrobialBiochemistry (Or) B-Cell	3	3		40	60	100

	Biology						
	GeneticsAndCounseling(Or) Nutritional Biochemistry	3	3		40	60	100
VI	Metabolism With ClinicalCorrelations	4	4		40	60	100
	MetabolismWithClinical Correlations	2		4	25	25	50
	MolecularBiology And Immunology	4	4		40	60	100
	MolecularBiology And Immunology	2		4	25	25	50
	A-GeneticEngineering (Or) B-CancerBiology	3	3		40	60	100
	A. Clinical						
	BIOCHEMISTRY(OR) B. BiostatisticsAndBioinformatics	3	3		40	60	100

ProgrammeOutcome:

- To create interesting Biochemistry and appreciation for chemical basis of biological processes.
- Toinculcatethespiritofinquiryandvalueofsystematicstudyofadisipline.
- Provide a general under standing of there lated disciplines with aholisticknowledge generation in biological sciences.
- Toprovide anin-depth understanding of chemical reaction mechanism sin biological processes.
- Toprovideaflavorofhistoricaldevelopmentsofenzymesandtheirapplicationsinresearch, diagnostics and various industries.
- Gainproficiencyinbasiclaboratorytechniquesandbeabletoapplythescientific methodto the processes of experimentation, hypothesis testing,data interpretation and logical conclusions.
- Develop problem solving and analytical skills through case studies, research papersand hands-on-experience.
- To appreciate biochemical mechanistic basis of physiologicalprocesses, metabolismunder normal andpathological conditions importance and levels of metabolic regulations.
- To applyand effectivelycommunicate scientific reasoning and dataanalysis inbothwritten and oral forms. They will be able to communicate effectively with well- designed posters and slides intalks aimed at scientific audiences as well as the general public.
- Tobridgethe knowledge and skillgapbetweenacademic outand industryrequirements.

- To give students experience inconducting independent, hypothesis-driven, biological research,project planning and management
- To provide skills to publish research findings, and awareness of IP rights, and scientific publication ethics and problems of plagiarism.
- To prepare competenthuman resource with better knowledge, hands-on- experience and scientific attitude, at national and global levels for career sin research and development, academia and Pharma-, biotech-and agro-, and food processing industries.

ProgramLearning Outcome: The learning outcome-based curriculumis specific intermsof changes in cognitive and psychomotor behaviour of students. Biochemistry Honors course is intendedtoprovideabroadframeworkenablingstudentstoacquireaskillsetthathelpsthemUnderstandandappreciatethefieldofbiochemistry.Thestructureordesignofthisframeworks hallensuresahighstandardoftheHonorsdegreeinBiochemistryatnationallevel.Theprogram specification is intended as a reference point for prospective students, current students, academic indelivering the program and realizing its objectives. Keeping in pace with the development altrends in Biochemistry and allied areas, itis expected that the students undertaking Biochemistry (Honors) course become conversant with the essence of Biochemistry and exhibit certain levels of learning outcomes as proposed below;

Graduates with strong academic knowledge, discipline-specific and generic skills complementedwithsocialresponsibilityaregreatestassetofthecountry.Thecurriculumframe work under NEP for Biochemistry graduates aims to build the following attributes;

ISEMESTER

Course Outcome: This will inculcate confidence and clarityof mind in studentsto understand the chemistry of Biomolecules, and Biological reactions. Aptitude.Critical thinking.Subject clarity.Analytical Skill.

OpenElectiveCourse:

OE-1:BIOCHEMISTRYINHEALTHANDDISEASES (THEORY):3Credits

42 Hrs.

Course Outcome: This open elective course offering to students of various streams gives knowledge about health and various terminologies used in health and disease conditions; Difference between communicable and non-communicable diseases; Healthpromotion and treatments for various diseases and disorders.

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DSC-2:CHEMICALFOUNDATIONS OFBIOCHEMISTRY-2(THEORY):

4 Credits **56Hrs.**

Course Outcome: These topics will enable students to understand the fundamentals of chemical processes in biological systems; Aptitude, Critical thinking, Subject clarity, Analytical Skill.

DSCP-2:QUALITATIVEANDQUANTITATIVEANALYSIS(PRACTICAL):

2Credits **56Hrs.**

CourseOutcome:TheCourseObjective istoprovideexperimentalpracticeofquantitativeand qualitativeanalysis.Also itprovidestraininginphysicalchemistrylaboratorytechniques.Upon successfulcompletion,studentsshoulddevelopskillsin handlinginstrumentsandunderstandits application inresearch work.

OpenElectiveCourse:

OE-2:NUTRITIONANDDIETETICS(THEORY): 3 Credits 42Hrs.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- The student will gain knowledge about energy requirements and the Recommended Dietary Allowances.
- The student will understand the functions and role of macro nutrients, theirrequirements and the effect of deficiency and excess.
- Thestudentlearnstheimpactofvariousfunctionalfoodsonourhealth.
- The student will be able to apply basic nutrition knowledge in making foodschoicesand obtaining and a dequate diet.
- The student gains competence inconnecting the role of various nutrientsinmaintaining health and learn to enhance traditional recipes.

SEMESTERIII

Course outcome:

Thesetopicswillenablestudentstounderstandthefundamentalsoforganicchemistrypertinentto their importance in understanding biochemical reactions.

Course outcome programoutcome	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	X	X	X	X								
Criticalthinking		X										
Subject clarity	X	X				X	X	X		X		X
Analyticalskill	X				X	X	X	X	X			X

SEMESTERIII

PracticalIII

COURSETITLE: BIO-ORGANIC CHEMISTRY

Course outcome:

This course aims to familiarize students with the principles of organic chemistry and basic qualitativeanalysisoforganiccompounds.Courseobjectiveistoprovideexperimentalpracticeof preparation of organic compounds and extraction of biologically important compounds.

SEMESTER III: OPEN ELECTIVE 1 COURSE

TITLE. :BIOCHEMICALTECHNIQUES

Course outcome:

- These topics will enable students to develop competence in handling various chromatographic, electrophoretic and isotopic techniquesand applythem in isolating and characterizing different biological molecules.

SEMESTERIII

OPENELECTIVE2

COURSETITLE: HORMONES-BIOCHEMISTRYAND FUNCTION

Courseoutcome: Thesetopicswillenablethestudentsto:

- Understandthefunctionofhormonesandtheirregulation.
- Knowhowhormonalsystemsactinanintegratedmannertoregulateoverallbodyfunctions.
- Understandhowfailureofthesenormalphysiologicfunctionsandintegrationsare associated with some endocrine disorders.

SEMESTERIV

COURSETITLE:ANALYTICALBIOCHEMISTRY

1. Understandtheconceptofbiologicalsample preparation
2. Appreciatechemistryand applicationofanalyticalinstruments.
3. Getacquaintedwithcareandmaintenanceofequipmentand chemicals.
4. Understand clinicallyrelevant biochemicalanalysisofall biochemicalcomponents i.e., proteins, electrolytes, hormones etc.,
5. Havebasicknowledgeofclinicalandforensicanalyticalmethodsandtheirprinciples.

Courseoutcome programoutcome	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	X	X	X	X								
Criticalthinking		X				X						
Subject clarity	X	X						X				X
Analyticalskill					X	X	X	X	X	X	X	X

SEMESTERIV

PRACTICALSIV

COURSETITLE:ANALYTICALBIOCHEMISTRY

Courseoutcome: Thiscourseaimstoprovideexperimentalpracticeofanalyticaltechniques in Biochemistry. Upon successful completion, students should develop skills in handling instruments and understand its application in research work.

1. Sourcingandhandlingbiologicalsamples.Developskillandproficiencyinbasic techniques
2. Centrifugation
3. Chromatography
4. Electrophoresisand
5. Spectroscopy

SEMESTERIV
OPENELECTIVE1:BIOCHEMICALTOXICOLOGY COURSE

TITLE:BIOCHEMICAL TOXICOLOGY

Course outcome: This open elective course offered to various streams gives basic idea about biochemicalbasisofvariouseffectsoftoxins/pharmaceuticalsandanoutlineofprocessinvolved in toxicity testing and drug dosing.

- Categorizetheclassesoftoxicants/drugsandknowspecificexamples
- Statetheroutesofexposureto toxins/drugs;
- Explaintheprocessesofabsorption,metabolismand eliminationoftoxins/drugs; and
- Explainenvironmentalandphysiologicalfactorsthataffecttoxicantmetabolism

SEMESTERIV

OPENELECTIVE2:PLANTBIOCHEMISTRY

COURSE TITLE: PLANT BIOCHEMISTRY

Courseoutcome: Thesetopicswillenablethestudentsto

- Understandtheplantcell,photosynthesis,transporters,and
- Importantprimarymetabolites.Illustrateplantgrowthregulators,plant'sresponsesto various biotic and abiotic stresses.
- Explainaboutplantsecondarymetabolitesandtheirfunctionalimportance.

LISTING OF COURSES V SEMESTER FOR THE FOUR YEAR UNDERGRADUATE PROGRAMME IN BIOCHEMISTRY

CourseOutcome:

Thecourseprovidesfundamentalinsightsonthetypesof Bimolecular; and their uniquestructural features, chemical properties and biological importance of each.

CourseOutcomes	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	x	x	x	x								
Criticalthinking		x								x		x
Subjectclarity	x	x					x					x
AnalyticalSkill	x				x	x				x		

AnalyticalSkill	x				x	x				x		

SEMESTERV

PRACTICALSV

COURSETITLE:HumanPhysiology and Enzymology

CourseOutcome:

The practical course will enable the students to learn the principles of reactions pertaining to different Biomolecules. They will be able to qualitatively identify the presence of specific biomolecules when provided with solution of a mixture of biomolecules.

SEMESTERV

COURSETITLE:HUMANPHYSIOLOGY

CourseOutcome:

Physiologyinvolvesthestudyofhowlivingsystemsfunctionsatthesystemlevel, and emphasizes an integrative approach to studying the biological functions of the human body. Enzymologytopicswillenablestudentsto describe structure, functions andthemechanismof action of enzymes. Learning kinetics of enzyme catalyzed reactions and enzyme inhibitions and regulatory process, expressing enzyme activity, enzymeUnits, Specific activity etc.

CourseOutcomes	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude	x	x	X									
Criticalthinking		x										
Subjectclarity	x	x									x	
AnalyticalSkill	x				x	x						

SEMESTERVI

PRACTICALSVI

COURSETITLE:HumanPhysiology and Enzymology

CourseOutcome:

Atcompletionofthiscourse, students are expectedtogainconceptsofassessingthehuman

Physiologyusingbiologicalfluidanditisexpectedthatthestudentswillbeabletounderstand measurement of few physiological parameters of various systems and their interrelations. Students will also be exposed to fundamental aspectsof enzymology such as measuring enzyme activity, determining optimum parameters of enzymes etc.

CourseOutcome:

1. Attheendofthecoursethestudentswillbeableto:
2. Understandtheconceptsofmetabolism, characteristics ofmetabolicpathwaysandstrategies used to study these pathways.
3. Gain a detailed knowledge of various catabolic and anabolic pathways andits regulation systematically learnthebreakdownandsynthesisofaminoacidsandnucleotidesinhumans and recognize its relevance with respect to nutrition and human diseases.
4. Acknowledge the role of inhibitors of nucleotide metabolism which arepotentially being used as chemotherapeutic drugs.
5. Comprehend how the amino acid and nucleotide metabolism are integrated with carbohydrate and lipid metabolism

CourseOutcomes	1	2	3	4	5	6	7	8	9	10	11	12
Aptitude		x		x				x				
Criticalthinking		x		x		x				x		
Subjectclarity	x	x				x	x					x
AnalyticalSkill	x				x	x				x		

BachelorofScience(Basic/Hons.)DegreeinBiotechnology
Choice Based Credit System(CBCS)With Multiple EntriesandExitOptions under New Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourseofStudy:I,II,III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1: Cell Biology and Genetics(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1: Cell Biology and Genetics (0+0+2)	**4**	**2**	**25**	**25**
	OE-1:Biotechnology for human welfare (3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2: Microbiological MethodsandTechniques (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2: Microbiological MethodsandTechniques (0+0+2)	**4**	**2**	**25**	**25**
	OE-2: Applications of Biotechnology in Agriculture (3+0+0)	**3**	**3**	**40**	**60**

SemesterIII&IV

Semester	Course code	Course Category	Theory/ Practical	Credits	PaperTitle	Marks	
						S.A	I.A
3	**BTC:103**	DSC- 3	Theory	3	Biomolecules	60	40
			Practical	2	Biomolecules	25	25
		OE-3	Theory	3	NutritionandHealth	60	40

4	**BTC:104**	DSC-4	Theory	3	MolecularBiology	60	40
			Practical	2	MolecularBiology	25	25
		OE-4	Theory	3	IntellectualProperty Rights	60	40

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Programmeoutcome:

Competencies need to be acquired by a candidate securing B.Sc. (Basic) or B.Sc. (Hons) degreeinBiotechnology. At the end of the course the student should be able to:

- Demonstrating theLaboratoryskillsincellbiology, basic and applied microbiologywithan emphasis on technological aspects.
- Understanding concepts of Biotechnology and demonstrate knowledge acquired in interdisciplinary skills in cell biology, genetics. Biochemistry, microbiology, and molecular biology.
- Competent toapplytheknowledgeandskillsgained inthefieldsofPlant biotechnology, animal biotechnologyand microbialtechnologyin pharma, food, agriculture, beverages, herbal and nutraceutical industries.
- Critically analyze the environmental issues and apply the biotechnology knowledge gained for conserving the environment and resolving the problems.
- Demonstratecomprehensiveinnovationsandskillsinthefieldsofbiomolecules, celland organelles, molecular biology, bioprocessengineering andgeneticengineering ofplants, microbes, and animals with respect to applicationsfor human welfare.
- Applyknowledgeandskillsofimmunology, bioinformatics, computationalmodellingof proteins, drug design and simulations to test the models and aid in drug discovery.
- Critically analyze, interpret data, and apply tools of bioinformatics and multi omics in various sectors of biotechnology including health and Food.
- Demonstrate communication skills, scientific writing, data collection and interpretation abilities in all the fields of biotechnology.
- Learningandpracticingprofessionalskillsinhandling microbes,animalsandplantsand demonstratetheabilitytoidentifyethicalissuesrelatedtorecombinant DNAtechnology, genetic engineering, animals handling, intellectualproperty rights, biosafety, and biohazards.
- Exploring the biotechnological practices and demonstrating innovative thinking in addressing the current day and future challenges with respect to food, health, and environment.
- Thorough knowledge and application of good laboratory and good manufacturing practices in biotech industries.
- Understandingandapplicationofmolecularbiologytechniquesandprinciplesinforensic and clinical biotechnology.

- Demonstrateentrepreneurshipabilities,innovativethinking,planning,andsettingup small-scale enterprises or CROs.

IISEMESTER

Programmeoutcome: Attheendofthecoursethestudentshouldbeableto:

- Wouldbeabletocomprehendthestructureofacellwith itsorganelles.
- Can explain the organization of genes and chromosomes, chromosome morphologyand its aberrations.
- Candistinguish betweenthestructureofprokaryoticand eukaryoticcell.

IIISEMESTER

Program Name	**BScBiotechnology**		Semester	**Third Sem**
CourseTitle	**Biomolecules**			
CourseNo.	**BTC:301**	**DSC-3T**	No.ofTheoryCredits	**4**
Contact Hours	**56hrs**		DurationofESA/Exam	**2.5 Hours**
FormativeAssessment Marks	**40**		SummativeAssessmentMarks	**60**

CoursePre-requisite(s):

CourseOutcomes(COs):Attheend ofthecoursethestudentshould be able to:

1. Acquireknowledgeabouttypesofbiomolecules, structure,andtheir functions
2. Willbeabletodemonstratetheskillstoperformbioanalyticaltechniques
3. Applycomprehensiveinnovationsandskillsofbiomoleculestobiotechnologyfield

CourseTitle	**Biomolecules**		PracticalCredits	**2**
CourseNo.	**BTC:301**	**DSC-3P**	Contacthours	48h

Program Name	**BScBiotechnology**		Semester	**ThirdSem**
CourseTitle	**NutritionandHealth**			
CourseCode		**OE-3**	No.ofTheoryCredits	**3**
Contacthours	**Lecture**	42h	DurationofESA/Exam	**2.5Hours**
	Practical	-		

FormativeAssessmentMarks	40	SummativeAssessmentMarks	60

CoursePre-requisite(s):
CourseOutcomes(COs):Attheend ofthecoursethestudentshould be able to: 1. Studytheconceptsoffood,nutrition,dietand health 2. Toapplythebestpracticesoffoodintakeanddietaryrequirements 3. Acquireknowledgeabout varioussourcesofnutrientsandgoodcookingpractices

IVSEMESTER

ProgramName	**BScBiotechnology**		Semester	**FourthSem**
CourseTitle	**MolecularBiology**			
CourseNo.	**BTC:401**	**DSC-4T**	No.ofTheoryCredits	**4**
Contacthours	**56hrs**		DurationofESA/Exam	**2.5 Hours**
FormativeAssessment Marks	40		SummativeAssessment Marks	60
CoursePre-requisite(s):				
CourseOutcomes(COs):Attheend ofthecoursethestudentshould be able to: 1. Studytheadvancementsinmolecularbiologywithlatesttrends. 2. Willacquiretheknowledgeofstructure,functionalrelationship ofproteinsandnucleicacids. 3. Awareaboutthebasiccellularprocessessuchastranscription,translation, DNAreplicationand repairmechanisms.				

CourseTitle	**MolecularBiology**		PracticalCredits	**2**
CourseNo.	**BTC:401**	**DSC-4P**	Contacthours	48

Program Name	**BScBiotechnology**		Semester	**FourthSem**
CourseTitle	**IntellectualPropertyRights**			
CourseCode		**OE-4**	No.ofTheoryCredits	**3**
Contacthours	**Lecture**	42h	DurationofESA/Exam	**2.5Hours**
	Practical	-		
FormativeAssessmentMarks	40		SummativeAssessmentMarks	60

CoursePre-requisite(s):

CourseOutcomes(COs):Attheend ofthecoursethestudentshould be able to:

1. KnowledgeaboutneedandscopeofIntellectualpropertyrights
2. Acquireknowledgeaboutfilingpatents,process,andinfringement
3. Knowledgeabouttrademarks,industrialdesigns,andcopyright

Sl No.	Program	ProgramCode	NoofProgramspecificdisciplines with code
1	B.Sc.	BSCCBCSYCM	2. Biotechnology , BSCCBCSBITYCM

PRAGRAM SPECIFICCOURSEOBJECTIVES:

- Biotechnologyisanundergraduatecourseaimstoimpartknowledgetothestudentson application of biotechnology in various fields such as medical, environmental, industrial, and agricultural and many more.
- The mainmottoistocreatebiotechnologicalawareness.
- Toencouragestudentsacriticalappreciationoftheintegratednatureof biotechnological problems.
- Tomakethemrealisethatthebiotechnologicalproblemsareglobal.
- Toinducethespiritofcompetitiveness.
- Toimpart specialisedknowledgeandskillstostudentsinparticularareasofthe national or regional biotechnological issues.

PROGRAMMESPECIFICCOURSEOUTCOME:

AftersuccessfulcompletionofB.Sc.Biotechnology Course:

- Graduatesinbiotechnologywillbeeligible forpursuing highereducation,M.Sc. programs in Biotechnology and also in the different field of life science.
- Graduates will exhibit contemporaryknowledge in Biotechnologyand students will be eligible for doing jobs in pharmaceutical and biotechnological Industry.
- Graduates will be able to understand the potentials, and impact of biotechnological innovationsonenvironment andtheir implementation for finding sustainable solution to issues pertaining to environment, health sector, agriculture, etc.
- Graduates will be able to design, conduct experiments, analyze and interpret data for investigating problems in BT and allied fields.
- Graduateswillbeabletoworkindividuallyaswellasinteamtosurvivein multidisciplinary environment.
- Graduateswillpossess oralandwrittencommunicationskills.

B.Sc.Biotechnology5thSemester

ProgramName	**B.Sc.Biotechnology**	Semester	**5thSem**
CourseTitle	**GeneticEngineering(Theory+Practical)**		
CourseCode:	**DSC–A9(T)**	No.ofTheoryCredits	**04**
Contacthours	**60 hrs**	DurationofESA/Exam	**03**
Formative AssessmentMarks	**40**	SummativeAssessmentMarks	**60**

CourseObjectives

- Understandthefundamentalprinciplesandtechniquesofgeneticengineering.

- Explore the applications of genetic engineering in agriculture, medicine,biotechnology, and environmental science.
- Developpracticalskills ingeneticengineeringtechniquesand laboratoryprocedures.
- Gainknowledgeof gene expressionregulationandgeneticmodificationmethods.
- Enhancecriticalthinkingandproblem-solving skills through discussionsandcasestudies.
- Stayupdatedonemergingtrendsandadvancements ingeneticengineering.

CourseOutcomes:

- Demonstrateathoroughunderstandingofthefundamentalprinciplesandtechniquesof genetic engineering.
- Apply the knowledge of genetic engineering to diverse applications inagriculture, medicine, biotechnology, and environmental science.
- Performlaboratoryprocedures and eveloppracticalskillsingeneticengineeringtechniques.
- Explaingene expression regulation mechanisms and applygenetic modification methods effectively.
- Evaluategeneticengineering'sethical,social,and legalimplicationsandpropose responsible solutions.
- Stayupdatedwithrecent advancementsingeneticengineering,criticallyevaluate emerging trends, and assess their potential impact on various fields.

CourseObjectives

1. Tounderstand the fundamental aspectsofplantandanimalbiotechnology.
2. Learnaboutbiotechnologicaltools and techniques usedinplantandanimalresearch.
3. Explore methods of introducingforeigngenesintoplantsand animals through transformation techniques.
4. Gainpracticalskills inplant tissue cultureandanimalcellcultureforimprovement.

5. Designstrategiesforplantgeneticmanipulationagainstbioticandabioticstressors.
6. Hypothesizes trategies toincreaseplantyieldand fruit seedquality.
7. Applyknowledgetoreal-worldchallengesinagriculture,veterinarymedicine,conservation, and biomedical research
8. Understandtheneedforanimalbiotechnologyforhumanwelfare.

CourseOutcomes:

Aftercompletingthiscourse, the student is expectedtolearnthefollowing:

1. Demonstrate a comprehensive understanding of plant biology, physiology, genetics, and molecular biology.
2. Applybiotechnologicaltools and techniques used inplant research and agriculture, such as plant tissue culture, genetic engineering and transgenics.
3. Execute plant tissue culture techniques for callus induction, somatic embryogenesis,and micropropagation, and apply them in plant breeding andpropagation.
4. Performplanttransformationmethodsanddemonstratetheabilitytointroduceforeigngenes into plants using different techniques.
5. Apply knowledge about ethical considerations and regulatory frameworksassociated with plant biotechnology and genetically modified crops.
6. Understand the biology and characterization of cultured cells, including theiradhesion, proliferation, differentiation, morphology, and identification.
7. Gain practical skills in basic mammalian cell culture techniques, measuring growth parameters, assessing cell viability, and understanding cytotoxicity.
8. Learnabout germplasmconservationtechniquesandthe establishmentofgenebanks, along with large-scale culture methods for cell lines.
9. Explore organ andhistotypic culture techniques, biotransformation, 3Dcultures, whole embryo culture, somatic cell cloning, and the ethical considerations surrounding stem cellsand their applications.

		Semester	**5th Semester**
CourseTitle	**BiotechnologySkillsandAnalyticalTechniques**		
CourseNo.	**SEC-4**	No.ofTheoryCredits	2+1(Theory+ Practical)
Contacthours	**45 hrs**	DurationofESA/Exam	2 hrs
Formative AssessmentMarks	**20**	SummativeAssessment Marks	30

Course Outcomes (COs): At theendofthecoursethestudentshouldbeableto:

1. Demonstrate skills as per National Occupational Standards (NOS) of the "Lab Technician/Assistant" Qualification Pack issued by the Life Sciences Sector Skill Development Council-LFS/Q0509.
2. Develop knowledge of laboratory safety procedures and protocols and acquire skills in handling and maintaining laboratory equipment and instruments.
3. Operate analytical equipment and instruments as per standard operating procedures (SOP)
4. Knowledge about major activities of the biotech industry, regulations and compliance, environment, health and safety (EHS), good laboratory practices (GLP), and Good Manufacturing Practices (GMP) as per the industry standards.
5. Demonstrate soft skills, such as decision-making, planning, organizing, problem- solving, analytical thinking, critical thinking, and documentation.

CourseArticulationMatrix: Mapping of Course Outcomes (COs)withProgram Outcomes (POs1-13)

CourseOutcomes	1	2	3	4	5	6	7	8	9	10	11	12	13
Develop knowledge of laboratorysafetyprocedures and protocols and acquire skills in handling and maintaining laboratory Equipmentandinstruments.	✓	✓											
Operateanalyticalequipment and instruments as per standard Operatingprocedures (SOP)		✓	✓									✓	
Knowledge about major activities of the biotech industry, regulations and compliance, environment, healthandsafety(EHS) ,good laboratory practices (GLP), and Good Manufacturing Practices (GMP) as per the industry standards.		✓							✓		✓		
Demonstrate soft skills, such asdecisionmaking,planning, organizing, problem solving, Analytical thinking, critical thinkinganddocumentation.	✓	✓						✓	✓				

B.Sc.Biotechnology6thSemester

ProgramName	**B.Sc.Biotechnology**	Semester	**6thSemester**
CourseTitle	**Immunology(Theory+Practical)**		
CourseCode:	**DSC-A13(T)**	No.ofTheoryCredits	**04**
Contacthours	**60 hrs**	DurationofESA/Exam	**3 Hours**
FormativeAssessmentMarks	**40**	SummativeAssessmentMarks	**60**

CourseObjectives:

1. Tounderstandthevariousaspectsofimmunity, elicitation ofimmuneresponses,factors determining the outcome of immune responses and major players of immunity, relevancebetween nutritional support and immunity, and immunological techniques.
2. Toprovideknowledgeonessentialfeaturesofantigensandantibodiesand theirtypesand different theories of Antibody formation.
3. Toacquireknowledgeontypesofimmunity, phagocytosis, interferons, and the complement system.
4. Toexplaintheconcept of hypersensitivity, autoimmunity, and transplantation.
5. Toprovideknowledgeonimmunedeficienciesandseveralimmunologicaltechniques

CourseOutcomes:

Attheendofthecourse, the studentshouldbeableto:

1. Demonstratecomprehensionoftheunderlyingstructureandfunctionofthe immunesystem and related disorders.
2. Demonstrateanunderstandingoftheroleofcellsandmoleculesinimmunereactions andresponses
3. Demonstratetechnicalskillsinimmunologicaltoolsandtechniques
4. Applythedomain-specificknowledgeandskillsacquiredinimmunologyfor innovativetherapiesandImmunotechnologies
5. Understandthefundamentalconceptsofimmunity, andthecontributionsoftheorgansandcellsin immune responses.
6. RealizehowtheMHCmolecule'sfunctionandhostencountersanimmune insult.
7. Understandtheantibodiesandcomplementsystem
8. Understandthemechanismsinvolvedintheinitiationofspecificimmune responses
9. Differentiatethehumoralandcell-mediatedimmunemechanisms
10. Comprehendtheoverreactionbyourimmunesystemleadingtohypersensitiveconditions and its consequences
11. Understanduniquepropertiesofcancercells,immunerecognitionoftumors,immune evasionof cancers

ProgramName	**B.Sc. Biotechnology**	Semester	**6th Semester**
CourseTitle	**BioprocessandEnvironmentalBiotechnology (Theory)**		
CourseCode:	**DSC- A15(T)**	No.ofTheoryCredits	**04**
Contacthours	**60 hrs**	DurationofESA/Exam	**03 Hours**
FormativeAssessment Marks	**40**	SummativeAssessmen t Marks	**60**

CourseObjectives:

1. Performsimulationsofmicrobialgrowthandmetabolism
2. Design bioreactors fortheproductionofvarious products.
3. Presentknowledgeaboutmajormetabolicpathwaysand those related tobiofuelproduction from microbes.
4. Understand the fundamental concepts and principles of environmental biotechnology andExplore the interrelationship between biotechnology and the environment.

5. Gain knowledge of the variousapplicationsof biotechnology in environmental conservation, pollution control, and sustainability.
6. Learn about microbial processesandtheirrolein environmentalbiotechnology.
7. Understandtheprinciplesof bioremediationanditsapplicationinthe clean-upof environmental pollutants.
8. Explorethe potential of bioenergy production and waste management through biotechnological approaches.
9. Identifyandcharacterizethemostimportant contaminantsintheBioprocessandother industrial wastes.
10. Reuse/recyclethebiologicalwastetocleantechnologysuchasenergy,biofuel,biofertilizer through bioremediation

Courseoutcomes:

1. Exploitationofmicroorganismsforindustrialuseandtheirimprovement, and formulation of media for efficient growth and production of microbial or cell-based products.
2. Thedesign, operation, and specific applications of various bioreactors.
3. Demonstrateacomprehensiveunderstandingofthefundamentalconceptsandprinciplesof environmental biotechnology.
4. Apply knowledge of biotechnological techniques to address environmental challenges,such as pollution control and waste management.
5. Analyze and evaluate environmental biotechnology case studies, research findings, andreal-world applications.
6. Design and implement biotechnological approaches for environmental remediation,utilizing microbial processes and biodegradation principles.
7. Evaluate the ethical and sustainable aspects of environmental biotechnology practices andmake informed decisions regarding their application in environmental conservation.
8. Communicate scientific concepts and research findings related to environmentalbiotechnology effectively, both in written and oral forms, to diverse audiences.

BachelorofScience(Basic/Hons.)DegreeinBotanyChoiceBased CreditSystem(CBCS)WithMultipleEntriesAndExitOptions under New Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1: Microbial DiversityandTechnology (4+0+0)	4	4	40	60
	DSCP-1: Microbial DiversityandTechnology (0+0+2)	4	2	25	25
	OE-1:PlantsandHuman Welfare (3+0+0)	3	3	40	60
II	DSC-2:DiversityofNon-FloweringPlants(4+0+0)	4	4	40	60
	DSCP-2:DiversityofNon-Flowering Plants (0+0+2)	4	2	25	25
	OE-2:PlantsandHuman Welfare (3+0+0)	3	3	40	60

ISEMESTER

Programmeoutcome: Attheendofthecoursethestudentshouldbeableto:

- Understandthe fascinatingdiversity,evolution, andsignificanceofmicroorganisms.
- Comprehendthe systematic position, structure, physiology and life cycles of microbes and their impact on humans and environment.
- Gainlaboratoryskillssuchasmicroscopy,microbialcultures,staining,identification,preservation of microbes for their applications in research and industry.

OpenElectiveCourse:

OE-1:PLANTS ANDHUMANWELFARE(THEORY): 3Credits 42Hrs.

CourseOutcome:

Oncompletionofthiscourse,thestudentswillbeable to;

- Tomakethestudentsfamiliarwitheconomicimportanceofdiverseplantsthatoffer

Resourcestohumanlife.

- Tomake the students known about the plants usedas-food, medicinalvalue andalso plant source of different economic value.
- To generate interest amongst the students on plants importance in day today life, conservation, eco system and sustainability.

IISEMESTER

Programmeoutcome: Attheendofthecoursethestudentshouldbeableto:

- Understand the diversity and affinities amongAlgae, Bryophytes, Pteridophytes and Gymnosperms.
- Understand the morphology, anatomy, reproduction and life cycle across Algae, Bryophytes, Pteridophytes and Gymnosperms, and their ecological and evolutionary significance.
- Obtainlaboratoryskills/explorenon-floweringplantsfortheir commercialapplications.

OpenElectiveCourse:
OE-2:PLANTPROPAGATION,NURSERYMANAGEMENTANDGARDENING
(THEORY): 3 Credits 42Hrs.

Course Outcome: Oncompletionofthis course, the studentswill be able to;

- Togainknowledgeofgardening, cultivation, multiplication, raisingofseedlingsofgarden plants.
- Togetknowledgeofnew andmoderntechniquesofplantpropagation.
- Todevelopinterestinnatureandplantlife.

IIISemester
Theory:DisciplineSpecificCoreCourse(DSCC) Title of the Course and Code:
BOT-A-3.1:PLANTANATOMYANDDEVELOPMENTALBIOLOGY

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour perweek	Total No. of Lecture Hours /Semester	Duration of Exam	Formative Assessment Marks	Summative AssessmentMarks	Total Marks
BOT-A-3.1	DSCC	Theory	04	04	56hrs	2hrs	40	60	100

Course Outcomes:

Oncompletionofthiscourse,thestudentswillbeableto:

1. Observation of variationsthatexistin internal structure of variousparts of a plantandas well as among different plant groups in support for the evolutionary concept.
2. Skilldevelopmentfortheproperdescriptionofinternalstructureusingbotanicalterms,**t**

Heir identificationandfurtherclassification.

3. Inductionoftheenthusiasmoninternalstructureoflocallyavailableplants.
4. Understandingvariouslevelsoforganizationinaplantbodywithanoutlookinthe relationship between the structure and function through comparative studies.
5. Observationandclassificationofthefloralvariationsfromthepremisesofcollegeand house.
6. Understandingthe variousreproductivemethodssub-stagesinthelifecycleofplants
7. Observationandclassificationoftheembryologicalvariationsinangiosperms.
8. Enthusiasmtounderstandevolution basedonthevariationsinreproductionamongplants.

Semester-3
Practical:DisciplineSpecificCoreCourse
(DSCC) Title of the Course and Code:
BOT-A-3.2:PLANTANATOMYANDDEVELOPMENTAL BIOLOGY

Course No.	Typeof Course	Theory / Practical	Credits	Instruction hour per week	Total No. of LectureHours /Semester	Durationof Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A-3.2	DSCC	Practical	02	04	52hrs	3hrs	25	25	50

IIISemester
OpenElectiveCourse(OEC-3)
(OEC for other students)Paper:
Community Forestry Code: OEC-3.1

Course No.	**Typeof Course**	**Theory / Practical**	**Credits**	**Instruction hour per week**	**Total No. of Lectures / Hours / Semester**	**Duration of Exam**	**Formative Assessment Marks**	**Summative Assessment Marks**	**Total Marks**
OEC-3.1	**OEC**	**Theory**	**03**	**03**	**42hrs**	**2hrs**	**40**	**60**	**100**

Learning outcomes:

Aftercompletionofthecourse,thestudentswillbeableto;

- Understandcommunityforestryanditsconservation
- Examinetheuseoftreesandcommunityforestry
- Interprettheroleofindigenous/tribalpeopleinconservationofforest
- Examinetheroleofvariouscommunityforestryconservationprograms
- Measurethedifferentpropertiesoftreessuchaswoodvolume,age, height,volume etc.

III Semester
OpenElectiveCourse(OEC-3)
(OEC forotherstudents)
Paper:AlgalCultivationandApplications Code:
OEC-3.2

Course No.	Typeof Course	Theory / Practical	Credits	Instruction hour perweek	TotalNo. of Lectures / Hours/ Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-3.2	OEC	Theory	03	03	42hrs	2hrs	40	60	100

Learning outcomes:

Oncompletionofthiscourse,thestudentswillbeableto;

- Understandcoreconceptsandfundamentalsofvariouslevelsofalgalgrowth
- Translatevariousalgaltechnologiesforbenefitofecosystem
- Demonstratealgalgrowthindifferenttypesofnaturalwater.
- AnalyzeemergingareasofAlgalBiotechnologyforidentifyingcommercialpotentials of algal products & their uses.

IIISemester
OpenElectiveCourse(OEC-3) (OEC for other students)
Paper:LandscapingandGardening
Code: OEC-3.3

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour perweek	Total No. of Lectures/ Hours/ Sem	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-3.3	OEC	Theory	03	03	42hrs	2hrs	40	60	100

Learning outcomes:

Afterthecompletionofthiscoursethelearnerwillbeableto:

- Applythe basic principlesandcomponentsofgardening
- Conceptualizeflowerarrangement andbio-aestheticplanning
- Designvarioustypesofgardensaccordingtothecultureandartofbonsai
- Distinguishbetweenformal,informaland freestylegardens
- Establishandmaintainspecialtypesofgardensforoutdoor andindoorland scaping

SEMESTERIV

TitleofTheCourse:EcologyandConservationBiology

CourseNo	Type of Course	Theory/ Practical	Credits	Instruction Hour Per week	Total No. Lectures/ Hours/ Semester	DurationOf Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOTA-4.1	DSCC	Theory	04	04	56hrs	2hrs	40	60	100

Practical:DisciplineSpecificCoreCourse(DSCC) Title of the Course and Code: BOT-A-4.2: ECOLOGYANDCONSERVATIONBIOLOGY

CourseNo.	Typeof Course	Theory / Practical	Credits	Instruction hour per Week	Total No. of Lectures/Hours / Semester	Durationof Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
BOT-A- 4.2	DSCC	Practical	02	04	52hrs	3hrs	25	25	50

OpenElectiveCourse(OEC-4) (OEC for other students)

Paper:PlantDiversityandHumanWelfare Code: OEC-4.1

Course No.	**Type of Course**	**Theory / Practical**	**Credits**	**Instruction hour per week**	**Total No. of Lectures /Hours/ Semester**	**Duration of Exam**	**Formative Assessment Marks**	**Summative Assessment Marks**	**Total Marks**
OEC-4.1	**OEC**	**Theory**	**03**	**03**	**42hrs**	**2hrs**	**40**	**60**	**100**

Learning outcomes:

Afterthecompletionofthiscourse,thelearnerwillbeableto:

- Developunderstandingoftheconceptandscopeofplantbiodiversity
- Identifythecausesandimplicationsoflossofbiodiversity
- Applyskillstomanageplantbiodiversity
- Utilizevariousstrategiesfortheconservationofbiodiversity
- ConceptualizetheroleofplantsinhumanwelfarewithspecialreferencetoIndia

IVSemester
OpenElectiveCourse(OEC-4) (OEC for other students)
Paper:MedicinalPlantsinHealthCare Code: OEC-4.2

Course No.	Typeof Course	Theory / Practical	Credits	Instruction hour perweek	TotalNo. of Lectures / Hours/ Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC-4.2	OEC	Theory	03	03	42hrs	2hrs	40	60	100

Learning outcomes:

Oncompletionofthis course,thestudentswillbeableto:

- Recognizethebasicmedicinalplants
- Applytechniquesofconservationandpropagation ofmedicinalplants.
- Setupprocessofharvesting,dryingandstorageofmedicinalherbs
- Proposenewstrategiestoenhancegrowthofmedicinalherbsconsideringthepractical issues pertinent to India.

IVSemester
OpenElectiveCourse(OEC-4) (OEC for other students)
Paper:FloricultureCode:OEC-4.3

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour perweek	TotalNo. of Lectures /Hours/ Sem	Duration of Exam	Formative AssessmentMarks	Summative Assessment Marks	Total Marks
OEC-4.3	OEC	Theory	03	03	42hrs	2hrs	40	60	100

Learning outcomes:

Aftercompletingthiscoursethelearnerwillbeableto;

- Developconceptualunderstanding ofgardeningfromhistoricalperspective.
- Analyzevarious nurserymanagementpracticeswithroutinegardenoperations.
- DistinguishamongthevariousOrnamentalPlantsandtheircultivation.
- Evaluategardendesignsofdifferentcountries.
- Appraisethelandscapingofpublicandcommercialplacesforfloriculture.
- Diagnosesthevariousdiseasesandusesofpestsfororna mentalplants.

Program Name	**B.Sc. in BOTANY** Semester V		
Course Title	**Plant Morphology and Taxonomy (Theory)**		
Course Code:	**DSC — BOT-C9 – T**	No. of Credits	**04**
Contact hours	**60 Hours**	Duration of SEA/ Exam	**2 hrs. 30 min.**
Formative Assessment Marks I **4 0**		Summative Assessment Marks	**60**
Course Pre-requisites			
Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1:Understanding the main features in Angiosperm evolution. CO2:Ability to identify, classify and describe a plant in scientific terms, thereby, Identification of plants using dichotomous keys. Skill development in identification and classification of flowering plants. CO3:Interpret the rules of ICN in Botanical nomenclature. CO4:Classify Plants systematically and recognize the importance of Herbarium, Virtual Herbarium and Botanical gardens. CO5. Recognition of locally available angiosperm families, plants and economically important plants. Appreciation of human activities in conservation of useful plants.			

Program Name	**B.Sc. in BOTANY** Semester V		
Course Title	Genetics and Plant Breeding (Theory)		
Course Code	**DSC — BOT-Cli – T**	No. of Credits	**04**
Contact hours	**60 Hours**	Duration of SEA/ Exam	**2 hrs. and 30 min.**
Formative Assessment Marks **40**		Sununative Assessment Marks	**60**
Course Pre-requisites			
Course Outcomes (COs): After the successful completion of the course, the student will be **able** to:.C01. Understanding the basics of genetics, plant breeding and cell biology. CO2 Ability to identify, calculate and describe crossing over, allelic generations and frequencies of recombination. CO3 Interpret the results of mating and pollinations. C04. Recognition of modes of inheritance of traits/ phenotypes and Phenotype-genotype correlation.			

	B.Sc. in BOTANY Semester **V**		
Course Title	Plant Biotechnology (Theory)		
Course Code	BOT C-19 T	No. of Credits	04
Contact hours	60 Hours	Duration of SEA/ Exam	2 hrs. 30 **min.**

Program Name	**BOT C15-T**	No. of Credits	**04**
Contact hours	**04 Hours**	Duration of Exam	**2 hrs. 30 min.**
Formative Assessment MarksI **40**		Summative Assessment Marks	**60**

Course Pre-requisites
Course Outcomes (COs): After the successful completion of the course, the student will be able to: C01. Importance of water and the mechanism of transport. CO2 To understand biosynthesis and breakdown of biomolecules. CO3 Role of plant hormones in plant development and about secondary metabolites. C04. Preliminary understanding of the basic functions and metabolism in a plant body. CO5. To understand the importance of nutrients in plant metabolism and crop yield.

Course Pre-requisites
Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1 Explain the basics of the physiological and molecular processes that occur during plant growth and development and during environmental adaptations CO2 Understand how biotechnology has been used to develop knowledge of complex processes that occur in the plant CO3 Use basic biotechnological techniques to explore molecular biology of plants C04. Understand the processes involved in the planning, conduct and execution of plant biotechnology experiments CO5. Explain how biotechnology is used for plant improvement and discuss the ethical implications of that use

ProgramName	B.Sc.inBOTANY	!Semester
Com-seTitle	Landscapine:andGardenine:(The01-y)	
Course Code:	BOT ESl-A	No.of Credits
Contacthours		Duration ofSEA/Exam
Fom1ativeAssessment Marks I		SununativeAssessmentMarks

CoursePre-requisites
Com·seOutcomes(COs):Afterthesuccessfolcompletionofthecomse,thestudentwill beableto: CO1. Studentswouldbeabletoidentifytheornamentalplants, C02.Theywillhaveanunderstandingofcultivationmethods,landscapingandmakingtheflowerananagement. C03.Tounderstandtheconceptofdifferenttypesofgardeningpractices C04.Applythebasicprinciplesandcomponentsofgardening C05.Learntodesignvarioustypesofformalandinformalgardens C06.Establishandmaintainspecialtypesofgardensforoutdoorandindoorlandscaping

Program Name	B.Sc. **in BOTANY**]Semester

Course Title	**Landscaping and Gardening (Theory)**	
Course Code:	**BOT ES1-A**	No. of Credits
Contact hours		Duration of SEA/Exam
Formative Assessment Marks		Summative Assessment MmmmmMarMarks

Course Pre-requisites
CourseOutcomes(C0s):Afterthesucc es sfulcompletionofthec ourse,thestudentwillbeableto: C01: Identify edible types of mushroom CO2: Gain the knowledge of cultivation of different types of edible mushrooms and spawn production CO3: Manage the diseases and pests of mushrooms C04: Learn a means of self-employment and income generation

ProgramName	B.Sc.in BOTANY		V
CourseTitle	Floriculture(Theory)		
CourseCode:	BOTE2CT	No.ofCredi	03
Contacthours	45Hours	DurationofSEA/E	2hours
Fo1mativeAssessment Marks 140		SuJilJilative	60

CoursePre-1·requisite(s):
CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse.Thestudentwillbeableto: CO1:Identifyanddescribetheomamentalfloweringplants. C02:Practicethemethodsofprepaiingsoilandwater,cultivationand propagationmethods. C03:Design,prepareandapplyappropriatecombinationsofplantsandmethodsofcultivationfor commercialsetup. C04:AdapttothejobroleofFloriculturist(employment/entrepreneurship)

BachelorofScience (Basic/Hons.)DegreeinChemistry
ChoiceBasedCreditSystem(CBCS)WithMultipleEntriesAnd
ExitOptionsunderNewEducationPolicy(NEP) –2020 (2021-22
Batch Onwards)
DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Chemistry-1 (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1:Chemistry-1 Practical(0+0+2)	**4**	**2**	**25**	**25**
	OE-1:ChemistryInDaily Life(3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2:Chemistry-2(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2:Chemistry-2 Practical(0+0+2)	**4**	**2**	**25**	**25**
	OE-2:MoleculesofLife (3+0+0)	**3**	**3**	**40**	**60**

ProgramOutcomes: Bythe endoftheprogramthestudentswillbe ableto:

- To create enthusiasmamong students for chemistry and its application in various fields of life.
- Toprovidestudentswithbroadand balancedknowledgeandunderstandingofkeyconcepts in chemistry
- Todevelopinstudentsarangeofpracticalskillssothattheycanunderstandandassessrisks and work safely measures to be followed in the laboratory.
- Todevelopinstudentstheabilitytoapplystandardmethodologytothesolutionofproblems in chemistry
- To provide students with knowledge and skill towards employment or higher education in Analytical chemistry or multi-disciplinary areas involving chemistry.
- To provide students with the ability to plan and carryout experiments independently and assess the significance of outcomes and to cater to the demands of chemical Industries of well-trained graduates
- To develop in students the ability to adapt and apply methodology tothe solution of unfamiliar types of problems.
- To instill critical awareness of advances at the forefront of chemical sciences, to prepare students effectively for professionalemployment or research degrees in chemical sciences and to develop an independent and responsible work ethics.

Learning/CourseOutcomes:

After studyingthiscoursestudentwillbeabletounderstand:

- Theconceptsofchemicalanalysis,accuracy,precisionand statisticaldatatreatment.

- Prepare the solutions after calculating the requiredquantity of salts inpreparing the reagents/solutions and dilution of stock solution.
- Describe the dual nature of radiation and matter; dual behavior of matter and radiation, deBroglie'sequations, He is enberg uncertain typrinciple andtheir related problems.
- Quantum mechanics. Derivation of Schrodinger's wave equation. Radialand angular Orbital shapes of s,p,d and fatomicorbitals, nodalplanes. Electronic configurations of the atoms.
- Pauli'sexclusionprinciple, Hund'srule,Aufbau'sprincipleanditslimitation.
- The concepts of Organic reactions and techniques of writing the movement of electrons, bond breaking, bond forming.
- TheConceptofaromaticity,resonance,hyperconjugation, etc.
- Explain bond properties , electron displacement effects (inductive effect, electro metric effect, resonance effect and Hyper conjugation effect). steric effect and their applications inexplaining acidic trength of carboxylic acids, sbasicity of amines.
- Understandbasicconceptoforganicreactionmechanism,typesoforganicreactions.
- Understandthepreparationandreactionsofalkanes.
- Understandthestabilityandconformationalanalysisofcycloalkanes.
- Understandtheconceptofresonance,aromaticityandanti-aromaticity.
- Describerelativestrengthofaliphaticandaromaticcarboxylicacids.
- Explaintheexistenceofdifferentstatesofmatterintermsobalancebetweeninter molecular forces and thermal energy of the particles. Explain the laws governing behavior of ideal gases and real gases. Understand cooling effect of gas ona diabatic expansion.
- Understandtheconditionsrequiredforliquefactionofgases.Realizethatthereiscontinuity in gaseous and liquids state.
- Understandthepropertiesofliquidsintermsofinter molecular attractions.
- Understand the existence of different states of matter interm so balance between intermolecular forces and thermal energy of the particles. Explain the laws governing behavior of ideal gasesandrealgases. Understand cooling effect of gas on adiabatic expansion.
- Understandtheconditionsrequired forliquefactionofgases.Realizethatthereiscontinuity in gaseous and liquid state.
- Understandthepropertiesofliquidsintermsofintermolecularsattractions.

DSCP-1:CHEMISTRY-1(PRACTICALS):4Credits; 56Hrs.

Learning/Course Outcomes: After studying this course and performing theexperiments setinit, student willbe able to understand:

- Basic concepts involved intitrimetric analysis, primarystandard substances, preparation of standard solutions.

- Explaintheprinciplesofacid-base,redoxandiodo metrictitrations.
- Workout the stoi chiometry relations based on the reactions involved in thetitrimetric analysis.
- Describethesignificanceoforganicquantitativeanalysis.
- Understandthepreparationoforganiccompoundsinvolvingaddition, substitution, hydrolysis, diazotization and condensation reactions.

OpenElectiveCourse(OE)

OE-1:CHEMISTRYINDAILYLIFE: 3Credits; 42Hrs.

Learning/CourseOutcomes: Oncompletionofthecoursestudentswillbeable to:

- Understandthe chemicalconstituentsin variousday today materials usingby acommon man.
- Understandthechemicalconstituentsinvitamins,soapsanddetergents.
- Understandtherenewablechemicalenergyresources.
- Understanddifferenttypesofpolymersandtheir applications.
-

IISEMESTER

Learning/CourseOutcomes: Afterstudyingthiscoursestudentwillbeableto:

- Understandprinciplesoftitrimetricanalysis.
- Understand principles ofdifferent type's titrations. Titration curves for all types ofacid–base titrations.
- Gain knowledge about balancing redoxequations, titration curves, theoryofredoxindicators and applications.
- Understand titrationcurves, indicators for precipitation titration sin volving silver nitrate-Volhard's and Mohr's methods and their differences.
- Indicators for EDTA titrations - theory of metal ion indicators. Determinationofhardness of water.
- Understand periodic table, classification and properties of spd and f blockselements.
- Understand different scales for the measurement of electro-negativity and factorsaffectingit.
- Understand chemistryofthehydrides,carbides,oxidesandhalidesofgroup13-17.
- Understandnucleophilicsubstitutionatsaturatedcarbon,energyprofilediagram.
- Stereochemistryandfactorsaffecting SN1andSN2reactions.
- Aromaticelectrophilicsubstitutionreactions;nitration,sulfonationFriedel-Crafts.
- Understandliquidcrystals,classificationwithexamples.
- Understandthedifferentformsofsolids, lawsofcrystallography, miller indicesandits calculation,X-ray diffractionstudies. Bragslawandits

Equation.

- Defectsinsolids,propertiesofglassesandconceptofliquidcrystals.

DSCP-2:CHEMISTRY-2(PRACTICALS): 4 Credits; 56Hrs.

Learning/Course Outcomes: After studying this course and performing theexperiments setinit, student will be able to understand:

- Basicconceptsinvolvedintitrimetricanalysis,primarystandardsubstances, preparation of standard solutions.
- Explaintheprinciplesofacid-base,redoxandiodometric titrations.
- Describethesignificanceofinorganicquantitativeanalysis.
- Determineof densityfollowedby thedeterminationof viscosity and surfacetension of different liquid samples.
- Determinationofpartitionco efficientofdifferentliquidmixtures.
- Determinationofrateconstantinthedecompositionreactionofhydrogenperoxide.

OpenElectiveCourse(OE)

OE-2:MOLECULESOFLIFE 3Credits; 42hrs.

Course/LearningOutcomes: Oncompletionofthecoursestudentswillbeable to:

- Acquireknowledgeaboutdifferenttypesofsugarsandtheirchemicalstructures.
- Identifydifferenttypesofaminoacidsanddeterminethestructureofpeptides.
- Explaintheactionsofenzymesinourbodyandinterpret enzymeinhibition.
- Predictactionofdrugs.Depictthebiologicalimportanceofoilsandfats. Importance of lipids in the metabolism. Differentiate RNA and DNA and their replication. Explain production of energy in our body.

IIISEMESTER

DSC-3:Chemistry-III

(L:T:P=4:0:0) ContactHours:56 Credits: 4 Workload: 4 Hours/Week

CourseObjectives:

1. Interrelationshipamongfrequency,wavelengthandwavenumberandimportance ofvalidation parameters of an instrumental method will be taught.
2. Principle, instrumentationandapplicationsofspectrophotometer,nephelometryand turbidometry will be taught.
3. Principle,typesandapplicationsofsolventextractionwillbetaught
4. Theconceptofmechanismanditsimportancewillbetaughttothestudent.
5. Concept and importance of intermediates in organic chemistry will be taught takingproper examples.
6. The varioustechniquesforidentificationofreactionmechanismwill betaughtto

Thestudent takingproperexamples.

7. Differenttypesofbondinginmolecules/compounds/ions.
8. Thetheoreticalandexperimentalaspectsofchemicalkineticsincludingbasic theoriesof reaction rates and methods of determining order.
9. Electrochemistry dealing with electrolytesin solution.Conductance measurementsandapplications.Conceptofionicmobilityandtheirdetermination.

Course SpeificOutcomes: Afterthecompletionofthiscourse,thestudentwouldbeableto;

1. Understandthe importanceoffundamentallaw and validationparameters inchemical analysis.
2. Applysolvent extractionmethod forquantitative determinationofmetalions in different samples.
3. Utilizetheion-exchangechromatographyfordomesticandindustrialapplications.
4. Explainthemechanismforagivenreaction.
5. Predicttheprobablemechanismforareaction.
6. Explaintheimportanceofreactionintermediates, itsroleandtechniquesof generatingsuch intermediates.
7. Predictthenatureofthebondformedbetweendifferentelements.
8. Identifythepossibletypeofarrangementsofionsinioniccompounds.
9. WriteBorn-Habercyclefordifferentioniccompounds.
10. Relatedifferentenergy parameterslike,latticeenergy,entropy,enthalpy and solvation energy in the dissolution of ionic solids.
11. Explaincovalentnatureinioniccompounds.
12. Understand the concept of rate of a chemical reaction, integrated rate equations, energy ofactivation and determination of order ofa reaction based on experimental data.
13. Toknow the different types of electrolytes, usefulness of conductance and ionic mobility measurements.
14. Todeterminethetransport numbers.

DSC-3:Chemistry-IIIPractical

(L:T:P= 0:0:2)	**ContactHours: 56**	**Credits: 2**	**Workload:4 Hours/Week**

Courseobjectives:To attainpracticalknowledgeabout:

1. Analyticalskillsindetectingtheconstituentspresentinunknownsamplesby systematically carrying out the qualitative analysis.
2. Themethodsofdeterminingratesofchemicalreactions.
3. Designingelectrochemicalcellsandmakingmeasurementsrelatedtoit.
4. Determination of physical characteristics of electrolytes using conductivity measurements in solution.
5. Adsorptionphenomenon,mechanismandbasicmodelsto explainadsorption.
6. Simple techniqueslike conductometry to obtain physicochemical parameters of electrolytes.

CourseSpecificoutcomes:Attheendofthecoursestudentwouldbeableto;

1. Understandthechemicalreactionsinvolvedinthedetectionofcationsandanions.
2. Explain basic principlesinvolvedin classificationof ionsintogroups in semi-microqualitative analysis of salt mixture
3. Carryoutheseparationofcationsintogroupsandunderstandtheconceptofcommon ion effect.
4. Understandthechoiceofgroupreagentsusedintheanalysis.
5. Analyzeasimpleinorganicsaltmixturecontainingtwoanionsandcations
6. Use instruments like conductivity meter to obtain variousphysicochemical parameters.
7. Applythetheoryaboutchemicalkineticsanddeterminethevelocityconstantsof various reactions.
8. Learnaboutthereactionmechanisms.
9. Interpret the behavior of interfaces, the phenomena of physisorptionandchemisorption'sandtheirapplicationsinchemicalandindustrial processes.
10. Learntofitexperimentaldatawiththeoreticalmodelsandinterpretthedata

DSC-4:Chemistry-IVsemester

(L:T:P=4:0:0) ContactHours:56 Credits:4 Workload:4Hours/Week

CourseObjectives:

1. Principle, instrumentationandapplicationsofspectrophotometry,nephelometryand turbidometry will be taught.
2. Principle,typesandapplicationsofsolventextractionwillbetaught.
3. Conceptofstereochemistryanditsimportancewillbetaught.
4. **Thevariousprojectionformulaeandthetechniquesofdesignatingthemoleculesin to R/ S andD** /Lwill betaughttakingproper examples.
5. The theoryand concept ofCis-, trans- isomerism and its importance and thetechniquesto differentiate between them will be taught taking examples.
6. Thestructuresofmolecules/compounds/ionsbasedondifferentmodels/theories.
7. Propertiesofcompoundsbasedonbondingandstructure.
8. Thefundamentalsofthermodynamicsincludingthelaws,theconceptofentropyandfree energy functions and their applications.
9. Theconceptsofsurfacechemistry,catalysisandtheirapplications.

CourseSpecificOutcomes: Afterthecompletionofthiscourse,thestudentwouldbeableto;

1. Understandthe importanceoffundamentallawandvalidationparameters

inchemical analysis.

2. Knowhowdifferent analytes indifferent matrices (waterandrealsamples) canbe determined by spectrophotometric, nephelometric and turbidimetric methods.
3. Explainthe importanceofStereochemistryinpredicting thestructureand propertyof organic molecules.
4. Predicttheconfigurationofanorganicmoleculeandabletodesignateit.
5. Identifythechiralmoleculesandpredictitsactualconfiguration.
6. WritetheM.O.energydiagramsforsimplemolecules.
7. Differentiatebondinginmetalsfromtheircompounds.
8. Learnimportantlawsofthermodynamicsandtheir applicationsto variousthermodynamic systems.
9. Understand adsorption processes and their mechanisms and the function andpurposeofa catalyst.
10. Applyadsorptionasaversatilemethodforwastewaterpurification.

DSC-4:Chemistry-IVPractical

(L:T:P=0:0:2) ContactHours:56 Credits:2 Workload:4Hours/Week

Courseobjectives:

1. To impart skills related to preparation of stock and working solutions and handlingof instrumental methods.
2. Toknowtheprincipleofcolorimetricanalysisandconstructionofcalibrationplot.
3. Tounderstandthechemistryinvolved incolorimetricdeterminationofmetalionsand anions.
4. TodetermineRf̩valuesofdifferent metalionspresent inamixture.
5. Toimpartknowledgeontheimportanceoffunctionalgroupsinorganiccompounds.
6. Techniquestoidentifythe functionalgroupsinacompound byperforming physicaland chemical tests.
7. Torecorditsmeltingpoint/boilingpoint.
8. Topreparesuitablederivativeforthatcompoundandtocharacterizeit.

CourseSpecificoutcomes:Afterthecompletionofthiscourse,thestudentbeableto

1. Understandtheimportanceofinstrumentalmethodsforquantitativeapplications.
2. Apply colorimetricmethodsforaccuratedetermination of metal ionsandanionsinwater or real samples.
3. Understand how functional group in a compound is responsible for its characteristic properties.
4. Learntheimportanceofqualitativetestsinidentifyingfunctionalgroups.
5. Learnhowtoprepareaderivativeforparticularfunctionalgroupsandhowtopurifyit.

OpenElectiveCourse

IIISEMESTER

OEC-3:AtomicStructure,BondingandConceptsinOrganicChemistry

(L:T:P=3:0:0) ContactHours:42 Credits:3 Workload:3Hours/Week

CourseObjectives:

1. Todevelopanunderstandingofprinciplesofatomicstructure.

2. To know the importance of quantum numbers,writing of electronic configurationsand representation of orbitals.
3. Todevelopanunderstandingoftheperiodictrends.
4. Tounderstandthenatureofbondingandtopredicttheshapesofmolecules.
5. ToconstructMOenergyleveldiagramsandpredictthepropertiesofmolecules.
6. Tounderstandtheformationofsigmaandpibondsandthebondstrength.
7. Tostudytheclassificationoforganicreactions.
8. To learnnomenclaturepreparation andreactionsof alkanes,alkenes,alkynesand stability of alicyclic compounds.

Course Specific Outcomes: On completion of the course the studentwill learn andbe ableto understand/explain;

1. The concept of atomic structure, significance of quantum numbers, filling of electronsof atoms/ions in various orbitals as per rules.
2. Thetrendsinperiodicproperties.
3. Thestructuresofionicsolids,applicationsofB-Hcycle,solubilityofcompoundsand consequences of polarization of ions.
4. TheshapesofmoleculesionsbasedonVSEPRtheory.
5. TheconstructionofMO energy level diagrams and prediction of propertiesof molecules/ions like bond order, bond energies, bond lengths and magnetic properties.
6. Theformationofsigmaandpibondsandthebondstrength.
7. Theclassificationoforganicreactions.
8. Nomenclaturepreparation,andreactionsofalkanes,alkenes,alkynesandstabilityof alicyclic compounds.

IVSEMESTER

OEC-4:Electrochemistry,Corrosionand Metallurgy

(L:T:P=3:0:0) ContactHours:42 Credits:3 Workload:3Hours/Week

CourseObjectives: Thiscoursewilldealwith

1. Typesofconductance,conceptofelectrolytes,electrolysis,redoxreactionsandEMF.
2. Concept of differenttypes of electrochemical cells,Types of electrodesand electrode potential. Application of electrochemical series.
3. Basicprinciplesandapplicationsofconductometric,potentiometricandpHtitrations.
4. DifferenttypesofBatteriestheirprincipleconstructionandworking-lead-acid storage and lithium ion battery. Study of Fuels cells.
5. Conceptofcorrosion,typesofcorrosionanditspreventionbydifferent

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1. Understandtheconceptofconductance inelectrolyticsolutions, electrolysisandredox reactions involved in electrode reactions.
2. Learnthedifferent typesofelectrochemicalcells, theirsymbolicalrepresentationand application of electrochemical series.
3. Applyconductometric,potentiometric and pHtitrations.
4. Knowtheprinciple,constructionandworkingofbatteries.
5. Understanddifferenttypesofcorrosionanditspreventionbydifferentmethods.
6. Learnthemethodsofextractionofmetals fromtheiroresandpurification.

VSEMESTER(Paper-5)

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1.Demonstrate understanding of the structural arrangements of ionic crystals.
2.Apply various theories of acids and bases.
3.Describe the periodic properties and trends of f-block elements.
4.Identify and classify ligands, and understand the concept of chelation.
5.Utilize physical methods like conductance, color, and pH changes to study complexes.
6.Interpret different representations of organic molecules, including optical activity and conformational analysis.
7.Understand the basic concepts of organic reactions, aromatic systems, and reaction mechanisms. Elucidate the structure, synthesis, and biological importance of Vitamin A and Vitamin C.
8.Apply the laws of photochemistry (Grothus-Draper law, Stark-Einstein law) to relevant scenarios. Compare primary and secondary stages in radiochemical reactions, understanding ionic and energy yields.

VSEMESTER(Paper-6)

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1.Students will gain an in-depth understanding of the structural aspects and bonding in boranes, carboranes, and other main group element compounds.
2.Students will comprehend various acid-base theories (Arrhenius, Bronsted-Lowry, and Lewis).
3.Students will understand the structure and properties of carbohydrates, focusing on monosaccharides like glucose.
4.Students will gain knowledge of heterocyclic compounds, their structures, and their wide-ranging applications in pharmaceuticals, agrochemicals, and materials science.
5.They will apply quantum mechanical concepts to explain phenomena at the atomic and molecular levels.
6.Students will understand the laws of photochemistry, including the Grothus-Draper and Stark-Einstein laws.
7.Students will comprehend colligative properties such as depression in freezing point and osmotic pressure.
8.Students will learn the principles of UV-visible spectroscopy.

VISEMESTER(Paper-7)

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1.Students will understand the concepts of metal-ligand bonding using Valence Bond Theory (VBT) and Molecular Orbital Theory (MOT).
2.Students will analyze the magnetic properties of coordination compounds and relate them to their electronic configurations and ligand field strength.
3.Students will understand the mechanism of aromatic electrophilic substitution reactions.
4.Students will study the role of metal hydrides in reduction reactions and understand their mechanisms.
5.Students will learn various ways to represent organic molecules, including structural and stereochemical representations.
6.Students will grasp basic concepts of organic reactions and aromatic systems.
7.Students will understand the theory of ionic equilibria, including acid-base equilibria, solubility, and buffer systems.
8.They will explore its applications in analytical chemistry, biological systems, and industrial processes.

VISEMESTER(Paper-7)

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1.Students will understand the concepts of metal-ligand bonding using Valence Bond Theory (VBT) and Molecular Orbital Theory (MOT).
2.Students will analyze the magnetic properties of coordination compounds and relate them to their electronic configurations and ligand field strength.
3.Students will understand the mechanism of aromatic electrophilic substitution reactions.
4.Students will study the role of metal hydrides in reduction reactions and understand their mechanisms.
5.Students will learn various ways to represent organic molecules, including structural and stereochemical representations.
6.Students will grasp basic concepts of organic reactions and aromatic systems.
7.Students will understand the theory of ionic equilibria, including acid-base equilibria, solubility, and buffer systems.
8.They will explore its applications in analytical chemistry, biological systems, and industrial processes.

VISEMESTER (Paper-8)

CourseSpecificOutcomes: Uponcompletionofthecoursestudentswill beableto;

1.Students will understand the constituents of paints, their functions, and the process of manufacturing lithopone and titanium dioxide.
2.Students will understand the properties and applications of refractories and ceramics.
3.They will study the types, composition, and industrial importance of fertilizers.
4.Students will gain knowledge of the structure and properties of silicates.
5.They will explore its wide-ranging applications in fields such as medicine, electronics, energy, and materials science.
6.Students will study various types of organic rearrangements, including their mechanisms and applications.
7.Students will learn the basic concepts of amino acids, their structures, properties, and reactions.
8.Students will understand the principles of chemical dynamics, including reactions between ions in solutions.
9.Students will study the kinetics of homogeneous catalysis and fast reactions.
10.Students will learn the theory and principles of NMR spectroscopy.

BachelorofScience(Basic/Hons.)DegreeinComputerScience Choice BasedCreditSystem(CBCS)With MultipleEntries and Exit Optionsunder NewEducation Policy(NEP) – 2020 (2021-22 Batch Onwards)

DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Computer Fundamentalsand ProgramminginC(4+0+0)	4	4	40	60
	DSCP-1: Computer Programming (0+0+2)	4	2	25	25
	OE-1: Office Automation (3+0+0)	3	3	40	60
II	DSC-2:DataStructures usingC(4+0+0)	4	4	40	60
	DSCP-2: Data structures (0+0+2)	4	2	25	25
	OE-2:CProgramming Concepts(3+0+0)	3	3	40	60

Courseobjectives: Thepresent CurriculumFrameworkforBSc degreesis intendedtofacilitate the students to achieve the following.

- To build up an indulgent and knowledge of the basic theory of Computer Science and Information Technology with good basis on theory, systems and applications such as algorithms, data structures, data handling, data communication, computation and analysis.
- Todevelopthecapabilityto usethisknowledgetoanalysenewsituations inthe application domain including software tiny tools.
- To gain indispensable and state-of-the-art skills to take up industry challenges. The objectives and outcomes are carefully designed to suit to the above-mentioned purpose.

- Theabilitytosynthesizetheacquiredknowledge,understandingandexperience forabetter

and improved comprehension of the real-life problems.

- Tolearnskillsandtoolslikemathematics,statisticsandelectronicstofindthesolution, Interprettheresultsandmakepredictionsforthefuturedevelopments.
- Toformulate,tomodel,todesignsolutions,procedureandtousesoftwaretoolstosolvereal world problems and evaluate.

Programme Outcomes: The Bachelor of Computer Science (Basic/Hons) program makes possiblestudentsto accomplishfollowingadditionalattributesbesidesthe afore-mentioned attributes, by the time of graduation:

- Theabilitytoapplyskillset incomputingwithstrongprogrammingand mathematicsskills, aswellaswiderangingskillsinprojectmanagement,effectivepresentationsandteamwork.
- Run by contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.
- The capability to apply the knowledge and understanding noted skills to the analysis of a given information handling problems.
- The skill to work independently on a generous software project and asan effective team member.
- Discipline knowledge: Acquiring knowledge on basics of Computer Science and abilityto apply to design principles in the development of solutions for problems of varying complexity.
- Problem Solving: Improved reasoning with strong mathematical abilityto Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
- Programming a computer: Exhibiting strong skills required to program a computer for various issues and problems of day-to-day applications with thorough knowledge on programming languages of various levels.
- Application Systems Knowledge: Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.
- Communication: Must have a reasonablygood communicationknowledge both in oraland writing.
- Ethics on Profession, Environment and Society: Exhibiting professional ethics to maintain the internality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
- LifelongLearning:Shouldbecomeanindependentlearner.So, learntolearnability.
- Motivationto take upHigher Studies: Inspirationto continue educationstowards advanced studies on Computer Science.

ISEMESTER

CourseOutcomes: Aftercompletingthiscoursesatisfactorily,astudentwillbeableto:

- ConfidentlyoperateDesktopComputerstocarryoutcomputationaltasks.
- UnderstandworkingofHardwareandSoftwareandtheimportanceofoperatingsystems.
- Understandprogramminglanguages,numbersystems,peripheraldevices,networking, multimedia and internet concepts.
- Read,understandandtracetheexecutionofprogramswritteninClanguage.
- WritetheCcodeforagivenproblem.

- Performinputandoutputoperationsusingprogramsin C.
- Writeprogramsthat performoperationsonarrays.

IISEMESTER

CourseOutcomes: Aftercompletingthiscoursesatisfactorily,astudentwillbeableto:

- Describe howarrays, records,linked structures, stacks, queues,trees, and graphsare represented in memory and used by algorithms.
- Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.
- Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs.
- Demonstratedifferentmethodsfortraversingtrees.
- Comparealternative implementationsofdatastructureswithrespect to performance.
- Describetheconceptofrecursion;giveexamplesofitsuse.
- Discuss the computational efficiency of the principal algorithms for sorting andsearching.

OpenElectiveCourse(OE)

CourseOutcomes:

- ConfidentlyoperateDesktopComputersto carryoutcomputationaltasks.
- UnderstandworkingofHardwareandSoftwareandtheimportance of operatingsystems.
- Understandprogramminglanguages,numbersystems,peripheral devices, and networking, multimedia and internet concepts.
- Read,understandand tracetheexecutionofprogramswritteninClanguage.
- WritetheCcode foragivenproblem.
- Performinputandoutputoperationsusingprogramsin C.
- Writeprogramsthat performoperationsonarrays.

III&IVsemester

Model Curriculum Structure
(B.Sc. Schema)

Program: B.Sc. (Basic and Honors) **Subject: Computer Science**

1. **Computer Science as MAJOR with another Subject as MINOR (Table IIA of Model Curriculum)**

2. **Computer Science as MAJOR with another Subject also as MAJOR (Table IIIA of Model Curriculum)**

3. **Computer Science as MINOR with another Subject as MAJOR (As per Table IIA of Model Curriculum)**

Sem	Discipline Specific Core Courses(DSC)	Hour / Week		DS Elective Courses	Hours/ Week
		Theory	Lab		
III	**DSC-3:** Object Oriented Programming in JAVA	4			
	DSC-3 Lab: JAVA Programming Lab		4		
IV	**DSC-4:** Database Management Systems	4			
	DSC-4 Lab: DBMS Lab		4		

ComputerScience:
SkillEnhancementCourse:SECforB.Sc.&otherSubjectStudents SEC Model-2
Semester:III/IV

CourseTitle: ArtificialIntelligence	CourseCredits:2
TotalContactHours:13hoursoftheoryand26 hoursofpractical	DurationofESA:01Hour
FormativeAssessmentMarks:25marks	SummativeAssessment Marks:25 marks

CourseOutcomes(Cos):
Attheendofthecourse,studentswill beableto:

- AppraisethetheoryofArtificialintelligenceandlistthesignificanceofAI.
- DiscussthevariouscomponentsthatareinvolvedinsolvinganAIproblem.
- IllustratetheworkingofAI Algorithmsinthegivencontrast.
- AnalyzethevariousknowledgerepresentationschemeS, ReasoningandLearningtechniquesofAI.
- ApplytheAIconceptsto build anexpertsystemto solvethereal-worldproblems.

ModelSyllabusforB.Sc.(BasicandHonors),SemestersIIIandIV Semester: III

CourseTitle:ObjectOrientedProgramminginJava	Coursecode:DSC3
TotalContactHours:52	CourseCredits:04
FormativeAssessmentMarks:40	DurationofSEE/Exam: 02Hours
SummativeAssessmentMarks:60	

CourseOutcomes(Cos):

Attheendofthecourse,studentswill beableto:

• Explaintheobject-orientedconceptsand JAVA.

- Write JAVA programs using OOP concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- ImplementClassesandmultithreadingusingJAVA.
- DemonstratethebasicprinciplesofcreatingJavaapplicationswithGUI.

CourseTitle:JavaProgramming Lab	Coursecode: DSC3Lab
TotalContactHours:52	Hours/week:04
FormativeAssessmentMarks:25	CourseCredits:02
ExaımMarks:25	DurationofExam:03Hours

CourseOutcomes(Cos):

Aftercompletingthiscoursesatisfactorily,astudentwillbeableto:

- ImplementObjectOrientedprogrammingconceptusingbasicsyntaxesofcontrolStructures
- Identify classes, objects, members of a class and the relationships among them needed for afinding the solution to specific problem
- Demonstrateshowto achievereusabilityusinginheritance

- Demonstrate understanding and use of interfaces, packages, different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
- Identify and describe common user interface components to design GUI in Java using Applet & AWT along with response to events

Semester:IV

CourseTitle:DatabaseManagementSystem	Coursecode:DSC4
TotalContactHours:52	CourseCredits:04
FormativeAssessmentMarks:40	
SummativeAssessmentMarks:60	DurationofSEE/Exam: 02Hours

CourseOutcomes(COS):

Attheendofthecourse,studentswill beableto:

- Explainthevariousdatabaseconceptsandtheneedfordatabase systems.
- Identifyanddefinedatabaseobjects,enforceintegrityconstraintsonadatabaseusing DBMS.
- DemonstrateaDatamodeland Schemasin RDBMS.
- IdentifyentitiesandrelationshipsanddrawERdiagramfor agivenreal-world problem
- ConvertanERdiagramtoadatabaseschemaanddeduceittothedesirednormalform.
- FormulatequeriesinRelationalAlgebra,StructuredQueryLanguage(SQL)fordatabase manipulation.
- Explainthetransactionprocessingandconcurrencycontroltechniques.

CourseTitle:DBMSLab	Coursecode: DSC4Lab
TotalContactHours:52	Hours/week:04
FormativeAssessmentMarks:25	CourseCredits:02
ExamMarks:25	DurationofExam:03Hours

CourseOutcomes(Cos):

Studentwouldbeabletocreatetables,execute queries

1. Executeasinglelinequeryand groupfunctions.
2. ExecuteDDLCommands.
3. ExecuteDML Commands
4. ExecuteDCLandTCLCommands.
5. Implement theNestedQueries.
6. ImplementJoinoperationsinSQL
7. Createviewsforaparticulartable
8. ImplementLocksforaparticulartable

OpenElectiveforIII&IVSemester Python Programming Concepts

CourseTitle:PythonProgrammingConcepts	CourseCredits:3(3L+OT+0P)
Semester:III/IV	DurationofSEE:02Hour
TotalContactHours:42	SEE:60MarksIA:40Marks

CourseOutcomes(Cos):

• ExplainthefundamentalsofComputers.

• ExplainthebasicconceptsofPythonProgramming.

• Demonstrateproficiencyinthehandling ofloopsand thecreationof functions.
• Identifythemethodstocreateandstorestrings.

FundamentalsofMultimedia

CourseTitle:FundamentalsofMultimedia	CourseCredits:3(3L+OT+0P)
Semester.III/IV	DurationofSEE:02Hour
TotalContactHours:42	SEE:60 Marks.IA: 40Marks

CourseOutcomes(COS):

• Students will learn about multimedia, which is a field concerned with the computer controlled integrationoftext,graphics,drawings,stillandmovingimages(video),animation,audioandanyother mediawhereeverytypeofinformationcanberepresented,stored,transmittedandprocesseddigit

ProgramName	B.Sc.	I Semester	v
CourseTitle	Computer Networks(Theory)		
CourseCode:	DSC6	No.of Credits	04
Contact hours	52Hours	Duration of SEA/Exame	2hours
Formative Assessement Marks	40	SmmnativeAssessmentMarks	60

CourseOutcomes (COs): Afterthe successful completion of the course,the student willbeable to:

COl Definevariousdatacommunicationcomponentsinnetworking .
CO2 Describenetworkingwithreferencetodifferent typesofmodels and topologies.
CO3 Understandtheneed forNetworkandvariouslayersofDSiandTCP/IPreferencemodel .
C04 ExplainvariousDataCommunicationsmedia .
CO5 Descreb the physical layer functionsand components
CO6 Identifythedifferent typesofnetworktopologiesandSwitching methods.CO7 Descrbe variousDatalinkLayerProtocols.
CO7 Identifythe different types of networkdevicesandthefunctionswithinanetwork.
CO9 AnalyzeandinterpretvariousDataKinkLayerand TransportLayer protocols.COlO Explain differentapplication layerprotocols.

ProgramName	B.Sc.	Semester	VI
CourseTitle	WebTechnologies(Theory)		
CourseCode:	DSC8	No.ofCredits	04
Contacthours	52Hours	Durationof SEA/Exam	2hours
Fomative Assessment Marks		Summative Assessment Marks	60

Course Outcomes (COs): After thesuccessfulcompletionofthecourse, the studentwillbeableto

CO1	Understandbasicsoft webtechnology
C02	Recognizethedifferent Client-sideTechnologiesandtoolslike,HTML,CSS,JavaScript
C03	LearnJavaServletsandJDBC
C04	WebTechnologyforMobilesandUnderstandwebsecurity

ProgramName	B.Sc.	Semester	VI

CourseTitle	StatisticalComputing&RProgramming(Theory)		
CourseCode:	DSC9	No.ofCredits	04
Contacthours	52Hours	Durationof SEA/Exam	2hours
Formative Assessement Marks	40	SmmuativeAssessmentMarks	60

Course Outcomes(COs):After the successful completion of the course,the student will be able to	
COl	Explore fundamentals of statistical analysis in R enviroment.
C02	Describe key terminologies, concepts and techniques employed in StatisticalAnalysis.
C03	Define Calculate, Implement Probability and ProbabilityDistribution to solve a widevariety of problems.
C04	ConductandinterpretavarietyofHypothesisTeststed and DecisionMaking.
CO5	Understand, Analyse and lnterpret CorrelationProbability and Regression to analyse the underlyingrelationshipsbetweendifferentvariables.

Program Name	B.Sc.	Semester	VI
Course Title	RProgrammingLab		
CourseCode:	DSC9Lab	No.of Credits	02
Contact hours	04Hoursperweek	Duration of SEA/Exam	2hours
Formative AssessmentMarks	25	SummativeAssessmentMarks	25

Overview

Thefollowing programproblematic comprises of R programming basics and application ofseveral Statistical Techniques using it.The moduleaims to provide exposure interms ofStatistica1Analysis,HypothesisTesting, Regression and Correlation using Rprogramming language.

Leaming Objectives

TheobjectiveofthisLaboratorytomakestudentsexercisethefundamentalsofstatisticalanalysisin Renvironment.theywouldbeabletoanalysisdatafor thepmposeofexplorationusingDescriptiveandInferential Statistics.StudentswillunderstandProbabilityandSamplingDistributionsandlern thecreativeapplicationofLinearRegressionimnultivariatecontext for predictive purpose.

Course Outcomes:

- Install,CodeandUseRProgrammingLanguage inR StudioIDEtoperfom basic taskson Vectors, Matrices and Data frames.Explore fundament also statisticalanalysis in Renvironmen t.
- Describe key tenninologies, concepts and techniques employed in Statistical Analysis .
- Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
- Conduct and interpret avruiety of Hypothesis Teststoaid Decision Making.
- Understand , Analyze, and lnterpret Con-elation Probability and Regression to analyse the underlying relationships between different variables.

BachelorofScience(Basic/Hons.)DegreeinElectronics
ChoiceBasedCreditSystem(CBCS)WithMultipleEntriesAnd
ExitOptionsunderNewEducationPolicy(NEP) –2020 (2021-22
Batch Onwards)
BOARDOFSTUDIES:PROCEEDINGS

DetailsofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper	Teachin g hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examinatio n Marks (C3)
	(L+T+ P)				

I	DSC-1:ElectronicDevices andCircuits(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1:Electronic DevicesandCircuits (0+0+2)	**4**	**2**	**25**	**25**
	OE-1: Fundamentals of Electronicsand Domestic Wiring (3+0+0)	**3**	**3**	**40**	**60**
	OE-2:Domestic Equipment Maintenance(3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2:Analogand DigitalElectronics (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2:Analogand DigitalElectronics(0+0+2)	**4**	**2**	**25**	**25**
	OE-3:Fundamentalsof SemiconductorDevices (3+0+0)	**3**	**3**	**40**	**60**
	OE-4:RenewableEnergy andEnergyHarvesting (3+0+0)	**3**	**3**	**40**	**60**
	OE-5:PCBDesign andFabrication (3+0+0)	**3**	**3**	**40**	**60**

ISEMESTER

Courseobjectives:

TheobjectivesoftheCourseareto enablethestudent to understand Principleofoperation of passive components.

- Basicsprinciplesofnetworktheorems.
- Analysis of Electronic circuits Construction, operation and applications of semi conductor diode, BJT and special purpose devices
- Number systems, Boolean laws and methods of simplifications of Boolean expressions
- Course Outcomes at the end of this course, students will be able to explain theprinciples and behavior of basic semi conductor devices.
- Analysebasicnetworksusingnetworktheorems.
- Apply the concepts to realize the circuits. As per the requirement build simple electronic circuits used in various applications.
- Evaluate the critical internal parameters of semi conductor devices for the given standarddevice models. Demonstratetheworkingofanalogganddigitalcircuits asper the specifications.

DSCP-1:ELECTRONICDEVICESANDCIRCUITS(PRACTICALS):4Credits56Hrs.

Course Objectives: The objectives of the Course are to enable the student get the hands-on training on the Working principles of Electronics Instruments and components.

- AnalyseElectroniccircuitsbyapplyingNetworktheorems
- UnderstandtheI-VcharacteristicsofDiode,BJT,andothersemiconductordevices
- Design and construct the biasing, amplifier, resonant circuits and to understand their behaviour.
- SimplifyBooleanExpressionsandconstructthecircuitsto verifythetruthtable.

OpenElectiveCourses(OE)

OE-1:FUNDAMENTALSOFELECTRONICSANDDOMESTICWIRING:
3 Credits 48Hrs.

CourseObjectives: The objectivesoftheCourse areto enable thestudenttounderstand

- Abilitytogaintheknowledgeofbasicelectronicsand electroniccomponents.
- AbilitytoanalysevariouscomponentsbehaviourinACandDCcircuits.
- Abilitytogettheknowledgeofelectricalwiringandsafetyprecautions.
- Providestudentswithlearningexperiencesthatdevelopbroadknowledgeand

understandingofkeyconceptsofelectricalandelectronics.

- Providestudentswithskillsthat enablethemtogetemployment invarious organisations, industries, and turn as entrepreneurs.

OE-2:DOMESTIC EQUIPMENTMAINTENANCE:3Credits48 Hrs.

CourseObjectives: Theobjectivesofthecourseare

- Toenablethestudentstounderstandtheworkingprincipleofdomesticequipments.
- Identifythecommon faultsthatoccurinthedomesticequipment.
- Abletocarryout minorrepairsintheequipments.
- Understandthetechnicalspecificationsoftheequipments.

IISEMESTER

Course objectives: The objectives of the Course are to enable the student to understand Principle of operation active devices like, BJT, FET, Op-Amp, UJT, SCR, etc., understand different applications of op-amp.

- AnalysisofElectroniccircuits.
- Construction,operationandapplicationsoscillators.
- DigitalLogicFamiliesandtheircomparison.
- Understand,analyseandsimplycombinationalandsequentialdigitallogic circuits.
- CourseOutcomesAttheendofthiscourse,studentswillbeabletoexplaintheworking principlesofsemiconductordeviceslikeJFET,MOSFET,UJT,SCR,Diac andTriac.
- Designandbuildthecircuitstounderstand theapplicationsofop-amp.
- Demonstrateandunderstandtheworkingofcombinationalandsequentiallogic circuits.

DSCP-1:ELECTRONICDEVICESANDCIRCUITS(PRACTICALS): 4Credits 56Hrs.

CourseObjectives: TheobjectivesoftheCoursearetoenablethestudentsto have handson trainingandunderstandingofthefollowingI-VcharacteristicsofspecialdeviceslikePrinciple of operation active devices like, BJT, FET, Op-Amp, UTJ, SCR, etc.,

- Understanddifferentapplicationsofop-amp,
- Knowabouttheworking ofsinusoidalandnon-sinusoidaloscillators.
- WorkingofCombinationalandSequentialDigital circuits.
- UnderstandtheconceptandworkingofADCandDAC

OpenElectiveCourses(OE)

OE-3:FUNDAMENTALSOFSEMICONDUCTORDEVICES:3Credits48Hrs.

Course Objectives: The objectives of the Course are to enable the studenttounderstand

- AbilitytogaintheknowledgeofSemiconductorsdevices.
- Abilitytogettheapplicationsofsemiconductordevices.
- Providestudentswithlearningexperiencesthatdevelopbroad knowledgseandunderstandingofsemiconductordevicesand its applications.

CourseObjectives: Theobjectivesofthecourseare

- Toenablethestudentstounderstandtheimportanceofnon-conventionalenergy systems
- Understandthemethodofenergyharvestingusingsolarenergy,wind energy,hydro energy, etc.
- Know the principle of operation of piezoelectric effectandits use in energy harvesting
- Getstheknowledgeonelectromagneticenergyharvestingmethods.

OE-5: PCBDESIGNANDFABRICATION: 3 Credits 48Hrs.

Course Objectives: Uponthe completion ofthis course, students will demonstrate theability to:

- UnderstandbasicsofPCBdesigning.
- Applyadvancetechniques,skillsandmoderntoolsfordesigning and fabrication ofPCBs.
- ApplytheknowledgeandtechniquestofabricateMultilayer,SMTand HDIPCB.
- UnderstandconceptsofPackaging.

III&IVsemester

ProgramName	**BScinElectronics**		Semester	**ThirdSemester**
CourseTitle	**ProgramminginCandDigitalDesignusingVerilog(Practical)**			
CourseCode:	**DSCP.ELE3**		No. of Credits	**2**
FormativeAssessmentMarks	**25**	SummativeAssessmentMarks		**25**
Note:Minimumof5programsto bewrittenandexecutedin eachsection				

ProgramName	**BScinElectronics**	Semester	**FourthSemester**
CourseTitle	**ElectronicCommunication-I(Theory)**		
CourseCode:	**DSC.ELE4**	No.of Credits	**4**
Contacthours	**60 Hours**	Durationof SEA/Exam	**2hours**
FormativeAssessmentMarks	**40**	SummativeAssessmentMarks	**60**

CourseObjectives:

Oncompletionofthecourse,Studentwillbeable:

- Tounderstandthecommunicationsystem,principleandworkingof communicationsystem,meansand medium of communication.
- Tounderstandtheprincipleandworkingofdifferent modulationanddemodulation techniques.
- TounderstandthePrincipleandworkingofAntenna,Waveguides,Transmission lines, and RADAR
- TounderstandthebasicsofSatelliteand OpticalFibercommunication

Courseoutcomes:

- Afterstudyingthiscourse,studentswillbeableto:
- KnowthebasicconceptofAnalogCommunication.
- UnderstandtheprincipleofAnalogCommunication.
- KnowtheVariousmodulationtechniquesinvolvedinradiocommunicationbefore the transmission.
- Knowdifferentdetectionprocessinvolved inreceiver.
- BasicknowledgeaboutSatelliteCommunication,Opticalfibercommunication system and RADAR.

Program Name	**BScinElectronics**	Semester	**FourthSemester**
CourseTitle	**ElectronicCommunication-I(Practical)**		
CourseCode:	**DSCP.ELE4**	No.of Credits	**2**
FormativeAssessment Marks	**25**	SummativeAssessmentMarks	**25**
Note:Minimumof10Experimentsaretobeperformedusinghardwareandsimulation.			

CurriculumContents

Semester-V

ProgramName	**BScinElectronics**	Semester	**FifthSemester**
CourseTitle	**ElectronicCommunication–II**		
CourseCode:	DSC-ELE51	No.ofCredits	**4**
Contact hours	**60 Hours**	DurationofSEA/Exam	**21/2Hours**
FormativeAssessment Marks	**40**	SummativeAssessmentMarks	**60**

CourseObjectives:

Tounderstandthevariousmicrowavedevicesand theirworking
Tounderstandprincipleandworkingofdifferentdigitalmodulationtechniques.
TounderstandtheworkingprinciplesofCellularcommunicationanddifferentwireless communication techniques.

CourseOutcomes:

Know the various microwave devices, their working and applications.
FamiliarwithASK, FSK, PSK, BPSK, QPSK Digital modulation techniques.
Understandthebasicconceptofcellphonehandset, working principle of cellular communication and wireless technologies.

ProgramName	**BScinElectronics**		Semester	**FifthSemester**
CourseTitle	**EmbeddedControllers**			
CourseCode:	**DSC-ELE52**		No.ofCredits	**4**
Contact hours	**60 Hours**		DurationofSEA/Exam	**2½ Hours**
FormativeAssessmentMarks		**40**	SummativeAssessmentMarks	**60**

CourseObjectives:

Toknowtheimportanceofmicrocontrollersandtheirapplications Understand the basics of Embedded Systems concepts.
Acquireknowledgeabout8051andPICMicrocontrollersanditsperipherals.

CourseOutcomes:

Identify and understand function of different blocks of 8051 microcontrollers.
DevelopprogramforI/Oportoperations,Timers,SerialportandInterruptsusingC.
GaintheknowledgetinterfaceKeyboard,DAC,Steppermotor,LED/LCDdisplayetc. Design and develop small scale embedded systems.

VISemester

ProgramName	**BScinElectronics**		Semester	**SixthSemester**
CourseTitle	**SignalsandSystems**			
CourseCode:	DSC-ELE61		No.ofCredits	**4**
Contact hours	**60 Hours**		DurationofSEA/Exam	**2½ Hours**
FormativeAssessmentMarks		**40**	SummativeAssessmentMarks	**60**

CourseObjectives:

GaintheknowledgeonSignalsandSystems Understand the operations on Signals
KnowtheZ-Transformanditsproperties
KnowtheFourierseriesrepresentationofsignals

CourseOutcomes:

Distinguish between continuous-timeanddiscrete-timesignalsandsystems. Do basic operations on signals.
ApplyZ–transformtechniquetosignals.
AnalyzethefrequencycharacterizesofsignalsbyapplyingFouriertools.

ProgramName	**BScin Electronics**		Semester	**SixthSemester**
CourseTitle	**SignalsandSystemsPracticals**			
CourseCode	DSC-ELE61P		No.ofCredits	**2**
FormativeAssessmentMarks		**25**	SummativeAssessmentMarks	**25**
Note:Minimumof10Programmeshavetobewrittenandexecuted.				

CourseObjectives:

To introduce the sensors use in the industries and study their characteristics To analyze different sensor circuits

To introduce the evolution of IoT.

To understand the concepts of IoT Architecture

To comprehend the essentials of IoT andits applications.

CourseOutcomes:

Apply concepts of measurements and instrumentation of sensors Explain the application, challenges and architecture of IoT.

Use sensors and actuators with Controllers.

Investigate various protocols and wireless technologies.

BachelorofScience(Basic/Hons.)DegreeinEnvironmentalScience
ChoiceBasedCreditSystem(CBCS)With MultipleEntries And Exit Options under New Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Divisions ofEnvironment (4+0+0)	4	4	40	60
	DSCP-1: Waterquality analysis(0+0+2)	4	2	25	25
	OE-1:Environmental Conservation Movements (3+0+0)	3	3	40	60
	OE-2:Environment and Sustainable Agriculture(3+0+0)	3	3	40	60
	OE-3:Environmental Pollution(3+0+0)	3	3	40	60
II	DSC-2: Ecology– TheoryandPractice (4+0+0)	4	4	40	60
	DSCP-2:Ecological analysis(0+0+2)	4	2	25	25
	OE-4:ClimateChange and ItsImplications (3+0+0)	3	3	40	60
	OE-5:Environmentand PublicHealthin Contemporary Society (3+0+0)	3	3	40	60
	OE-6:Wildlife and Conservation (3+0+0)	3	3	40	60

Programme outcome: Bythe end of the Programme the students willbe able to develop:

- DisciplinaryknowledgeinfieldsrelatedtoEnvironmentalScience
- Systemicandcriticalthinkingwithreferenceto environment- people-economic-development attributes
- Problemidentificationskillsandsustainablesolutionprovisioning
- Analyticalreasoningandappropriateinterpretationskills
- Self-directedlearningefficiencies leadingtoaproductivelifelonglearningprocess
- Research-related skills such as review of literature, design of experiments,statisticalcompetence,report writingandprepare target specific communicationpackages
- Cooperation/Teamwork
- Reflectivethinking
- Multidisciplinarycompetencecateringtoenvironmentalsustainability

ISEMESTER

ProgrammeSpecificObjectives:

- To develop competency inunderstandingthe interrelatedness of the divisions of the Environment.
- To instill an introductory knowledge of the divisions of Environment and develop necessary analytical skills to characterise the irvariations.
- Tomotivateand inspireto acquirecontemporaryunderstandingandskillsleadingto issue identification.
- To inculcate creativity and innovative spirit in the domain ofhuman-environment interface leading to vocation/entrepreneurialopportunities.

Programmeoutcomes:

- Demonstrateanentrylevelcompetence inunderstandingtheenvironmentaldivisions and associated processes.
- Demonstrate the ability tocarryoutwater quality analys is in the laboratory andinterpret the results.
- Abilitytounderstandandappreciatetheroleofenvironmental parametersin specific day-to-day activities.
- Beableto understand thedemandsand function inworkenvironment dealing with environmental systems.

IISEMESTER

ProgrammeSpecificObjectives:

- To develop competency inunderstandingthe ecological principles governingthe biosphere.

- Toinstillaknowledgeof theEcologyanddevelopnecessaryanalyticalskillsto understand the ecological systems.
- Tomotivateand inspiretoacquirecontemporaryunderstandingandskills leadingto issue identification.
- To inculcate creativityand innovative spirit in the domain ofhuman-environment interface leading to vocation/entre preneurial opportunities.

Programmeoutcomes:

- Demonstrate an entry level competence in understanding the ecological dynamics and their influence on humans and anthropogenic end eavours.
- Demonstrate the ability to carryout ecological analysis in fieldconditions/laboratories and make appropriate judgements.
- Abilityto understand and appreciate therole ofecologyand systemdynamics inspecific habitats/agroeco systems.
- Beabletounderstandthedemandsandfunctioninworkenvironment dealingwith environmental systems.

B.Sc.(Basic/Hons.)Semester3

TitleoftheCourse:**ES3T1–NATURALRESOURCESANDMANAGEMENT**

Number of TheoryCredits	Numberoflecture hours/semester	Number of practicalCredits	Numberofpractical hours/semester
4	**52**	**2**	**52**
ProgrammeSpecificObjectives			
PSO1	Todeveloptheunderstandingofroleofnaturalresourcesineconomicand ecological development.		
PSO2	Toinstillaknowledgeofquantifyingandevaluatingcontributionofnatural resources management in human development.		
PSO3	Tomotivateandinspiretoacquirecontemporaryunderstandingandskillsleadingto issue identification and management of natural resources.		
PSO4	Toinculcatecreativityandinnovativespiritinthedomainofhuman-development and natural resource utilisation efficiency.		
ProgrammeOutcomes			
PO1	Demonstratecompetenceinunderstandingthesignificanceofnaturalresourcesin economic/ecological development.		
PO2	Demonstratetheabilitytocarryouttheprocessofidentificationof,data procurement and interpretation with reference to natural resources.		

PO3	Ability to understand and appreciate the role of quantification ofresource use pattern in contemporary/sustainable developmentparadigms.
PO4	Beabletounderstandthedemandsofdataanalysisandreportinginnaturalresource management domain.

ES3P1–MINERALOGY,PETROLOGY,ENERGYRESOURCESAND MEDICINALPLANTS

(TotalTeachingHours=52;TotalCredits=2)

ES3OE3:WOMENANDENVIRONMENT

NumberofTheoryCredits	Numberoflecturehours/semester
3	**42**

ES3OE3:ENVIRONMENTALDISASTERSANDMANAGEMENT

NumberofTheoryCredits	Numberoflecturehours/semester
3	**42**

B.Sc.(Basic/Hons.)Semester4

TitleoftheCourse:**ES4T1–BIODIVERSITY,WILDLIFEANDCONSERVATION**

Number of TheoryCredits	Numberoflecture hours/semester	Number of practicalCredits	Numberofpractical hours/ semester
4	**52**	**2**	**52**
ProgrammeSpecificObjectives			
PSO1	Todevelopcompetencyinunderstandingbiodiversityandwildlife.		
PSO2	Toinstillaknowledgeabout humaninteractionswithuncultivated varietiesand develop necessary analytical skills to appreciate theseinteractions.		
PSO3	Tomotivateandinspiretoacquirecontemporaryunderstandingandskillsleadingto issue identification and conservation.		
PSO4	Toinculcatecreativityandinnovativespiritinidentifyingappropriateconservation tools and their timely implementation.		
ProgrammeOutcomes			

PO1	Demonstratecompetenceinunderstandingtheecological,socialandlegal dimensions of biodiversity and wildlife.
PO2	Demonstratetheabilitytocarryoutdatacollectionproceduresandanalysisinfield conditions/laboratories and make appropriate Interpretations.
PO3	Abilitytounderstandandappreciatetheroleofbiodiversityinspecificnatural habitats and agroecosystems.
PO4	Beabletodevelopcompetenceandacademicskillsincontributingtowards biodiversity and wildlife conservation.

ES4P1–BIODIVERSITYASSESSMENTANDECOSYSTEM SERVICES

(TotalTeachingHours=52;TotalCredits= 2)

ES4OE4:ENVIRONMENTANDSUSTAINABLEAGRICULTURE

NumberofTheoryCredits	Numberoflecturehours/semester
3	**42**

ES4OE4:INITIATIVESFORENVIRONMEN TAL MANAGEMENT

NumberofTheoryCredits	Numberoflecturehours/semester
3	**42**

B.Sc.Semester:5
Titleofthecourse:ENDSC503-T-ENVIRONMENTAL CHEMISTRYAND

INSTRUMENTATION

Numberoftheorycredits	Numberoflecturehours/semester
4	**60**

ProgrammeSpecific Objectives	
PSO1	Todevelopcompetencyinunderstandingthechemistryandtheprocessesin environment.
PSO2	To instill knowledgeaboutthechemistryofsoilandwater.
PSO3	Todevelopcompetencyinunderstandingtheinstrumentsusedforanalysisand the principles for developing the instruments.
PSO4	Tobeable to employ thedevelopedskillsinreal-timesituations.

ProgrammeOutcomes	
PO1	Demonstrate competence inunderstandingtheconceptsandchemistryof elements interacting in the environment.
PO2	Demonstratetheabilitytocarryoutdatacollectionproceduresandanalysisin field conditions/laboratories and make appropriate interpretations.
PO3	Beabletodevelopcompetenceandacademicskillsinhandlingadvance instruments.
PO4	Tobeabletoapplyskillsinaccordancewithguidelines/standardsprescribedby statutory authorities.

B.Sc.Semester:5

ENSEC 501: **Environmental Employability Course** 2+1=3Credits

Subject: Integrated Solid Waste Management CREDITS – 03

Course objectives:

Thiscoursewillenablestudents to

- Gaininsightinto the collection, transfer, and transport of municipal solid waste.
- Understandthedesignandoperationofamunicipalsolidwaste landfill.
- Understandthedesignandoperationofa resourcerecoveryfacility.
- Understandthedesignandoperationofawaste-to-energyfacility.

Courseoutcomes: During thiscourse, students will betrained:

- Applythebasicscientificandsustainabilityprinciplesbehindwastemanagement,for solving practical waste management challenges.
- Adopttheroleonpolicydriver'splayinstakeholders'responsetothewasteand resource management challenge within a circular economy.
- Knowtheprinciplesofexistingandemergingtechnologiesforthetreatmentofwaste and recovery of value from wastes.

B.Sc.Semester6

TitleoftheCourse: **ENDSC601-T-ENVIRONMENTAL MICROBIOLOGY and BIOTECHNOLOGY**

Numberof Theory Credits	Numberoflecture hours/semester	Numberofpractical Credits	Numberofpracticalhours/ semester
4	**60**	**2**	**60**

ProgrammeSpecific Objectives	
PSO1	Todevelopcompetencyinunderstandingthemicrobesof Environment.
PSO2	Toinstilaknowledgeaboutrolesofmicrobesintheenvironment.
PSO3	Tomotivateandinspiretoacquirecontemporaryunderstandingandusing the knowledge for remediation.
PSO4	Toinculcatecreativityandinnovativespiritinidentifyingappropriate measures for recycling and conservation.

Programme Outcomes	
PO1	Demonstratecompetenceinunderstandingthemicrobesof Environment.
PO2	Demonstratecompetence in understandingthemicrobes in waterandtheir impact on human health.
PO3	Ability to understandand appreciate the role ofmicrobes in enhancingthequality of life of human.
PO4	Demonstratetheabilitytocarryoutdatacollectionproceduresandanalysisin field conditions/laboratories and make appropriate Interpretationsusingthemicrobes.

B.Sc.Semester6

TitleoftheCourse: **ENDSC603–T–ENVIRONMENTALIMPACTASSESSMENT AND ENVIRONMENTAL RISK ASSESSMENT**

Number of TheoryCredits	Numberoflecture hours/semester	Number of practicalCredits	Numberofpractical hours/ semester
4	**60**	**2**	**60**

ProgrammeSpecific Objectives	
PSO1	TodevelopcompetencyinunderstandingtheprocessofassessingtheEnvironmentalImpact.
PSO2	ToinstillaknowledgeonmethodologiesusedforassessingEnvironmentalImpact.
PSO3	Tomotivateandinspiretoacquirecontemporaryunderstandingandskillsleadingtoissue identification and conservation.
PSO4	Toinculcatecreativityandinnovativespiritinidentifyingappropriateassessmenttools.

ProgrammeOutcomes	
PO1	DemonstratecompetenceinunderstandingthereportsofEnvironmentalImpact assessment of a project.
PO2	Demonstratetheabilitytocarryoutdatacollectionproceduresandanalysisinfield conditions/laboratories and make appropriate interpretations required for EIA.
PO3	Abilitytounderstandtheproceduretoconductanaudit.
PO4	Demonstratetheabilitytocarryoutriskanalysisadhering otherlaws.

B.Sc.6thSemester:

ENSEC601: **Environmental Employability** 02+01=03 Credits

Subject: Internship Course

objectives:

Thiscoursewillenablestudents to

- Gaininsightintothecollection,transfer,andtransportofmunicipalsolid waste.
- Understandthedesignandoperationofamunicipalsolidwaste landfill.
- Understandthedesignandoperationofa resourcerecoveryfacility.
- Understandthedesignandoperationofawaste-to-energyfacility.

Courseoutcomes:Duringthiscourse,studentswillbetrained:

- Applythebasicscientificandsustainabilityprinciplesbehindwastemanagement,for solving practical waste management challenges.
- Adoptttheroleonpolicydriver’splayinstakeholders'responsetothewasteand resource management challenge within a circular economy.
- Knowtheprinciplesofexistingandemergingtechnologiesforthetreatmentofwaste and recovery of value from wastes.

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VISEMESTERPRACTICALS
Paper -2

Year	**2021-22**	**CourseCode:ESDSC 604** **CourseTitle:EngineeringgeologyandGeochemistry**	**Credits**	**02**
Sem	**V**		**Hours**	**56**
Formative Assessment Marks: 25		SummativeAssessmentMarks:25	DurationofESA:3 hrs.	
CourseOutcomes		Attheendofthecoursethestudentshouldbeableto:Createengineeringgeologicaland water quality spatial maps		
		EngineeringGeologyMaps PollutionMaps		
		PARTB:Fieldvisittoquarry,activeminingareas,geosites.Teachingmapping Techniqueusingcompass,BruntonandGPS		

V/VI SEMESTER Paper
EMPLOYIBILITYSKILLPAPER

Year	**2023-24**	**CourseCode:ESDSE501/601** **Course Title: Groundwater Exploration**	**Credits**	**3**
Sem.	**V**		**Hours**	**32**
Course Pre-requisites,				
Formative Assessment Marks: 40		SummativeAssessmentMarks:60		Duration of ESA: 2 hrs.
Course Outcomes		Candidate after successful completion of the course will become an expert in the search groundwater potential zones and can become self-entrepreneur.		

Bachelorof Science(Basic/Hons.)Degreein Food Science&Nutrition
ChoiceBasedCreditSystem(CBCS)With MultipleEntries
AndExitOptionsunderNewEducation Policy(NEP)–
2020
(2021-22BatchOnwards)
DetailsofCourseofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Human Physiology(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1:Human Physiology(0+0+2)	**4**	**2**	**25**	**25**
	OE-1:BasicsofFood Science(3+0+0)	**3**	**3**	**40**	**60**
	OE-2:Basicsof Nutrition(3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2:Fundamentals of Human Nutrition (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2: Fundamentalsof HumanNutrition (0+0+2)	**4**	**2**	**25**	**25**
	OE-3: Healthy Lifestyle(3+0+0)	**3**	**3**	**40**	**60**
	OE-4: Culinary Science(3+0+0)	**3**	**3**	**40**	**60**

ISEMESTER

CourseOutcomes: Attheendofthecoursethestudentshouldbeableto:

- Gainthebasicknowledgeofhumananatomyandphysiology.
- Definethemainstructurescomposinghumanbody.
- Explains structure and functions ofcells, tissuesand organs, systems of the humanbody
- Relatesstructureandfunctionsoftissue.
- Providesexcellentpreparationforcareersinthehealthprofessions

and/orbiomedicalresearch.

OpenElectiveCourse (OE):

OE-1:BASICSOFFOODSCIENCE (THEORY):3Credits 42Hrs.

Objectives:

- Itsscopeistohelpand gainknowledgeon Foodgroupsand foodcommodities,
- ToUnderstandthenutritionalcompositionoffoods

LearningOutcomes:

- Ithelpstoknowdifferenttypesoffoodcommoditiesandtheirimportance.
- Tolearnthemacroandmicronutrientscontentoffoodcommodities.

OE-2:BASICSOFNUTRITION (THEORY):3Credits42Hrs.

Objectives:

- Itsscopeistohelpand gainknowledgeofNutrients.

LearningOutcomes:

- Ithelpstoknowabouttheuseofdifferentnutrientsandtheirfunctions.

DSC-2:FUNDAMENTALS OFHUMANNUTRITION(THEORY):4Credits;56Hrs.

CourseOutcome:

- Gainknowledge inbasicterminology,aspectsofnutrition&functionsoffood inhealthy life sustenance
- Understandfunctionofnutrients,dietarysources,consequencesofdeficiency and excess
- Understandthefoodcompositionandconcept ofenergybalance
- Equipwithknowledgeandunderstandingonimportanceofwater
- Understandthenutritionalmanagementofdeficiencydisorders.

OpenElectiveCourse(OE):

OE-3:HEALTHYLIFESTYLE(THEORY): 3 Credit; 42Hrs.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- Gainknowledgeonhealthylifestyles.
- Understandtherelationshipbetweendifferentnutrientsandtheir importance.
- Understandthepersonalhygiene;environmentalHygiene.

OE-4:CULINARYSCIENCE(THEORY): 3 Credit; 42Hrs.

Course Outcome:

Oncompletionofthiscourse,thestudentswillbeableto;

- Gainknowledgeonaimsandobjectivesofcooking.
- UnderstandtheConservationofnutrientsandtheirimportancetolife.
- Understandthepersonalhygiene;environmentalHygiene;foodstorageand causesof contamination.

3rd and 4th Semester

ContentsofCoursesforB.Sc.(Hons.)inFoodScienceand NutritionasMajorSubject

ModelII A

*InlieuoftheresearchProject,twoadditionalelectivepapers/Internshipmaybe offered

AbbreviationforFSNDSCT1.1/FSNDSCP1.1

FSN–FoodScienceandNutrition;DSC –DisciplineCore;T –Theory/P–Practical;1 – First Semester; .1 – Course 1

Syllabusfor3rd and4thSemester B Sc

Food Science & Nutrition

SemesterIII

CourseTitle: **FOODSCIENCEANDNUTRITION/PrinciplesofFoodScience**	
TotalContactHours:56+56	CourseCredits:4+2
Formative AssessmentMarks:40	Test1+Test2=2Hrs
SummativeAssessmentMarks:60	DurationofESA/Exam: 03Hrs

Course Pre-requisite(s): Students who have passed Pre-UniversityBoardofExaminationor Equivalent boardwithsciencesubjectsareeligible fortheundergraduatedegreeB.Sc inFood Science and Nutrition.

Objectives:

- Toobtainknowledgeondifferentfoodgroupsandtheir contributionto nutrition.
- To provide understanding aboutcomposition andnutritive value of food and knowledgerelevant to processing, shelf life extension and reduction of toxins.
- Togainknowledgeonfoodsafety,hazardsanddesigningofnewfood products

CourseOutcomes(COs):

Attheendofthecoursethestudentgainstheknowledgeon:

- BasicconceptsofFood Science
- Foodgroups,foodcommoditiesandtheirstructure

B.ScSemester3

Title of the Course: Food Science & Nutrition

Course:DSC3.1PrinciplesofFoodScience		**Course2 OE:A)FoodAdulteration B)CommonNutritionalProblems**	
Numberof TheoryCredits	Numberof lecture hours/semester	Numberof TheoryCredits	Numberof lecture hours/semester
04	**56**	**03**	**42**

Course 3.2OEA)FoodAdulteration

FoodAdulteration

Objectives

- Itsscopeistohelp and gainknowledge on foodadulterantsin foodcommodities
- Tounderstandcertainskills ofdetectingadulterationofcommonfoods

Learning Outcomes

- Ithelpstoextend theknowledgetoother kindsofadulteration,detectionand remedies
- Tolearnbasiclawsandproceduresregardingfoodadulterationandconsumer protection

Course3.2 OEB)Common NutritionalProblems

Objectives

- Itsscopeisto help and gainknowledgeofNutrients

Learning Outcomes

- Ithelpstoknowabouttheuseofdifferentnutrientsandtheir deficiencies.
- Ithelpstostudyabout theNutritionalPrograms

urseTitle:**FOODSCIENCEANDNUTRITION-Course2.OE-A)FoodAdulterationandB) Common Nutritional Problems**	
TotalContactHours:42	CourseCredits:3
Formative AssessmentMarks:40	Test1+Test2=2Hrs
SummativeAssessmentMarks:60	DurationofESA/Exam: 03Hrs

Semester4

Course4.1:DSC-LifeCycleNutrition(Credits4+2) Course

Outcomes (Cos):

1. Gainknowledge inbasicterminology,aspectsofnutrition&functionsoffoodthroughout the life cycle
2. Understand methodsofassessingnutrition status

TitleoftheCourse:FoodScience&Nutrition

Course4.1:DSC-LifeCycle Nutrition		**Course4.2 OEA)Food Safety andHygiene B)IndianTraditionalfoods**	
Number of TheoryCredits	Numberoflecture hours/semester	Numberof Theory Credits	Numberoflecture hours/semester
04	**56**	**03**	**42**

Course4.1:**FOODSCIENCEANDNUTRITION/LifeCycleNutrition**	
TotalContactHours:56+56	CourseCredits:4+2
Formative AssessmentMarks:40	Test1+Test2=2Hrs
SummativeAssessmentMarks:60	DurationofESA/Exam: 03Hrs

Course4.2.OpenElective–A)FoodSafety&Hygiene Course

Outcomes (COs):

1. Tostudythe typesofhazardsassociated withfood
2. Togainknowledgeonfoodregulations(nationalaswellasinternational)
3. To understand the designand implementationoffood safetymanagement systems suchas ISO series, HACCP and its prerequisites such as GMP, GHP etc.

Course4.2.OE-B)Indiantraditionalfoods(credits3/42hrs) Course

Outcomes (COs):

1. Gainknowledge ondiversitiesoffoodsandfoodhabitsofIndia
2. UnderstandthepatternsinIndiawith focusontraditionalfoods.

CourseTitle:**FOODSCIENCEANDNUTRITION-Course4.2OE-A)FoodSafety& Hygieneand B) Indian Traditional Foods**	
TotalContactHours:42	CourseCredits:3
FormativeAssessmentMarks:40	Test1+Test2=2Hrs
SummativeAssessmentMarks:60	DurationofESA/Exam: 03Hrs

5th Semester

ProgramName	**BScinFoodScienceandNutrition**		Semester	**Fifth Semester**
Course Title	**FoodPreservation(Theory)**			
Course Code:	**FSNT5.1**		No.ofCredits	**4**
Contact hours	**60 Hours**		DurationofSEA/Exam	**2 hours**
FormativeAssessment Marks	**40**		SummativeAssessmentMarks	**60**

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudent will be able to:
CO1.Students will be able to apply a variety of food preservation techniques.
CO2.understandthefactorsinfluencingfood spoilage and deterioration.
CO3.Studentswillhaveacomprehensiveunderstandingoffoodsafetyandqualitycontrol. CO4.Students will be knowledgeable about emerging trends and technologies in food preservation.

ProgramName	**B.Sc.in FoodScience and Nutrition**	Semester	**Fifth Semester**
Course Title	**Principles of Diet Therapy(Theory)**		
Course Code:	**FSNT5.2**	No.of Credits	**4**
Contact hours	**60 Hours**	Duration of SEA/Exam	**2 hours**
Formative Assessment Marks	**40**	Summative Assessment Marks	**60**

Course Outcomes(COs):After the successful completion of the course,the student will be able to:
CO1.Summarize and critically discuss /understand both fundamental and applied aspects of diet therapy.
CO2.planning and preparation of therapeutic diets.

ProgramName	**B.Sc.inFood Science andNutrition**	**Semester**	**FifthSemester**
Course Title	**DietCounseling(SEC)(Theory)**		
Course Code:	**FSNT5.3a**	No.ofCredits	**3**
Contact hours	**45Hours**	Durationo f SEA/Exa m	**2 hours**
FormativeAssessment Marks	**40**	Summative AssessmentMarks	**60**

Course Outcomes (COs): After the successful completion of the course, the student will be ableto:
CO1.Use various types and techniques of counseling to motivate patients to achieve well being.
CO2.To understand the principles and procedures of communication skills and role of counselor

ProgramName	**B.Sc.inFoodScienceandNutrition**	**Semester**	**FifthSemester**
Course Title	**BakingandConfectionarySkills(Theory)(SEC)**		
CourseCode:	**FSNT5.3b**	No.ofCredits	**3**
Contact hours	**45 Hours**	DurationofSEA/Exam	**2 hours**
FormativeAssessment Marks	**40**	SummativeAssessment Marks	**60**

CoursePre-requisite(s):Diplomawithminimum45%

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwill be able to:
CO1.Demonstratedproficiencyinbakingandconfectionarytechniques.
CO2.Showcaseexpertiseiningredientsandutilizingpropertechniques andachievingdesired outcomes.
CO3.Showcasetheabilitytodeveloporiginalrecipesoradaptexistingonestocreateuniqueandinnovativecreations.
CO4.Practicalknowledgeofindustrystandardsandpracticesinbakingandconfectionary

6thSemester

ProgramName	**B.Sc.inFoodScience and Nutrition**	**Semester**	**SixthSemester**
Course Title	**FoodMicrobiology(Theory)**		
Course Code:	**FSNT6.1**	No.ofCredits(Theory+ Practical)	**4**
Contact hours	**60 Hours**	DurationofSEA/Exam	**2 hours**
Formative AssessmentMarks	**40**	SummativeAssessment Marks	**60**

CoursePre-requisite(s):
CourseOutcomes (COs): After the successful completion of th ecourse,the student will be able to: CO1. Develop a comprehensive understanding o food microbiology: CO2.Identifyandmanagefoodbornepathogens: CO3.Evaluatefoodpreservationandprocessing techniques: CO4.Ensurefoodsafetyandqualityassurance: Ensurefoodsafetyandqualityassurance: CO5. Apply critical thinking and problem-solving skills in food microbiology:

Program Name	**BScinFoodScienceandNutrition**		Semester	**Sixth Semester**
Course Title	**TherapeuticNutrition(Theory)**			
Course Code:	**FSNT6.2**		No.ofCredits	**4**
Contact hours	**60Hours**		DurationofSEA/Exam	**2hours**
FormativeAssessment Marks		**40**	SummativeAssessment Marks	**60**

Course Pre-requisite(s):
Course Outcomes (COs): After the successful completion of the course, the student will be able to: CO1. Describe the methods used to adapt a normal diet to treat a specific clinical nutritional disorder. CO2.Apply recent methods and techniques in the field of the rapeuticnutrition. CO3. Lists methods for preparation of normal food to adjust various pathological conditions. CO4.Recommenddietary adjustments leading to better healthout comes and improved quality of life.

BachelorofScience(Basic/Hons.)DegreeinEarthScience (Geology) ChoiceBasedCreditSystem (CBCS) WithMultipleEntriesAnd Exit Options under New Education Policy (NEP) – 2020(2021-22 Batch Onwards)

Program Outcomes: Discipline knowledge: After the completion of the BSc Course (Degree/Honors),thestudentswillbelearningthebasicsand importantaspectsofallbranchesof Earth Sciences mentioned in the preamble; which will enable them to apply their acquired knowledge.

1. ProblemSolving:Aftergoingthrough6or8semesterscurriculathestudents willbeableto understand and decipher majority of the geological processes and their effects.
2. Ethics onProfession,EnvironmentandSociety:AsthesubjectGeologyis related to Earthitsresourcesandprocessesthestudentswillbetaughttoacquireethicstomaintainthe integrity while dealing with data collection, compilation, and interpretation and finding solutions.
3. LifelongLearningandEntrepreneurship:Geologyisregardedasatechnicalsubjectonecan start their own consultancy so, they will become an independent entrepreneur and hence learning will be lifelong.
4. Motivation to take up Higher Studies: Inspiration to continue towards advanced studies in Geology and Research.

OpenElective(OE)Courses:OEcoursesareofferedtothecandidatesofeitherthesameprogram or other undergraduate programs as decided by the competent authority of the University of Mysore and the candidate who opts for OE inEarth Science has to chooseone OE fromthe pool ineachsemester.TheOEcourses,inadditiontoenhancingtheknowledgeontheEarth'sprocesses and helps to acquire skills for entrepreneurship.

Conceptnote,abbreviationexplanation,coding,eligibilityforadmissiontothecourse,durationof the course, course pattern, medium of instruction, attendance, internal assessment, mode of examination, duration of examination, results of the candidates and carry over are as per the provision made in the NEP regulations of University of Mysore and Yuvaraja's College (autonomous).

DetailsofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:EarthSystem	**4**	**4**	**40**	**60**

	Science-Fundamentals(4+0+0)				
	DSCP-1:Maps,Sediment Soil, FieldVisit (0+0+2)	**4**	**2**	**25**	**25**
	OE-1: Crystallography, Mineralogyand Economic Mineral(3+0+0)	**3**	**3**	**40**	**60**
	OE-2:Pedology(3+0+0)	**3**	**3**	**40**	**60**
	OE-3: BasicsofEarth System Science(3+0+0)	**3**	**3**	**40**	**60**
	OE-4: Geohazards and MitigationStrategies (3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2: Basics of Crystallography, Minerology andPetrology(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2: Crystallography, Minerology and Petrology (0+0+2)	**4**	**2**	**25**	**25**
	OE-5:MedicalGeology (3+0+0)	**3**	**3**	**40**	**60**
	OE-6: Industrial Minerals(3+0+0)	**3**	**3**	**40**	**60**
	OE-7:Paleobiology(3+0+0)	**3**	**3**	**40**	**60**
	OE-8:Gemsand OrnamentalStones(3+0+0)	**3**	**3**	**40**	**60**

ISEMESTER

DSC-1:EARTHSYSTEMSCIENCE–FUNDAMENTALS (THEORY)

4 Credit; 56Hrs.

CourseOutcomes: Attheendofthecoursethestudentshouldbeableto:

1. Explaintheoriginandinternalstructureofthe Earth.
2. Explaintheconceptualanddynamic aspectsoflandformdevelopment.
3. LearntherelevanceofappliedaspectsofGeomorphologyinvarious fields.

4. Formulateconceptualandanalyticaldescriptionsofgeodynamicprocessessuchas

volcanism,earthquakeandformationofocean.

DSCP-1:MAPS,SOIL&FIELDVISIT(PRACTICAL)

2 Credits 56 Hrs.

Course Outcome:

- Studentslearnthepreparationofvariouskindsofmaps.
- Students learn the skill of detecting the changes in the land use/land cover of aregion and study its impacts, suggest remedial measures.
- Students get acquainted with the soil properties, types, characteristics andremediation of soil.

OpenElectiveCourse(OE)

OE-1:CRYSTALLOGRAPHY,MINERALOGYANDECONOMICMINERAL (THEORY)

Credits:2 42Hrs.

CourseOutcome:

- Studyingthebasicsofmineralogyandcrystallographyhelps inunderstandingand building the overall knowledge in Geology.
- The students willbeable toidentifycommon rock-formingmineralsandhand specimens as well as in thin sections.
- Thestudentsgetfamiliarizedwiththeinstrumentsusedtoanalyse inorganic compounds.

OE-2:PEDOLOGY (THEORY): 3Credits 42Hrs.

Course Outcome: The students will be able to learn the processes of formation of soil, its classification, texture and structure, soil characteristics of each textural and structural class.

OE-3:BASICSOFEARTH SYSTEMSCIENCE(THEORY):3Credits 42Hrs.

CourseOutcome: Attheendofthecoursethestudentshouldbeable to:

- Explaintheoriginandinternalstructureoftheearth.
- Explaintheconceptualanddynamicaspectsoflandformdevelopment.
- Learntherelevanceofappliedaspectsofgeomorphologyin variousfields.

OE-4:GEOHAZARDSANDMITIGATIONSTRATEGIES(THEORY):

3 Credits 42Hrs.

CourseOutcome: Aftercompletingthecourse,student

- Canunderstand thegeologybehindnaturaldisasters.
- Willunderstandtheoriginandoccurrence ofgeohazards andevaluatetheprediction

andmitigations.

- Canunderstandthecauses,threats,impact,magnitudeandintensityofthenaturalhazards.
- Will be able toqualitatively estimate risk, and envisagerisk-appropriatemitigation strategies.

IISEMESTER

DSC-2:BASICSOFCRYSTALLOGRAPHY,MINERALOGYAND PETROLOGY(THEORY): 3Credits 56Hrs.

CourseOutcome: Attheend ofthecoursethestudentshouldbeable to:

- Tounderstand the statesof matter, atomic arrangement incrystals, andclassificationof crystals based on crystal symmetry.
- Tounderstandthecharacteristicsofcommonrock-formingminerals.
- To acquireknowledgeondifferent typesofrocks,their distinction fromeachotherand the rock cycle.
- Tounderstandtheoccurrenceand distributionofrocksinIndia.

DSCP-2:CRYSTALLOGRAPHY,MINERALOGYAND PETROLOGY (PRACTICAL)

2Credits 56Hrs.

CourseOutcome:Attheend ofthecoursethestudentshouldbeable to:

- To understand the states of matter, atomic arrangement in crystals, andclassificationof crystals based on crystal symmetry
- Tounderstandthecharacteristicsofcommonrock-formingminerals
- To acquire knowledge ondifferent typesofrocks,their distinction from eachotherand the rock cycle.
- Tounderstandtheoccurrenceand distributionofrocksin India.

OpenElectiveCourse(OE):

OE-5:MEDICALGEOLOGY (THEORY):3 Credits 42Hrs.

Course Outcome: The course provides a basic understanding of geogenic and anthropogenic distribution of trace elements, its cyclic movement through the abiotic- biotic environment and their toxic effectsonhuman health and that of flora and fauna.

OE-6:INDUSTRIALMINERALS (THEORY): 3Credits42Hrs.

CourseOutcome: Thiscourseisagoodopportunityformostofscienceandsocialsciencestudents not only to know about the mineral resources of India starting the principles of rock formation including minerals genesis during the rock formation and after their formation.

- Students exit with a certificate course will have skills to work in quarrying, mining, rock polishing, cement, silica/glass, sand mining, brick, ceramic, pottery and refractory industries.
- They will be exposed to start their own entrepreneurship. Similarly, students exit with a diploma, to Honors degree will be benefited work/carryout research in the interdisciplinary science to get original ideas and look for new reserves.

OE-7:PALEOBIOLOGY (THEORY): 3 Credits 42Hrs.

CourseOutcome: Attheendofthecourse,studentsunderstandthetypesofinvertebratefossils, their modeofpreservation, examinationofthe fossils, methodologiesforthereconstruction of the past through evolutionary studies.

OE-8:GEMSANDORNAMENTALSTONES (THEORY): 3 Credits 42Hrs.

CourseOutcome: Attheend ofthecoursethestudentshouldbeable to:

- Tounderstandmineralogyand genesisofgemstones.
- Toidentifymainphysicalandopticaltechniquesusedinthegemscharacterisation.

NEP–2020For<u>IIIandIVsemesters</u> Bachelor of Science (Basic/Honors)
DegreewithEarthScienceasMajor/Minorhaving Practicals
<u>PROGRAMME STRUCTURE</u>
Earth ScienceasCoresubject:IIIand IVsemesters

Semester	DisciplineCore(DSC) (Credits) (L+T+P)	Credits	DisciplineSpecificElective(DSE)/ Open Elective (OE) (Credits)(L+T+P)
III	**A3Theory(4credits)** (4+0+0) PrinciplesofStratigraphy&Palaeontology **P3Practicals(2credits)** (0+0+2) Stratigraphy&Palaeontology	**4+2**	**OE-3(3credits)**(3+0+0) i) DimensionalStone Technology ii) MarineGeology iii) Climatology iv) WatershedManagement
IV	**A4Theory(4credits)** (4+0+0) StructuralGeologyand Hydrogeology **P4Practicals(2credits)** (0+0+2) HydrogeologyandStructural Geology	**4+2**	**OE-4(3credits)**(3+0+0) i) GeologyandSociety ii) GeophysicalExploration iii) Geostatistics iv) Geotourism
Exitoptionwith Certificate			

COURSE-WISESYLLABUS

IIISemesterTheory

Year	2021-22	**CourseCode:ES301** **CourseTitle:PRINCIPLESOFSTRATIGRAPHY ANDPALAEONTOLOGY**	**Credits**	**4**
Sem	III		Hours	56
Course Pre-requisites,ifany		NA		
Formative Assessment Marks: 40		SummativeAssessment Marks: 60	Durationof ESA: 2hrs.	
Course Outcomes		Attheendofthecoursethestudentshouldbeableto: • Understand fossils, types, fossilization process and modes of preservation, economically important fossils, geotourismrelated fossils. • Understanding the origin and evolution of lifeon the Earth. • Learnrichmineraldepositslike petroleum,coal,and othermineralsassociatedwithfossils.Understanding the paleoclimate and Paleo environment.		

Year	**2021-22**	**CourseCode:ES302** **CourseTitle:Stratigraphy&Palaeontology**	**Credits**	**02**
Sem	**III**		**Hours**	**48**
CoursePre-requisites,if any		**NA**		
Formative Assessment Marks: 25		SummativeAssessment Marks: 25	DurationofESA: 3 hrs.	
CourseOutcome		Studentslearnthepreparationofvariouskindsofstratigraphic maps.Students learn the skill of identifying various fossils, deduce Palaeo environmental condition.		

IIISEMESTERPRACTICAL III

Semester, OPEN-ELECTIVE SYLLABUS (OE-9)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**III**	**CourseTitle:Dimention StoneTechnology**	**Hours**	**42**
Course Pre-requisites, if any		NA		

Formative Assessment Marks: 40	SummativeAssessmentMarks:60	DurationofESA:3 hrs.
Course Outcomes	**Courseoutcomes:** Aftercompletingthecourse,thestudentwillbeabletounderstandthe importance of Ornamental rocks and their reserves. BasicsofQuarryingtechniques,commercialvalues,cuttingandpolishing,and marketing of the ornamental stones. Also some knowledge on the environmentalimpacts ofstoneindustry.	

IIISemester, OPEN-ELECTIVESYLLABUS(OE-10)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**III**	**CourseTitle:Marine Geology**	**Hours**	**42**
CoursePre-requisites,if any	NA			
Formative Assessment Marks: 40	SummativeAssessmentMarks:60		DurationofESA:2 hrs.	
Course Outcomes	Marineresources–OceansandSeas.Mineraldepositsinthedeepsea like metals, petroleum, coal, phosphorites, metallic nodules. Marinelifeandtheireconomicimportance.			

IIISemester,OPEN-ELECTIVESYLLABUS(OE-11)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**III**	**CourseTitle:Climatology**	**Hours**	**42**
CoursePre-requisites,if any	NA			
Formative Assessment Marks: 40	SummativeAssessmentMarks:60		DurationofESA:2 hrs.	
Course Outcomes	**Skills,employabilityandentrepreneurship:**Theabovesubjectis veryrelevant tothecurrentprocessesoperatingontheEarthSystemthathasimplicationson thesociety.InIndia,thissubjectisquiterarelystudiedatgraduatelevel,quite oftenincludedinM.Sc./P.G.coursessuchasMeteorology,Agriculture, Geography, Oceanography, and at M.Tech. Courses in Climatology/MeteorologyandAtmosphericScience.Sinceweatherishighly dynamic,itrequiresskill'stounderstandtoamaximumextentfromthe multidisciplinaryperspectives.Themainpurposeofthiscourseistocreate interestamongyoungandtalentedstudentsfrommultidiscipline.Thisstudyis alsousefulforpredictingtheextremevariabilityofweatherincludingwhathas happenedintheHistoryoftheEarth. Studentspassoutfromthissubjecthave opportunitiesforemploymentand alsostudyadvance coursesofferedin			

	differentCSIR, DST,RandDlabs.,andprivate organizations.

IIISemester, OPEN-ELECTIVESYLLABUS(OE-12)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**III**	**CourseTitle:Watershed Management**	**Hours**	**48**
Course Pre-requisites, if Any	NA			
Formative Assessment Marks: 40	SummativeAssessment Marks: 60		DurationofESA:2 hrs.	
Course Outcomes	After completing the course, the student will be able to understand the importance of water resources both – Surface and subsurface water, water harvesting,waterconservation,watershedplanningandmanagement.Italso helpstounderstandtheroleofremotesensing,waterlawandNGOs.			

IV SEMESTER

Year	**2021-22**	**CourseCode:**	**Credits**	**4**
Sem.	**IV**	**CourseTitle:StructuralGeologyand Hydrogeology**	**Hours**	**56**
Course Pre-requisites, if Any	NA			
Formative Assessment Marks: 40	SummativeAssessmentMarks:60		DurationofESA:2 hrs.	
Course Outcomes	Attheendofthecoursethestudentshouldbeableto: • Studentswillunderstandthenaturalstructures androck mechanics. • Ithelpstounderstandvariousprimaryandsecondarystructures occurring in rocks. Studentswillknowaboutthewatercycle,groundwaterrelatedissues,water conservation,estimationofgroundwaterandalsoquality.			

IVSEMESTER PRACTICALS

Year	**2021-22**	**CourseCode:**	**Credits**	**02**
Sem	**IV**	**CourseTitle:HydrogeologyandStructuralGeology**	**Hours**	**48**
Course Pre-requisites,ifany	NA			
Formative Assessment Marks: 25	SummativeAssessmentMarks:25		DurationofESA: 3 hrs.	

CourseOutcomes	Attheendofthecoursethestudentshouldbeableto: 1. Toprepareinfallmaps 2. Tocalculatethewaterqualityparametersanditsspatial maps 3. Tosurveying. 4. Tounderstandthemeasurementofdeterminationofattitudeofthebeds.

IVSemester
OPEN-ELECTIVESYLLABUS(OE-13)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**IV**	**CourseTitle: GeologyandSociety**	**Hours**	**42**
Formative Assessment Marks: 40	SummativeAssessmentMarks:60		Durationof ESA:2hrs.	
Course Outcomes	Courseoutcomes: The challenges and opportunities posed by the climate change, resource demands andconflicts, and natural disasters (due to man-made structures as well as natural climatechange) point to the importance of studying transdisciplinary nature ofthe earth processes and their implications to our society. This interdisciplinary nature ofEarthSciencedrawsaspecialattentionfromthe studentswithotherbranchesof science. Fromthis interdisciplinaryoptionalcourse onEarth and SocialScience, students gainanunderstandingofnaturalprocessesandtheimpactthedistributionanduse ofnaturalresources suchas water, fossil fuels, and critical minerals for economic growth. It also facilitates the understanding natural hazards such as climate change, landslides,tsunamiinducedcoastalerosions,thermalDisturbancesinseawater &seafood,andearthquakes.			

IVSemester
OPEN-ELECTIVESYLLABUS(OE-14)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**IV**	**CourseTitle:Geophysical Exploration**	**Hours**	**42**
Formative Assessment Marks:40	SummativeAssessmentMarks:60		DurationofESA:2hrs.	
Course Outcomes	To studythe physicalpropertiesofthe Earthand applicationofphysics in Geoscience. Tounderstandsubsurfacefeaturesandstructuresforbetterunderstandingof subsurface of the Earth. Tounderstandthevariousgeophysicaltechniquesandtheirfieldsetup. Tounderstandthegeophysicaldataprocessing andinterpretation			

IVSemester
OPEN-ELECTIVESYLLABUS(OE-15)

Year	**2021-22**	**CourseCode:**	**Credits**	3
Sem.	IV	**CourseTitle:Geostatistics**	**Hours**	42
Formative Assessment Marks: 30	SummativeAssessment Marks: 70		DurationofESA:3 hrs.	
Course Outcomes	Candidatewillbeexposedtothebasicsofgeostatistics, whichhelps inthe analysisofsurveydata,reservesdata,and clusteranalysis including factor analysis and contouring. Such statistical analysis can be used in mining industries and hydrogeology.			

IVSemester
OPEN-ELECTIVESYLLABUS(OE-16)

Year	**2021-22**	**CourseCode:**	**Credits**	**3**
Sem.	**IV**	**CourseTitle:Geotourism**	**Hours**	**42**
Formative Assessment Marks: 30	SummativeAssessment Marks: 70		DurationofESA:2 hrs.	
Course Outcomes	Tounderstandthebeautyandrarityofthegeologicalfeatures, landscapes, mountains, geysers, rock monuments, national parks, Fossils parks, etc. To understand the preservation of the geologicalfeatures andmonuments. Propagatingtheimportanceofthesegeologicalfeaturestothecommon man.			

PROGRAMMESTRUCTURE

EarthScienceasCoresubject: VandVI semesters

Semester	DisciplineCore(DSC) (Credits) (L+T+P)	Credits	EmployabilitySkillPaper (Credits)(L+T+P)
V	**A5Theory(4 credits)** (4+0+0) OreGeologyandIndian Mineral Deposits **P5Practicals(2 credits)** (0+0+2) OreGenesisandIMD **A6Theory(4 credits)** (4+0+0) RemoteSensing,GIS&GPS AndMarineGeology **P6Practicals(2 credits)** (0+0+2) RSandGIS,GPS	**4+2+4+2**	**EmployabilitySkillPaper (3credits)**(2+0+1) GroundwaterExploration
VI	**A7Theory(4 credits)** (4+0+0) ExplorationGeologyandMining Geology **P7Practicals(2credits)**(0+0+2) Exploration Geology **A8Theory(4 credits)** (4+0+0) Engineering Geology, Geochemistry,Disasterand NaturalHazardsManagement **P8Practicals(2 credits)** (0+0+2) Engineeringgeologyand Geochemistry	**4+2+4+2**	**EmployabilitySkillPaper (3credits)**(2+0+1) GroundwaterExploration
ExitoptionwithDegreeCertificate			

NEPVthandVIthSemSyllabus V
SEMESTERPaper – 1

Year	2023-24	CourseCode:ESDSC501 CourseTitle:OreGeologyandIndian Mineral Deposits	Credits	4
Sem.	V		Hours	60

Course Pre-requisites,ifany	

Formative Assessment Marks: 40	SummativeAssessmentMarks:60	Durationo f ESA: 2 ½hrs.
Course Outcom es	Thiscourseprovidesabetterunderstandingofthe oreformingprocessandalso it gives an insight on the types of oredeposits present in the country. A student will understandand learn about the basic concepts of Petrology Geology withrespect to geology as to enable them to work as a Petroleum Geologist.	

Year	**2023-24**	**CourseCode:ESDSC503 CourseTitle:RemoteSensing,GIS&GPS and Marine Geology**	**Credits**	**4**
Sem.	**V**		**Hours**	**60**
Course Pre-requisites,i f any				
Formative Assessment Marks: 40	SummativeAssessmentMarks:60		Duration:2½hrs.	
Course Outcom es	Thecourseismeanttoaddressthefundamentaltechniquesusedforremotesensing. At the end of this course, the student will be appraised with all the theoretical knowledge, information and skills to use Remotely Sensed data for geological applications. This course provides a theoretical and practical, hands-on approach to			

VISEMESTER

Paper-1

Year	**2023-24**	**CourseCode:ESDSC601 CourseTitle:ExplorationGeology and Mining Geology**	**Credits**	**4**
Sem.	**VI**		**Hours**	**60**
Course Preequisites, if any				
Formative Assessment Marks: 40	SummativeAssessmentMarks:60			Duration: 2 hrs.
Course Outcomes	The course provides the student essential and basic concepts of mineral expiration techniques and the art and science of mining mineral resources. In Exploration Geology the student will gain first-hand knowledge dealing with the principles and their significance in exploring the deposits.			

BachelorofScience(Basic/Hons.)DegreeinMathematicsChoice BasedCreditSystem(CBCS)WithMultipleEntriesAndExit Options under New Education Policy (NEP) – 2020

(2021-22BatchOnwards)

DetailsofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	**DisciplineCore/ Open Elective Paper(L+T+P)**	**Teaching hours/ week**	**Credits**	**Internal Assessment Marks(C1+ C2)**	**Semester End Examination Marks (C3)**

I	DSC-1:Algebra-I andCalculus-I (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1:Theory based Practical'sonAlgebra-I andCalculus–I (0+0+2)	**4**	**2**	**25**	**25**
	OE-1:Optional Mathematics–I(3+0+0)	**3**	**3**	**40**	**60**
	OE-2:Business Mathematics–I(3+0+0)	**3**	**3**	**40**	**60**
	OE-3:Mathematical Aptitude–I(3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2:Algebra–II(Number Theory)andCalculus-II (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2:Theorybased Practical'sonAlgebra–II(Number Theory) andCalculus–II (0+0+2)	**4**	**2**	**25**	**25**
	OE-5:Optional Mathematics–II(3+0+0)	**3**	**3**	**40**	**60**
	OE-6:Business Mathematics-II(3+0+0)	**3**	**3**	**40**	**60**
	OE-7:Mathematical Aptitude–II(3+0+0)	**3**	**3**	**40**	**60**

Programmeoutcome: ThestudentgraduatingwiththeMathematicsshouldbeableto

- **DisciplinaryKnowledge**:BachelordegreeinMathematicsistheculminationof in-depthknowledgeofAlgebra,Calculus,Geometry,differentialequationsandsever

alother branches of pure and applied mathematics. This also leads to study the related areas such as computerscience and other all ied subjects.

- **Communication Skills**: Ability to communicate variousmathematical concepts effectively using examples and their geometrical visualization. The skillsand knowledge gainedin this programwill ead to the proficiency inanalyticalreasoning which can be used for modeling and solving ofreal life problems.
- **Critical thinking and analytical reasoning:** The students undergoing this programme acquireabilityofcritical thinkingandlogical reasoningandcapabilityofrecognizingand distinguishing the various aspects ofreallife problems.
- **Problem Solving**:The Mathematical knowledge gained by thestudents through this programmed evelopanability to analyzethe problems, identify and define appropriate computing requirements for its solutions. This programme enhances student's overall developmentandalsoequipthemwithmathematicalmodellingability,problemsolving skills.
- **Researchrelatedskills:**Thecompletingthisprogrammedevelopthecapabilityofinquiring about appropriate questions relating to the Mathematical concepts indifferentareas of Mathematics.
- **Information/digitalLiteracy**:Thecompletion ofthisprogrammewillenablethelearnertouseappropriatesoftwarestosolvesystemofalgebraicequationa nddifferentialequations.
- **Self–directedlearning**: The student completingthis program will develop an ability of working independently and to make anin-depthstudy of various notions of Mathematics.
- **Moral and ethical awareness/reasoning:** :Thestudentcompletingthis program will develop an ability toidentify unethicalbehavior such as fabrication, falsification or misinter pretation of data and adopting objectives, unbiased and truthful actions in all aspects of life in general and Mathematical studies inparticular.
- **Lifelonglearning**:Thisprogrammeprovidesself- directedlearningand lifelong learning skills. This programme helps the learner to think independently and develop algorithms and computational skills for solving real word problems.
- Ability to peruseadvanced studies and research inpure and applied Mathematical sciences.

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ISEMESTER

CourseOutcomes:Thiscoursewillenablethestudents to:

- Learnto solvesystemoflinearequations.
- Solve the system of homogeneous and non-homogeneous linear of *m*equationsin*n*variablesbyusingconceptofrankofmatrix.
- Studentswillbefamiliarwiththetechniquesofintegration and differentiation offunction with real variables.
- Studentslearntosolvepolynomialequations.
- LearntoapplyReductionformulae.
- Learn*FreeandOpenSourceSoftware(FOSS)*toolsfor computerprogramming.
- Solveproblemonalgebraandcalculustheory studiedinMATDSCT1.1by

usingFOSSsoftware's.

- Acquireknowledge ofapplicationsofalgebraandcalculusthroughFOSS.

OpenElectiveCourse(OE):

OE-1:OPTIONALMATHEMATICS–I(THEORY): 3 Credits 42Hrs.

CourseLearningOutcome: Thiscoursewillenablethestudentsto;

- Learntosolvesystemoflinearequations.
- Solvethesystemofhomogeneous andnon-homogeneous mlineare quations by using the concept of rank of matrix.
- Students willbe familiar with the techniques of differentiation of functionwith real variables.
- Identify and apply the intermediate evalue the orems and L'Hospitalrule.Learn to apply Reduction formulae.

OE-2:BUSINESSMATHEMATICS-I(THEORY):3 Credits 42Hrs.

CourseLearningOutcome: Thiscoursewillenablethestudentsto;

- Translatetherealwordproblemsthroughappropriatemathematical modellling.
- Explaintheconceptsanduseequations,formulaeandmathematical expressionand relationship in a variety of context.
- Findingtheextremeevaluesoffunctions.
- Analyzeand demonstratethemathematical skill require in mathematicallyintensiveareasin economics and business.

OE-3:MATHEMATICALAPTITUDE-I(THEORY):3CREDITS42HRS.

CourseLearning Outcome: Thiscoursewillenablethestudentsto;

- Studentshaveastrongbaseinthefundamentalmathematical concepts.
- Grasptheapproachesandstrategiestosolveproblemswithspeedand accuracy.
- Gain appropriate skills to succeedin preliminary selection process for recruitment.

IISEMESTER

CourseLearningOutcomes:Thiscoursewillenablethestudentsto:

- LearntheconceptofDivisibility.
- Learnaboutprimeandcompositenumbers.
- Learntheconceptofcongruencesanditsapplications.
- Identifyandapplytheintermediatevaluetheoremsand L'Hospitalrule.
- Understandtheconceptofdifferentiationandfundamentaltheor emsindifferentiation and various rules.
- Findtheextremevaluesoffunctionsoftwo variables.Students learnto find are asand volumes using integration.
- Learn*FreeandOpenSourceSoftware(FOSS)*toolsfor computerprogramming.

- Solveproblemonalgebraandcalculusbyusing FOSSsoftware's.
- Acquireknowledge ofapplicationsofalgebraandcalculusthroughFOSS.

OpenElectiveCourse(OE):

OE-4:OPTIONALMATHEMATICS–II (THEORY):3Credits 42Hrs.

CourseLearningOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- LearntheconceptofDivisibility.
- Learnaboutprimeandcompositenumbers.
- Learntheconceptofcongruencesanditsapplications.
- Under stand the concept to differentiation and fundamental theoremsin differentiationandvariousrules.
- Find theextremeevaluesoffunctionsoftwovariables.
- Tounderstandtheconceptsofmultipleintegralsandtheirapplications.

OE-5:BUSINESSMATHEMATICS-II(THEORY):3Credits 42Hrs.

CourseLearningOutcome: Thiscoursewillenablethestudentsto;

- Integrate conceptin internation albusiness concept with functioning of globaltrade.
- Evaluatethelegal,socialandeconomicenvironmentofbusiness.
- Applydecision-supporttoolstobusinessdecisionmaking.
- Will be ableto apply knowledge of business concepts and functions inanintegrated manner.

OE-6:MATHEMATICALAPTITUDE-II(THEORY):3Credits 42Hrs.

CourseLearningOutcome: Thiscoursewillenablethestudentsto;

- Haveastrongbaseinthefundamentalmathematicalconcepts.
- Grasp the approaches and strategies to solve problems with speed and accuracy. Gain appropriate skills to succeed in preliminary selection process forrecruitment.

III&IVsemester

NameoftheDegreeProgram :B.A./B.Sc.

Discipline Course :Mathematics

Starting Year of Implementation : 2021-22

Programme Outcomes (PO): By the end of theprogram the studentswillbeable to :

PO1	**DisciplinaryKnowledge**:BachelordegreeinMathematicsistheculminationof in-depth knowledge of Algebra, Calculus, Geometry, differentialequationsand severalother branchesof pureandapplied mathematics. This also leads to study the related areas such as computer science and other allied subjects

PO2	**Communication Skills**: Ability to communicate various mathematical concepts effectively using examples and their geometrical visualization. The skills and knowledge gained in this program will lead to the proficiency in analytical reasoning which can be used for modeling and solvingof reallifeproblems.
PO3	**Critical thinking and analytical reasoning:**The students undergoing this programmeacquireabilityofcriticalthinkingandlogicalreasoningand capabilityofrecognizing and distinguishing the various aspects ofreallifeproblems.
PO4	**Problem Solving**: The Mathematical knowledge gained by the studentsthrough this programme develop an ability to analyze the problems,identify and define appropriate computingrequirementsforits solutions.Thisprogrammeenhances students overall development and also equip themwithmathematicalmodellingability,problemsolvingskills.
PO5	**Researchrelatedskills:**Thecompletingthisprogrammedevelopthe capabilityofinquiringabout appropriatequestionsrelatingtotheMathematical concepts in different areas of Mathematics.
PO6	**Information/digitalLiteracy**:Thecompletionofthisprogrammewill enablethelearnertouseappropriatesoftwarestosolvesystemofalgebraicequation anddifferentialequations.
PO7	**Self –directedlearning**:Thestudentcompletingthisprogramwilldevelop an ability of working independently and to make an in-depth study ofvariousnotionsofMathematics.
PO8	**Moralandethicalawareness/reasoning:**:Thestudentcompletingthisprogram will develop an ability to identify unethical behavior such as fabrication, falsificationormisinterpretationofdataandadopting objectives, unbiased and truthful actions in all aspects of life in general and Mathematical studies in particular.
PO9	**Lifelonglearning**: This programme provides self directed learning andlifelong learning skills. This programme helps the learner to think independently and develop algorithms and computational skillsfor solvingreal word problems.
PO 10	Abilitytoperuseadvanced studiesandresearch inpureandappliedMathematical sciences.

ContentsofCoursesforB.A./ B.Sc.withMathematicsasMajorSubject&B.A./B.Sc.

(Hons)Mathematics

ModelIIA

Semester	**CourseNo.**	**Theory/ Practical**	**Credits**	**PaperTitle**	**Marks**	
					S.A.	**I.A.**
III	MATDSCT3.1	Theory	4	Algebra-IIIandDifferentialEquations–I	60	40
	MATDSCP3.1	Practical	2	TheorybasedPractical'sonAlgebra-III andDifferentialEquations–I	25	25

	MATOET3.1 MATOET3.2	Theory Theory	3	Discrete Mathematics – I MathematicalAptitude–III	60	40

IV	MATDSCT4.1	Theory	4	RealAnalysis-IandDifferential Equations – II	60	40
	MATDSCP4.1	Practical	2	TheorybasedPractical'sonRealAnalysis -IandDifferentialEquations– II	25	25
	MATOET4.1 MATOET4.2	Theory Theory	3	Basics of Number Theory MathematicalAptitude–IV	60	40

1. SchemeofAdmission:Asper theUniversityrules.
2. Eligibility:Asprescribedbythe University.
3. SchemeofExamination:Continuousassessment.
   questions.

CURRICULUMSTRUCTUREFORUNDERGRADUATEDEGREE PROGRAM

Name of the Degree Program : B.A. / B.Sc. (Honors)
Discipline/Subject :MathematicsStarting
Year of Implementation: 2021-22

PROGRAMARTICULATIONMATRIX

Semester	CourseNo.	Programme Outcomesthatthe CourseAddresses	Pre-Requisite Course(s)	Pedagogy*	Assessment**
			-		
					SEMINAR

III	MATDSCT3.1	PO1,PO4,PO7,		SEMINAR	
		PO8			
				PROJECT	QUIZ
IV	MATDSCT4.1	PO1,PO4,PO7,	MATDSCT3.1		
		PO8		BASED	
				LEARNING	ASSIGNMENT

Credit Distribution for B.A./B.Sc.(Honors) with Mathematics asMajorin the 3rd Year
(ForModelIIA)

Subject	Semester	Major/ Minor in the 3rd Year	Credits					
			Discipline Specific Core (DSC)	Open Elective (OE)	Discipline Specific Elective (DSE)	AECC &Languages	Skill Enhancement Courses (SEC)	Total Credits
Mathematics	I-IV	Major	4Courses (4+2)x4=24	4Courses 3x4=12	---	(4+4=8) Courses 8x(3+1)=32	2Courses 2x(1+1)=4	72

Other Subject		Minor	24	--	--	--	--	24

								96
Mathematics	V& VI	Major	4 Courses 4x(3+2)=20	-----	2 Courses 2 x 3 = 06	---	2Courses 2x2=4	30
Other Subject		Minor	10	--	--	--	--	10
(96+40)**=136**								
Mathematics	VII &VII I	Major	2 Courses 2x(3+2)=10 3Courses 3x4= 12 1Course 1x3=3 Total=25	-----	2 Courses 2x3=6 Res.Meth1x3 =3 2Courses 2x3= 6 Total=15	----	-----	40
TotalNo.ofCourses			14	04	07	08	04	
								136+40**=176**

Syllabus for B.A./B.Sc. with Mathematics as Major Subject & B.A./B.Sc. (Hons) Mathematics

SEMESTER–III

MATDSCT3.1:Algebra-IIIandDifferentialEquations–I	
TeachingHours:4Hours/Week	**Credits:4**
TotalTeachingHours:56Hours	**Max. Marks: 100 (S.A.-60+I.A. –40)**

CourseLearningOutcomes:Thiscoursewillenablethestudentsto

- enhancelearninginAlgebraandDifferentialEquations.
- applytheconceptsofalgebrainpracticalproblems.
- solvevariousdifferentialequations ofpracticalinterest.

MATDSCP 3.1:Practical's on Algebra - IIIandDifferential Equations – I	
PracticalHours:4Hours/Week	**Credits:2**
TotalPracticalHours:56Hours	**Max. Marks: 50 (S.A.-25+I.A. –25)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- Learn *Free and Open Source Software (FOSS)* tools for computer programming
- Solve problem on algebra and differential equations studied in **MATDSCT3.1** by

using FOSS software's.

- Acquireknowledgeofapplicationsofalgebraanddifferentialequationsthrough FOSS

OpenElectiveCourse
(ForStudentsofallStreams)

MATOET3.1:Discrete Mathematics	
TeachingHours:3Hours/Week	**Credits:3**
TotatTeachingHours:42Hours	**Max.Marks:100** **(S.A.-60+I.A.–40)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- knowtheconceptofsettheory.
- knowgraphtheorywhichhelpsindecision makinginvariouscapacities inorganization.
- EnhancetheknowledgetowardsElectronicsandcomputerscience.

OpenElective
(ForStudentsofallStreams)

MATOET3.2:MathematicalAptitude-III	
TeachingHours:3Hours/Week	**Credits:3**
TotatTeachingHours:42Hours	**Max.Marks:100** **(S.A.-60+I.A.–40)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- haveastrongbaseinthefundamentalmathematicalconcepts.
- graspthe approachesandstrategiestosolveproblemswithspeedandaccuracy
- gainappropriateskillstosucceedinpreliminaryselectionprocessforrecruitment

SEMESTER–IV

MATDSCT4.1: RealAnalysis–Iand Differential Equations – II	
TeachingHours:4Hours/Week	**Credits:4**
TotatTeachingHours:56Hours	**Max. Marks: 100** **(S.A.-60+I.A. –40)**

CourseLearningOutcomes:Thiscoursewillenablethestudentsto

- enhancelearninginAnalysisandDifferentialEquations.
- applytheconceptsofanalysisinpracticalproblems.
- solvevariousdifferentialequationsofpracticalinterest.

PRACTICAL

MATDSCP4.1:OnNumberTheoryandCalculus–II	
PracticalHours:4Hours/Week	**Credits:2**
TotalPracticalHours:56Hours	**Max. Marks: 50** **(S.A.-25+I.A. –25)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- Learn*FreeandOpenSourceSoftware(FOSS)*toolsforcomputerprogramming
- Solveproblemonrealanalysisand differentialequationsby usingFOSSsoftware's.
- Acquireknowledgeofapplicationsofrealanalysisand differentialequationsthroughFOSS

OpenElective

(ForStudentsof allStreams)

MATOET4.1:Basicsof Number Theory	
TeachingHours:3Hours/Week	**Credits:3**
TotalTeachingHours:42Hours	**Max.Marks:100 (S.A.-60+I.A.–40)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- Knowthe expansionofsumoftwonumberswithpositiveintegralpowers.
- Generalmethodofprovingthe statement.
- LearntheconceptofDivisibility.
- Learnaboutprimeand composite numbers.
- Learntheconceptofcongruences and its applications.

OpenElective

(ForStudentsofallStreams)

MATOET4.2:MathematicalAptitude–IV	
TeachingHours:3Hours/Week	**Credits:3**
TotatTeachingHours:42Hours	**Max.Marks:100 (S.A.-60+I.A.–40)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

- haveastrongbaseinthefundamentalmathematicalconcepts.
- graspheapproachesandstrategiestosolveproblemswithspeedandaccuracy
- gainappropriateskillstosucceedinpreliminaryselectionprocessforrecruitment

SEMESTER–V

MATDSCT5.1:RealAnalysis-IIandComplexAnalysis	
TeachingHours:4Hours/Week	**Credits:4**
TotalTeachingHours:60Hours	**Max. Marks:100 (S.A.- 60+I.A.–40)**

CourseLearningOutcomes:

The over all expectation from this course is that the student builds a basic understanding on Riemannintegrationandelementarycomplexanalysis.Thebroadercourseoutcomesarelistedas follow. At the end of this course,the student will be able to:

1. Carry out certain computations such as computing upper and lower Riemann sums as well integrals.
2. DescribevariouscriteriaforIntegrabilityoffunctions.
3. Exhibit certain properties of mathematical objects such as integrable functions, analytic functions, and harmonic functions and so on.
4. ProvesomestatementsrelatedtoRiemannintegrationaswellasincomplex analysis.
5. Carry out the existing algorithms to construct mathematical structures such as analytic functions.
6. Appliesthegainedknowled get solvevariousotherproblems.

MATDSCP5.1:PracticalsonRealAnalysis-IIandComplexAnalysis	
PracticalHours:4 Hours/Week	**Credits:2**
TotalPracticalHours:60 Hours	**Max.Marks:50 (S.A.-25+I.A.–25)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

1. Learn*FreeandOpenSourceSoftware(FOSS)*toolsforcomputerprogramming.
2. SolveproblemonRealAnalysisandComplexAnalysis studiedin**MATDSCT5.1by** UsingFOSSsoftware's.
3. AcquireknowledgeofapplicationsofRealAnalysisandComplexAnalysis through FOSS.

MATDSCT5.2:AdvancedAlgebraandDiscreteMathematics	
TeachingHours:4 Hours/Week	**Credits:4**
TotalTeachingHours:60Hours	**Max.Marks:100 (S.A.- 60+I.A.–40)**

CourseLearningOutcomes:Thiscoursewillenablethestudents to:

1. **Identifyandanalyzedifferentalgebraicstructuressuchasrings,fields,domainsandso on.**
2. **Explorethepropertiesoftheabovementionedalgebraicstructures.**
3. **Carryoutheprescribed algorithm tocomputetheGCDof polynomials,irreducibility of polynomials and so on.**
4. **Provevariousstatementsrelatedtoalgebraicstructures.**
5. **Applythegainedknowledgetosolvevariousotherproblems.**
6. Handlevariousmathematicaloperationslikerulesforcounting,arrangementsand selections with repetitions.
7. Understandrecurrencerelationandsolvingthem.
8. Applytherulesoflogicinarrivingatinferences(likethatofModusponens,ModusTollensand so on).
9. Apply the rules, principles and algorithms in solving problems like that of solving recurrence relations,minimizingtheBooleanexpressionthroughKarnaughMapmethod,solvingproblems basedon counting principles.
10. Provethemathematicalstatements relatedtoBooleanalgebra,mathematicallogic.

MATDSCP5.2:Practical'sonAdvancedAlgebraandDiscreteMathematics	
PracticalHours:4Hours/Week	**Credits:2**
TotalPracticalHours:60Hours	**Max. Marks: 50 (S.A.-25+I.A.–25)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

1. Learn*FreeandOpenSourceSoftware(FOSS)*toolsforcomputerprogramming.
2. Solveproblemon**AdvancedAlgebraandDiscreteMathematics**studiedin **MATDSCT5.2by**usingFOSSsoftware's.
3. Acquireknowledgeofapplicationsof**AdvancedAlgebraandDiscrete Mathematics** through FOSS.

MATSEC5.1:ProgrammingwithPython	
TeachingHours:4Hours/Week	**Credits:3**
TotalTeachingHours:60Hours	**Max.Marks:100 (S.A.-60+I.A.–40)**

CourseLearningOutcomes:

1. Onthecompletionofthiscoursethestudentswillbeableto
2. LearnthesyntaxandsemanticsofPythonprogramminglanguage.
3. WritePythonfunctionstofacilitatecodreuseandmanipulatestrings.
4. Understandingtheuseofbuilt-infunctionstonavigatethefilesystem.
5. Applytheconceptsoffilehandling.

SEMESTER–VI

MATDSCT6.1:LinearAlgebra	
TeachingHours:4 Hours/Week	**Credits:4**
TotalTeachingHours:60Hours	**Max.Marks: 100 (S.A.-60+I.A.–40)**

CourseLearningOutcomes:

The overall expectation from this course is that the student will build a basic understanding in fewareasoflinearalgebrasuchasvectorspaces,lineartransformationsandinnerproductspaces. Some broader course outcomes are listed as follows. At the end of this course, thestudent will be able to

1. UnderstandtheconceptsofVectorspaces, subspaces, bases dimension and their properties.
2. BecomefamiliarwiththeconceptsEigenvaluesandeigenvectors, minimal polynomials, linear transformations etc.
3. Learnpropertiesofinner productspacesanddetermineorthogonalityininner product spaces.
4. Provevariousstatementsinthecontextofvectorspaces.
5. Realiseimportanceofadjointofalinear transformationanditscanonicalform.

MATDSCP6.1:Practical'sonLinearAlgebra	
PracticalHours:4 Hours/Week	**Credits:2**
TotalPracticalHours:60 Hours	**Max. Marks: 50 (S.A.-25+I.A.–25)**

CourseLearningOutcomes: Thiscoursewillenablethestudentsto

1. Learn*FreeandOpenSourceSoftware(FOSS)*toolsforcomputer programming

2. SolveproblemonLinearAlgebrastudiedin**MATDSCT6.1by**usingFOSS software's.
3. AcquireknowledgeofapplicationsofLinearAlgebrathroughFOSS.

Programondiagonalization**MATDSCT6.2:NumericalAnalysis**	
TeachingHours:4Hours/Week	**Credits:4**
TotalTeachingHours:60Hours	**Max.Marks:100(S.A.-60+I.A.–40)**

CourseLearningOutcomes:

The over all expectation from this course is that the student will getequipped with certain numericaltechniquesforvariouscomputationssuchasfindingroots, findingthe integralsand derivatives,andfindingsolutionstodifferentialequations.Somebroader courseoutcomesare listed as follows. At the end ofthis course, the student will be able to

i. Describevariousoperatorsarising in numerical analysissuchas difference operators, shift operators and so on.
ii. Articulatetherationalebehindvarioustechniquesofnumericalanalysissuch as in finding roots,integrals and derivatives.
iii. Reproduce the existing algorithms for various tasks as mentioned previously in numerical analysis.
iv. Apply the rules of calculus and other are asof mathematics in justifying the techniques of numerical analysis.
v. Solve problems using suitable numerical technique.
vi. Appreciate the profound applicability of techniques of numerical analysis insolving real life problems and also appreciate the way the techniques are modified to improve the accuracy.

MATDSCP6.2:Practical'son Numerical Analysis	
Practical Hours:4 Hours/Week	**Credits:2**
Total Practical Hours:60Hours	**Max.Marks:50 (S.A.-25+I.A.–25)**

BachelorofScience(Basic/Hons.) DegreeinMicrobiology
ChoiceBasedCreditSystem(CBCS)With MultipleEntriesAndExit OptionsunderNewEducationPolicy(NEP) –2020 (2021-22 Batch Onwards)
DetailsofCourse ofStudy:I,II,III,IV,V and VISemesters

Sem.	DisciplineCore/ Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:General Microbiology(4+0+0)	4	4	40	60
	DSCP-1:General Microbiology(0+0+2)	4	2	25	25
	OE-1: Microbial TechnologyforHuman Welfare(3+0+0)	3	3	40	60
II	DSC-2:Microbial Biochemistryand Physiology(4+0+0)	4	4	40	60
	DSCP-2:Microbial Biochemistry and Physiology(0+0+2)	4	2	25	25
	OE-2:Environmentaland Sanitary Microbiology(3+0+0)	3	3	40	60

Programmeoutcome: Bytheend oftheprogramthe studentswillbe ableto:

- Knowledge and understanding of concepts of microbiology and its applicationinpharma,food,agriculture,beverages,nutraceuticalindustries.
- Understand the distribution, morphology and physiology of microorganisms anddemonstratetheskills inasepticand lingofmicrobesincluding is olation, identification and maintenance.
- Competenttoapplytheknowledgegainedforconservingtheenvironmentand resolving the environmental related issues.
- Learning and practicing professional skills in handling microbes and contaminantsin laboratories and production sectors.
- Exploringthemicrobialworldandanalyzingthespecificbenefitsandchallenges.
- Applying the knowledge acquired to undertake studies and identify specific

- remedial measures for the challenge sin health, agriculture, and foodsectors
- Thorough knowledge and application of good laboratory and good manufacturing practices inmicrobial quality control.
- Understanding biochemical and physiological aspects of microbes and developingbroaderperspectivetoidentifyinnovativesolutionsforpresentand future challenges posed by microbes.
- Understandingandapplicationofmicrobialprinciplesinforensicandworking knowledge about clinical microbiology.
- Demonstratetheabilitytoidentifyethicalissuesrelatedtorecombinant DNA technology, GMOs, intellectual property rights, biosafety and biohazards.
- Demonstratetheabilityto identifykeyquestionsin microbiologicalresearch, optimizere search methods, and analyze outcomes by adopting cientific methods, there by improving the employability.
- Enhanceanddemonstrateanalyticalskillsandapplybasic computationaland statistical techniques in the field of microbiology.
- Thoroughknowledgeandunderstandingofconceptsofmicrobiology.
- Learningandpracticingprofessionalskillsinhandling microbes.
- Thorough knowledge and application of good laboratory and good manufacturing practices in microbialquality control.

ISEMESTER

Programmeoutcome:

- Knowledgeand understandingofconceptsofmicrobiology.
- Learningandpracticingprofessionalskillsinhandling microbes.
- Thorough knowledge and application of good laboratory and good manufacturingpractices inmicrobial quality control.

IISEMESTER

Programmeoutcome: Thoroughknowledgeand understanding ofconceptsof microbiology and its and application in different microbiological industries.

III&IVsemester

NameoftheDegreeProgram	**:**	**BSc (Basic/Hons.)**
DisciplineCore	**:**	**Microbiology**
TotalCredits fortheProgram	**:**	**B.Sc.Basic-136 andB.Sc.Hons.-176**
Starting yearof implementation	**:**	**2021-22**

ProgramOutcomes:

CompetenciesneedtobeacquiredbythecandidateSecuringB.Sc. (Basic)orB.Sc.(Hons)

Bythe endoftheprogramthestudentswillbeable to:

1. Knowledge and understanding of concepts of microbiology and its application in pharma, food,agriculture, beverages, nutraceutical industries.

2. Understand the distribution, morphology and physiology of microorganisms and demonstrate the skills in aseptic handling of microbes including isolation, identification and maintenance.
3. Competenttoapplytheknowledgegainedforconservingtheenvironmentandresolvingthe environmental related issues.
4. Learning and practicing professionalskills in handling microbes and contaminants in laboratories and production sectors.
5. Exploringthemicrobialworldandanalyzingthespecificbenefitsand challenges.
6. Applyingtheknowledgeacquiredtoundertakestudiesandidentifyspecificremedialmeasuresfor the challenges in health, agriculture, and food sectors.
7. Thorough knowledge and application of good laboratory and good manufacturing practices in microbial quality control.
8. Understanding biochemical and physiological aspects of microbes and developing broader perspective to identify innovative solutions for present and future challenges posed by microbes.
9. Understanding and application of microbial principles in forensic and working knowledge about clinical microbiology.
10. Demonstratethe abilityto identifyethicalissues relatedto recombinant DNAtechnology, GMOs, intellectual property rights, biosafety and biohazards.
11. Demonstrate the ability to identify key questions in microbiological research, optimize research methods, and analyze outcomes by adopting scientific methods, thereby improving the employability.
12. Enhanceanddemonstrateanalyticalskillsandapplybasiccomputationalandstatisticaltechniques in the field of microbiology.

CourseOutcomes(COs):Attheendofthecoursethestudentshouldbeableto:
1. Knowledgeaboutmicrobesandtheir diversity
2. tudy,characters,classificationandeconomic importanceofprokaryoticandeukaryoticmicrobes.
3. Knowledgeabout virusesandtheirdiversity

CourseTitle	**MicrobialDiversity**		PracticalCredits	**2**
CourseNo.	**MBL-103**	**DSC-3P**	Contacthours	

ProgramName	**B.Sc. Microbiology**		Semester	**Third Semester**
CourseTitle	**MicrobialEntrepreneurship**			
CourseCode		**OE-3**	No.ofTheoryCredits	**3**
Contacthours	**Lecture**		DurationofESA/Exam	**Hours**
	Practical			
FormativeAssessment Marks	**40**		SummativeAssessment Marks	**60**

CoursePre-requisite(s):
CourseOutcomes(COs):At theendofthecoursethestudent shouldbeableto: 1. DemonstrateEntrepreneurialskills 2. AcquireknowledgeindustrialEntrepreneurship 3. Acquireknowledgeabout HealthcareEntrepreneurship

Program Name	**B. ScMicrobiology**		Semester	**Fourth Semester**
CourseTitle	**MicrobialEnzymologyand Metabolism**			
CourseNo.	**MBL:104**	**DCS-4T**	No.ofTheoryCredits	**4**
Contact hours	**56hrs**		DurationofESA/Exam	**2Hours**
FormativeAssessment Marks	**40**		SummativeAssessmentMarks	**60**

CoursePre-requisite(s):

CourseOut comes(COs):Attheendofthecoursethestudentshould beableto:

1. Differentiatingconceptsofchemoheterotrophicmetabolismandchemolithotrophic metabolism.
2. Describingtheenzymekinetics,enzymeactivityand regulation.
3. Differentiatingconceptsofaerobicandanaerobicrespirationandhowtheseare manifested in the form of different metabolic pathways in microorganisms

CourseTitle	**MicrobialEnzymologyand Metabolism**		PracticalCredits	**2**
CourseNo.	**MBL:104**	**DSC-4P**	Contacthours	

Program Name	**B.Sc.Microbiology**		Semester	**Fourth Semester**
CourseTitle	**HumanMicrobiome**			
CourseCode	**OE-4T**		No.ofTheoryCredits	**3**
Contacthours	**Lecture**		DurationofESA/Exam	**Hours**
	Practical			
FormativeAssessment Marks	**40**		SummativeAssessmentMarks	**60**

CoursePre-requisite(s):

CourseOutcomes(COs):At theendofthecoursethestudent shouldbeableto:

1. Articulateadeeperunderstandingonbiologicalcomplexitiesofhumanmicrobiome
2. Understandbroadergoalsofbiologicalanthropology.
3. Compareand contrastthemicrobiomeofdifferenthumanbodysitesandimpact human healthpromotion

B.Sc.Microbiology5TH Semester

Programname	B.Sc.inMICROBIOLOGY ISemester		v
CourseTitle	FOODMICROBIOLOGY(Theory)		
CourseCode	DSC-HT	No.ofCredits	04
ContactHours	60(4Hrs.perweek)	DurationofSEA/Exam(Hrs.)	211z
Formative Assessment Marks	40	SummativeAssessmentMark	60

Courseoutcomes(COs):

After thesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl.Understandtheassociationofmicrobesinfoodandthequalitytestingoffood

C02.Understandthepreservationandfoodsafetyprotocols

C03.Understandthemethodsofspoilageoffoodandthediseasesassociatedwithit C04.Learnthe propertiesofmilkandthetypesofpreservationofmilk.

COS.Learnthetypesof fermentedfoodanddairyproductsanditssignificance

B.Sc.Microbiology5th Semester

Programname	B.Sc.inMICROBIOLOGY ISemester		v
CourseTitle	MICROBIALANDBIOCHEMICALTECHNIQUES(Theor		
CourseCode	SEC-4T	No.ofCredits	02
ContactHours	30 (2Hrs.perweek)	Duration ofSEA/Exam(Hrs.)	02
Formative Assessment Marks	20	SummativeAssessmentMark	30

CourseOutcomes(COs):

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl:Demonstrateskillsinmicrobiologicaland analyticaltechniques.

C02:Understandprincipleswhichunderliesterilizationofculturemedia,glasswareandplasticwaretobeusedformicrobiologicalwork.

C03:Understandprinciplesofanumberofanalyticalinstrumentswhichthestudentshavetouseduringthestudyandalsolaterasmicrobiologistsforperformingvarious laboratorymanipulations.

C04:Handleseveralseparationtechniqueswhichmay berequiredtobehandledlaterasmicrobiologists.

B.Sc.Microbiology6th semester

Programname	B.Sc.inMICROBIOLOGY	Semester	VI

CourseTitle	IMMUNOLOGYANDMEDICALMICROBIOLOGY{Theory)		
CourseCode	DSC-131	No.ofCredits	04
ContactHours	60(4Hrs.perweek)	DurationofSEA/Exam(Hrs.)	211z
FormativeAssessment Marks	40	SummativeAssessmentMark	60

CourseOutcomes{COs):

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl: Gainapreliminaryunderstandingaboutvariousimmunemechanisms.
C02: Familiarizewithimmunologicaltechniquesandsero-diagnosisofinfectious diseases
C03:Understandpathogenicbacterialinfections,symptoms,diagnosisandtreatment

B.Sc.Microbiology6thSemester

Programname	B.Sc.inMICROBIOLOGY ISemester		VI
CourseTitle	INDUSTRIALMICROBIOLOGY(Theory)		
CourseCode	DSC-15T	No. ofCredits	04
ContactHours	60(4Hrs.perweek)	DurationofSEA/Exam(Hrs.)	211z
Formative Assessment Marks	40	SummativeAssessmentMark	60

CourseOutcomes(COs):

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl.Learntheoverviewofscopeandimportanceofindustriallyimportantmicrobes.

C02.Acquaintwithdifferenttypesoffermentationprocessesandequipment.

C03.Acquiretheknowledgeofpurificationofvalue-addedproducts.

C04.Acquireknowledgeontheconceptsandterminologyin geneticengineering.

CO5.Learnaboutprinciplesinvolved inmanipulatinggenesandDNA.

C06.Familiarwithvarioustechniquesusedingeneticengineering.

System(CBCS)With Multiple EntriesAndExitOptionsunderNew Education Policy (NEP) – 2020
(2021-22 Batch Onwards)

DetailsofCourseofStudy:I, II, III, IV, V and

VISemesters

Sem.	DisciplineCore/Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Mechanics& Propertiesof Matter (4+0+0)	4	4	40	60
	DSCP-1:Physics-1(0+0+2)	4	2	25	25
	OE-1:EnergySources (2+1+0)	3	3	40	60
	OE-2:ClimateScience (2+1+0)	3	3	40	60
II	DSC-2:Electricity andMagnetism (4+0+0)	4	4	40	60
	DSCP-2:Physics-2(0+0+2)	4	2	25	25
	OE-3:Astronomy andAstrophysics (2+1+0)	3	3	40	60
	OE-4:MedicalPhysics (2+1+0)	3	3	40	60

CourseObjective: Inthiscourse,weaimtoprovideasolid foundationinvariousaspectsof Physics,toshowabroadspectrumofmoderntrendsinPhysics,todevelop experimentaland mathematicalskillsofstudents.Thesyllabiareframed insuchawaythat itsbridgesthegap betweenthePre-UniversityandPostgraduatelevelsofPhysics, byprovidingacompleteand more logicalframeworkofbasicPhysics.Thesystematic andplannedcurriculumfromfirst andsecondsemestershallmotivateandencouragethestudentsforpursuinghigherstudiesin Physics, engage in research activities and become self-reliant.

CourseOutcomes: By the end of the first and second semester, the students would have

been introduced to powerful tools for tracking a wide range of topics in **Mechanics & PropertiesofMatterandElectricity&Magnetism**. Furtherdeveloped theirexperimental skills through a series of experiment which illustrates major themes of the lecture courses.

DetailsofCourseofStudy:IIIand IV Semesters

Sem	Disciplinecore/ Paper (L+T+P)	Teachinghours/ week	Credits	Internal Assessment Marks (C1+C2)	SemesterEnd Examination Marks (C3)
III	DSC-3:Wave MotionandOptics (4+0+0)	4	4	40	60
	DSCP-3:Physics-3(0+0+2)	4	2	25	25
	OE-5:Optical Instruments (2+1+0)	3	3	40	60
	OE-6: Sports Science(2+1+0)	3	3	40	60
IV	DSC-4:Thermal Physics&Electronics (4+0+0)	4	4	40	60
	DSCP-4:Physics- 4 (0+0+2)	4	2	25	25
	OE7: Nanotechnology (2+1+0)	3	3	40	60
	OE8:Electrical Instruments (2+1+0)	3	3	40	60

CourseObjective: Inthiscourse,weaimto provideasolid foundationin variousaspectsofphysics,to showa broad spectrumof modern trends in physics, to develop experimentaland mathematical skills ofstudents. The syllabiare framed in suchawaythat itsbridgesthe gap betweenthePre-universityand Post-graduate levelsof physics, by providing a complete and more logical frame work of basic physics. The systematic and planned curriculumfromfirstandsecondsemestershallmotivateandencouragethestudentsforpursuinghigherstudies in physics, engage in research activities and become self-reliant.

CourseOutcomes: Bytheendofthethirdandfourthsemester,thestudentswouldhaveintroducedtopowerful tools for tracking a wide range of topics in **Wave Motion and Optics** and **Thermal Physics & Electronics.** Further developed their experimental skills through a series of experimental skills through a series of experimental which illustrates major themes of lecture courses.

B.Sc inPhysicsVSemester

ProgramName	BScinPhysics	**Semester**	V
CourseTitle	**Classical Mechanics and QuantumMechanics-I(Theory)**		
CourseCode	**PHYC9-T**	**No. o** Credits of Cre s	**04**
ContactHours	**60Hours**	**Duration of SEA/Exam**	**02Hours**
Formative Assessment Marks	**40**	Summative **Assessment Marks**	**60**

CoursePre-requisite(s):

CourseOutcomes(C0s):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto

- Identifythefailureofclassicalphysicsatthemicroscopiclevel.
- Findtherelationshipbetweenthenormalizationofawavefunctionandtheabilitytocorrectly calculate expectationvaluesor probabilitydensities.
- Explaintheminimumuncertaintyofmeasuringbothobservablesonanyquantumstate.
- Describethetime-dependentandtime-independentSchrodingerequationforsimplepotentialslikefor instance one-dimensionalpotential well andHannonic oscillator.
- Apply Hermitianoperators, theirEigenvaluesand Eigenvectorsto findd variouscommutationanduncertaintyrelations.

ProgramName	BScinPhysics	**Semester**	**v**
CourseTitle	**ElementsofAtomic ,Molecular&LaserPhysics(Theory)**		
CourseCode	**PHYCll-T**	**No.ofCredits**	**04**
ContactHou1·s	**60Hours**	**Duration ol SEA/Exam**	**02Hours**
FormativeAssessmentMarks 140		**SummativeAssessmentMarks**	**60**

CoursePre-requisite(s):PUC ScienceKnowledge

CourseOutcomes(COs):Afterthe completion of the course,the student will be able to

- Describeatomicproperties using basic atomicmodels .
- Interpretatomicspectra of elementsusingvectoratom model.
- Interpretmolecularspectraofcompoundsusing basicsof rnolecular physics.
- Explainlasersvstemsandtheirapplicationsin varousfields..

B. Sc in Physics VI Semester

ProgramName	**BScinPhysics**	**Semester**	**VI**
CourseTitle	**ElementsofCondensedMatter&NuclearPhysics(Theory)**		
CourseCode	**PHYC14 -T**	**No. of Credits**	**4**
ContactHours	**60Hours**	**Duration of**	**2Hours**
FormativeAssessmentMark	**40**	**SummativeAssessmentMark**	**60**

CoursePre-requisite(s):

CourseOutcomes(COs):Afterthesuccessfulcompletion ofthecourse,thestudent willbeableto:

- Explainthebasicpropertiesofnucleusandgettheideaofitsinnerinformation.
- Understandtheconceptsofbindingenergyandbindingenergyper nucleon/smassnumbergraph.
- Describetheprocessesofalpha,betaandgammadecaysbasedonwell-establishedtheories.
- Explainthebasicaspectsofinteractionofgammaradiationwithmatterbyphotoelectriceffect, Comptonscatteringandpairproduction.
- Explain the different nuclear radiation detectors such as ionization chamber, Geiger-Mueller counteretc.
- Explainthebasicconceptofscintillationdetecton,photo-multipliertubeandserniconductordetectors.

Progra mName	BScinPhysics	**Semester**	**VI**
CourseTitle	**ElectroniclnstrumentationSensors(Theory)**		
CourseCode:	**PHYC16-T**	**No.ofCredits**	**04**
ContactHours	**60Hours**	**DurationofSEA/Exam**	**2Hours**
Formative Marks	**Assessment** 1 40	**SummativeAssessmentMarks**	**60**

CoursePre-requisite(s):

CourseOutcomes(COs):After thesuccessfulcompletionofthecourse,thestudentwillbeableto:

- Identifydifferenttypesoftestsandmeasuringinstrumentsusedinpracticeandunderstandtheirbasicworkingp inciples.
- Get hands traininginwiringacircuit, soldeing, makingameasurementusinganelectroniccircuituseininstrumentation
- Haveanunderstandingofthebasicelectroniccornponentsviz ., resistors,capacitors,inductors,discreteandintegratedcircuits,co1ourcodes,valuesandpindiagram,their practicaluse.
- Understandingofthemeasurementofvoltage , current, resistancevalue, i d e n t i f i c a t i o n of the terminalsofatransistorandICs.
- Identifyandunderstandthedifferenttypesoftransducersandsensorsusedinrobustandhand-heldinstruments.
- Understandand giveamathematicaltreatment oftheworkingofrectifiers ,filter,dataconvertersanddifferenttypesoftransducers.
- Connecttheconceptslearntinthecoursetotheirpracticaluse indailylife.
- Developbasichands Onskillsin theusage ofoscilloscopes, multimeters, rectifiers, amplifiers, oscillatorsandhighvoltageprobes,generatorsand digitalrneters.
- Servicingofsimplefaultsofdomesticappliances: Ironbox, itmnersion heater, fan, hotplate,batterycharger,emergencylampandthelike.

BachelorofScience(Basic/Hons.)DegreeinSericulture

Choice Based Credit System(CBCS)With Multiple EntriesAndExitOptions under New Education Policy (NEP) – 2020

(2021-22BatchOnwards)

Details ofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	DisciplineCore/ Paper (L+T+ P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1: Fundamentals of Sericulture(4+0+0)	4	4	40	60
	DSCP-1: Fundamentals of Sericulture(0+0+2)	4	2	25	25
	OE-1:Scienceof Sericulture(3+0+0)	3	3	40	60
II	DSC-2: Mulberry BiologyandCultivation (4+0+0)	4	4	40	60
	DSCP-2: Mulberry BiologyandCultivation (0+0+2)	4	2	25	25
	OE-2: Mulberry CropProduction Technology(3+0+0)	3	3	40	60

ProgramOutcomes: Bytheendoftheprogramthestudentswillbeable to:

- AcquirecompetencyinthedisciplinewithsoundknowledgeandskilltosecureB.Sc. (Basic) or B.Sc. (Hons) degree in Sericulture.
- Knowthedifferentcomponentsandchainlinkofsericultureindustry.
- Understand concepts of sericulture industry and demonstrate interdisciplinary skills acquired in mulberry plant cultivation, silkworm rearing, diagnosis of diseases and pest of mulberry and silkworm and their prevention and its relevance in Seri-farmer's livelihood.
- Demonstrating the Laboratory and field skills in mulberry cultivation andsilk worm rearing with an emphasis on technological aspects.
- Competenttotransfer theknowledgeandtechnicalskillstotheSeri-farmers.
- Criticallyanalyzetheenvironmentalissuesandapplyinmanagementofmulberrygarden and silkworm rearing at field.

- Demonstratecomprehensiveinnovationsandskillsinimprovementofmulberry and silkworm varieties for betterment ofsericulture industryand human welfare.
- Applyknowledge and skills ofseri biotechnologyfor development new mulberryvariety and silkworm breeds suitable for varied agro-climatic zones.
- Apply tools andtechniquesof biostaticsforcritical analysisandinterpretation ofdata accrueded.
- Usebioinformaticstoolsandtechniquesfortheanalysisandinterpretationof biomolecular data for better understating mulberry and silk worm.
- Aptlydemonstratecommunicationskills,scientificwriting,datacollectionandinterpretation abilities in all the fields of seri biotechnology.
- Thoroughknowledgeandapplicationofgoodlaboratoryandgoodmanufacturing practices in sericulture and biotech industries.
- Demonstrateentrepreneurshipabilities,innovativethinking,planning,andsettingup small-scale enterprises.

ISEMESTER

Courseoutcome: Attheendofthecoursethestudentshouldbeableto:

- Acquiresoundknowledgeondifferentcomponentsofsericultureindustry,
- Gainskillwithhandsontraining onmulberrycultivationand carryforwardtofield,
- Gainskillwithhandsontrainingonsilkwormeggproductionandsupportgrain age activity,
- Acquireknowledgeanddevelopskillinsilkwormrearingandsupportsilkworm farming.
- Withtheknowledgeandskillacquiredstudentsmaynotonlyactsasresource personnel to sericulture industry but also emerged as potential entrepreneur.

IISEMESTER

Courseoutcome: Attheendofthecoursethestudentshouldbeableto:

- Programoutcomesthat thecourseaddresses: Studentswould know allaboutmulberry plant and cultivars in the field.
- Theywould gainknowledge and acquire skill incultivation ofmulberryplantsin the garden.
-

OpenElectiveCourse (OE):

OE-2:MULBERRYCROPPRODUCTIONTECHNOLOGY (THEORY):

3 Credits **42Hrs.**

Course Outcome:

1) They gain the knowledge of disease incidences in mulberry to manage and avoid crop loss.

2) They also gain the knowledge of diseases of silkworm and to manage it.

3) They acquaint with the integrated management of pests and diseases through different methods to prevent crop loss (mulberry leaves and silkworm cocoons production).

SEMESTER3

SilkwormBiologyandRearingTechnology

Course Outcome:

1) Students will gain the traditional and scientific approach of mulberry cultivation and production and silkworm rearing and production,
2) Make them industry ready by hands on training in practical classes and field exposure.
3) Acquires knowledge of improved technologies used and adopted in mulberry cultivation and silkworm rearing.

Semester 4

MulberryandSilkwormCropProtection

Course Outcome:

1) They gain the knowledge of disease incidences in mulberry to manage and avoid crop loss.
2) They also gain the knowledge of diseases of silkworm and to manage it.
3) They acquaint with the integrated management of pests and diseases through different methods to prevent crop loss (mulberry leaves and silkworm cocoons production).

Semester 5

Mulberrycytogenetics, breedingandphysiology

Silkworm genetics, breeding and physiology

Course Outcome:

1) Gain the knowledge on the importance of plant and animal species preservation and utilization in general and mulberry and silkworm in particular.
2) They acquaint with the concept of evolution of new mulberry varieties and silkworm races for increased productivity.
3) They familiarize with the disease-free silkworm egg production practically, as it is the back bone of sericulture industry.

Semester 6

Silkworm seed technology and vanyasericulture

Silktechnology, extension and economics

Course Outcome:

1) The non-sericulture students will get the in-depth knowledge of silk reeling technology.
2) Understand the pros and cons of the production of quality and quantity of silk thread and its importance in the Indian tradition and culture.
3)Students will gain the knowledge of the byproducts of sericulture industry in each and every component and their utilization for the betterment of the society. Also gain the knowledge of alternate resources available for the development of the industry.

BachelorofScience(Basic/Hons.)DegreeinStatisticsChoiceBasedCredit System (CBCS) With Multiple EntriesandExitOptionsunderNew Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:DescriptiveStatistics (4+0+0)	4	4	40	60
	DSCP-1: DescriptiveStatistics (0+0+2)	4	2	25	25
	OE-1:Statistical Methodsits applications(3+0+0)	3	3	40	60
	OE-2:Business Statistics(3+0+0)	3	3	40	60
II	DSC-2:Probability andDistributions-I (4+0+0)	4	4	40	60
	DSCP-2:Probability andDistributions-I (0+0+2)	4	2	25	25
	OE-3:Applied Statistics(3+0+0)	3	3	40	60
	OE-4:Bio-Statistics(3+0+0)	3	3	40	60

Programmeobjectives:

- Graduateswilldemonstratecompetence inrespectivedomainastheyapply skills to conduct scientific research and contribute to quality education.
- Graduateswillberecognizedasexpertsin educational andresearchinstitutesas well as industries inidentifying and so lving global challenges.
- Graduates will become leading researchers and professors who create and disseminate new knowledgei n scientific and allied fields.

Programmeoutcome: ThestudentgraduatingwiththeStatisticsshouldbeableto

- **DisciplineKnowledge: Use**knowledgeofscienceand applytorelevantareas.
- **Problemanalysis:** Identify,formulate and analyzecomplex scientific problems using first principles of respective discipline.

- **Problem solving**: Execute a solution process using first principles of science tosolve problems related to respective discipline.
- **Conduct investigations**: Conduct investigations of issues using research methods and research-based discipline knowledge including design of experiments, data collection, interpretation and analysis to arrive atvalid conclusions.
- **Modern tool usage:** Identify, select and usemodern scientific, Software/programming languages tool or technique for modeling, prediction, data analysis and solving problems in the areas of their discipline
- **Environment and Society:** Evaluate the impact of scientific solutions on society and environment and designs ustainable solutions.
- **Ethics:** Demonstrate professional ethics, responsibilities and normsin respective profession.
- **Individual and teamwork:** Work effectively as an individual as a team member and as a leader in a multi disciplinary team.
- **Communication:** Communicateeffectivelywiththestakeholderswithemphasison communicating with scientific community, comprehend scientific reports, write researchpapersandprojectsproposalsandreports,delivereffectivepresentations, and give and receive clear instructions.
- **Project Management and Finance:** Apply the knowledge of scientific and technologicalprinciplestoone'sownworkto manageprojectsinmultidisciplinary settings.
- **LifelongLearning:**Identifyknowledgegapsandengageinlifelonglearninginthe context of changing trend sin respective discipline.

CourseOutcomes:Attheendofthesemesterscoursesthestudentshouldbeableto:

- Acquire knowledge of introductory statistics, its scopeand importance invarious are as such as Medical, Engineering, Agricultural and Social Sciences etc.
- Learn various types of data, their organization and descriptive statistics such as presentation sin tabular form graphs and summary measures such as measures of centraltendency and dispersion etc.
- Learn cor relation, curve fitting, regression analysis, regression diagnostics, partial and multiple cor relations.
- Learndifferentoftypesofdatareflectingindependenceandassociationbetweentwo or more attributes.
- Conceptualize the probabilities of events including frequent is tandaxio maticapproach. Simultaneously, they will learn the notion ofconditional probability including the concept of Bayes' The orem and able solve problems on the setopics.
- Learn concept of discrete and continuous random variables and their probability distribution sincluding expectation and moments.
- LearnStandardunivariatediscreteandcontinuousdistributionsandtheirapplications disciplines of science. .
- Learnbasics of R-programming and able to writeand execute R codes indescriptive statistics, probabilitymodels and fitting ofsuitable distributions to the givendataset,

Applicationsofnormaland otherstandard distributions.

OpenElectiveCourse(OE):

OE-1:STATISTICALMETHODSIT'SAPPLICATIONS (THEORY):3Credits42Hrs.

Course Objectives:

- Thisisanopenelectivecourse forotherthanstatisticsstudents.
- Thestudentswilllearn theelements of descriptivestatistics,probability, statistical methods such as tests of hypotheses, correlation and regression.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- Acquireknowledgeofstatisticalmethods.
- Identifytypesofdata andvisualization,analysisand interpretation.
- Learnelementaryprobabilityandprobabilitymodels.
- Learntoapplytestproceduresforgivendata set.

OE-2:BUSINESSSTATISTICS(THEORY): 3 Credits 42Hrs.

Course Objectives:

- Provideanintroductionto basicsofstatisticswith inafinancialcontext.
- To enable students to use statistical techniques for analysis and interpretation of business data.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- Frameandformulatemanagement decisionproblems.
- Understandthebasicconceptsunderlyingquantitativeanalysis.
- Usesound judgment intheapplicationsofquantitativemethodsto management decisions.

OpenElectiveCourse(OE):

OE-3:APPLIEDSTATISTICS (THEORY):3Credits42 Hrs.

Course Objectives:

- To enable the students to use statistical tools infinance, industries, population studies and health sciences.
- Toacquireknowledgeaboutsamplingmethodsforsurveys.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- Understand the Price and Quantity Index numbers and their different measures, understand the applicability of cost-of-living Index number.
- Knowthecomponentsand Need for Time series,understand thedifferent methods of studying trend and Seasonal Index.
- Studythe concept of vitalstatistics, sourcesof data, different measures of Fertility andMortality,UnderstandtheGrowthrates-GRRandNRRandtheir interpretations.
- KnowtheconcepttoPopulation,Sample,Samplingunit,samplingdesign,sampling frame, sampling scheme, need for sampling, applythe different sampling methods for designing and selecting a sample froma population, explain sampling and non- sampling errors.
- Describethephilosophyofstatisticalqualitycontroltoolsaswellastheirusefulness inindustry and hence develop quality control tools in agiven situation.

OE-4:BIO-STATISTICS(THEORY): 3 Credits 42Hrs.

Course Objectives:

- To enablethe studentsto identifythe variables ofbiologicalstudiesand explorethe tools of classification and presentation.
- Tostudy theprobabilitynotion,modelsandtheirapplicationsin thestudy of biological phenomenon.
- Toacquireknowledgeonsamplingdistributionandtestingofhypotheses.

CourseOutcome: Oncompletionofthiscourse,thestudentswillbeableto;

- Afterstudyingthecourse,thestudentwillbeabletoapplystatisticaltoo lsandtechniques in data analysis of biological sciences.

Statistics(Core courses)
Semesters-IIIandIV

Semester	DSC	CoreCourses	Credits
III	A3/B3	Probabilitydistributions-II	4
		PracticalsbasedonDSCA3/B3	2
IV	A4/B4	StatisticalInference-I	4
		PracticalsbasedonDSCA4/B4	2

OpenElectivesforIIIandIVSemesters

Sl.NO.	Titles of**OpenElectives**
OE-5	IntroductiontoStatisticswith R
OE-6	ElementsofStatisticalDataAnalysis
OE-7	PopulationStudies

Semesters-III andIV

Semester	DSC	CoreCourses	Credits
III	A3/B3	Probabilitydistributions-II	4
		PracticalsbasedonDSCA3/B3	2
IV	A4/B4	StatisticalInference-I	4
		PracticalsbasedonDSCA4/B4	2

OpenElectivesforIIIandIVSemesters

Sl.NO.	Titles of**OpenElectives**
OE-5	IntroductiontoStatisticswith R
OE-6	ElementsofStatisticalDataAnalysis
OE-7	PopulationStudies

SyllabusforIIIandIVSemestersB.Sc.withStatisticsasMajor/Minor B.Sc. III Semester

CourseTitle:**ProbabilityDistributions-II**	
TotalContactHours: 56	CourseCredit:04
FormativeAssessmentMarks:40	DurationofESA:2hours
ModelSyllabusAuthors:StatisticsBOSMembers ,YCM	SummativeAssessmentMarks: 60

Number of TheoryCredits	**Numberof lecture hours/semester**	**Number of practicalCredits**	**Numberof practical hours/semester**
04	56	02	52

CourseObjectives:

1) Tointroducetheconceptandvariouspropertiesofjointdistributionofbivariaterandom vector, marginal distribution, conditional expectations and correlation coefficient.
2) Tointroducethe varioustechniquesoffunctionsofrandomvectorandtheirdistributions
3) TointroduceWeaklawoflargenumbers(WLLN) andCentrallimittheorem(CLT)
4) Tomakestudentsexercise thefundamentalsofsimulationtechniquesinRenvironment.

CourseOutcomes: At theend ofthiscoursestudentsareableto:

1) Understandtheconceptofjointdistributionofbivariaterandomvector,abletofindmarginal, conditional expectations and correlation coefficient.
2) Understandindetailfunctionsofrandomvectorandtheirdistributions
3) Abletofindapproximatedistributionofstatisticwhenissamplesizeislarge
4) GenerateramdomvariablesfromvariousdistributionsusingR-code.

B.Sc.IVSemester

CourseTitle: A4/B4-**StatisticalInference-I**	
TotalContactHours:56	CourseCredit:04
FormativeAssessmentMarks:40	DurationofESA:02hours
Model Syllabus Authors: Statistics BOS Members,YCM	SummativeAssessmentMarks:60

Number of TheoryCredits	**Number of lecture hours/semester**	**Number of practicalCredits**	**Number of practical hours/semester**
04	56	02	52

Course Objectives:

1) Tointroducetheestimationtechniquesand itstheoreticalproperties
2) Tointroducebasicelementoftestingofstatisticalhypotheses.
3) Tointroducehowtoconstructconfidenceintervalsandtestsofhypotheses.

CourseOutcomes:Attheend ofthiscoursestudentsareableto:

1. Obtainestimatorsandexaminethe properties ofgoodestimators
2. Constructgoodtestproceduresandfind sizeoferrorsand poweroftests.
3. EmploysuitabletestprocedureandconstructConfidenceintervalforsmallaswellaslarge sample sizes, respectively for a given data set.

Pedagogy:

1. The course is taught using traditional chalk and talk method using problem solving throughexamples and exercises.
2. Studentsareencouragedto useresourcesavailableonopensources.

BachelorofScience(Basic/Hons.),BachelorofArts(Basic/Hons.)etc.withStatisticsasMajor with practicalsand any subject as Major/Minor

SummaryofDisciplineSpecificCourses(DSC)			
Semester	**CourseCode**	**Titleofthe Paper**	**Credits**
		PracticalsbasedonDSCA2	2
III	DSCA3	CalculusandProbabilityDistributions	4
		PracticalsbasedonDSCA3	2
IV	DSCA4	StatisticalInference-I	4
		PracticalsbasedonDSCA4	2

CourseTitle:**CalculusandProbability Distributions**	
TotalContactHours:56	CourseCredits:04
FormativeAssessmentMarks:40	DurationofESA/Exam:2 hours
Model Syllabus Authors: State level NEP-model curriculum setting committee members-Statistics	SummativeAssessment Marks: 60

NumberofTheory Credits	**Number oflecture hours/semester**	**Number of practicalCredits**	**Number of practical hours/semester**
4	**56**	**2**	**52**

Course Objectives

Toenablethestudentsto

1. Knowtheconceptofcontinuity,differentiability,integrationofoneandmorevariables.
2. Define and describe properties of Joint, Marginal and conditional distributions of variablesand some key concepts of probability theory.
3. Understanddifferentdiscrete,continuousandsamplingdistributions,propertiesandtheir applications.
4. GeneraterandomvariablesfromvariousdistributionsusingR-code.

Course outcomes

Aftercompletionofthiscoursethestudentswillbeableto

1. Judgecontinuityofafunction,findintegrationsandsolveproblemsofdifferentiability.
2. Solveproblemsofvariousanalyticalenvironmentsusingdifferentdistributionsandtheir properties.
3. Findsamplingdistributionsoffunctionsofrandomvariablesandexploretheirapplications.

B.Sc.IVSemester

CourseTitle: A4/B4-**StatisticalInference-I**	
TotalContactHours:56	CourseCredit:04
FormativeAssessmentMarks:40	DurationofESA:02hours
ModelSyllabusAuthors:Statistics BOSMembers,YCM	Summative Assessment Marks:60

Number of TheoryCredits	**Numberoflecture hours/semester**	**Number of practicalCredits**	**Number of practical hours/semester**

4	**56**	**2**	**52**

FormativeAssessment:Total40marks	
AssessmentOccasion/type	**WeightageinMarks**
InternalTest1	15
InternalTest2	15
Assignment/Seminar (7 marks) +Attendance(3marks)	10
Total	40

Course Objectives:

1) Tointroducethe estimationtechniquesand itstheoreticalproperties
2) Tointroducebasicelementoftestingofstatisticalhypotheses.
3) Tointroducehowtoconstructconfidenceintervalsandtestsofhypotheses.

CourseOutcomes:Attheend ofthiscoursestudentsareableto:

1. Obtainestimatorsandexaminetheproperties ofgoodestimators
2. Constructgoodtestproceduresandfind sizeoferrorsandpoweroftests.
3. EmploysuitabletestprocedureandconstructConfidenceintervalforsmallaswellaslargesample sizes, respectively for a given data set.

Pedagogy:

1. Thecourseistaughtusingtraditionalchalkandtalkmethodusingproblemsolvingthrough examples and exercises.
2. Studentsareencouragedtouseresourcesavailableonopensources.

CourseTitle: **A4/B4 StatisticalInference-IPractical3/Lab3**	
TotalContactHours: 52	CourseCredit:02
FormativeAssessmentMarks:25	DurationofESA:2hours
ModelSyllabusAuthors:StatisticsBoSMembers ,UoM	SummativeAssessmentMarks: **25(20+5(Practicalrecord)**

OPENELECTIVEPAPERS(OE)

OE-5.IntroductiontoStatisticswith R

Time:3hrs/week **Max.Marks:40+60**

CourseObjectives

Co-1:This soft core course is intended to introduce basic of Statistics withR language to students whodo not study Statistics as part of their program.

Co-2:IntroduceRcodestoanalysedatausingstandardstatisticalmethods.

CourseOutcomes(COs)

Uponthe completionofthiscourse studentsshouldbeableto:

CO1. Install Code and Use R Programming Language in R Studio IDE to perform basic taskson Vectors, Matrices and Data frames.

CO2.Describekeyterminologies,conceptsandtechniquesemployedinStatisticalAnalysis.

OE-6:ElementsofStatisticalDataAnalysis(OE) Time: 3hrs /week Max.Marks:40+60

Course Objectives

1.To enablethestudentstouseMSExcel/Rsoftwareforcleaningandpresentingthe data.
2.Toenablethestudentstoconstructdiagramsandgraphsusing MSExcel/Rsoftware.
3.To enable the students to analyze univariate, bivariate and multivariate data using MS Excel/ R software .

CourseOutcomes(CO)

Upon successful completion of this course the student will be able to
CO1.UseMSExcel/Rsoftwareforcleaningandpresentationofdata.
CO2. Present the data in the form of diagrams and graphs.
CO3.Analyzeunivariate,bivariateandmultivariatedata.

Population Studies

1.This soft core course is intended to introduce to students who do not study Statistics as part oftheir program.
2.Toenablethestudentstoidentifyappropriatesourcesofdata,performbasicdemographicanalysis using various techniques and ensure their comparability across populations.
3.To acquire knowledge about the construction of life table and its applications in demographicanalysis.

CourseOutcomes(CO)

Uponsuccessfulcompletionofthiscoursethestudentwillbeableto
CO1. StudytheconceptsofVitalStatistics, sourcesofdata,different measuresofFertility, Mortality and migration.
CO2.UnderstandtheGrowthrates- GRRandNRRandtheirinterpretations.

B.Sc.Semester– VDisciplineSpecificCourse(DSC)-10

CourseTitle:Matrixalgebraan RegressionanalysisCourseCode:

Typeof Course	Theory/ Practical	Credits	Instruction hourperweek	TotalNo.ofLectures/Ho	DurationofExam	FormativeAssessmentMarks	SummativeassessmentMarks	Total Marks
DSC-10	PracticalI	02	04	56hr·s.	3hrs.	25	25	so

CourseOutcomes(COs): Attheendofthecourse,studentswillbeableto:
CO1:Computationofrank,inverse,andEigenvaluesofhigherordermatrix
CO 2:
ExpressLinearRegressionmodelsinMatrixformandmodelevaluationwithsoftware
CO3:Identifysituationwherelinearregressionisappropriate.

CO4:Buildandfitlineai·regressionmodels withsoftware.
CO5:Interpretestimatesanddiagnosticstatistics.
CO6:Produceexplorato1ygraphs.

B.Sc.Semester-VDisciplineSpecificCourse(DSC)-11

CourseTitle: AnalysisofVarianceandDesignofexperimentsCourseCode:

Typeof Course	Theory*I* Practical	Credits	Instmction hourperweek	TotalNo.ofLectures/	DurationofExam	Formative AssessmentMarks	Summative assessment Marks
DSCC-11	Theory	04	04	56hrs	2hrs.	40	60

CourseOutcomes(COs): Attheendofthecourse,studentswillbeableto:

CO1: CanlearnExploratoryDataAnalysis(EDA)basicsforANOVAappropriatedata.

CO2: Learnfixedand randomeffectmodelsandone-wayandtwo-wayclassifieddata

CO3: Understanddifferentdesigns(CRD,RBD,and

LSD)andmissingplotteclmiques.

CO4: Understandthedifferentfactorialexperiments.

CO5: Developcompleteandpartialconfoundingforfactorialexperiments.

B.Sc.Semester-VDisciplineSpecificCou1se(DSC)-12

CourseTitle:AnalysisofVarianceandDesignofexperimentsCourseCode:

TypeofCourse	Theory/ Practical	Credits	Instructionhourperweek	TotalNo.of Lectures/Hours	Durationof Exam	FomativeAssessmentMarks	SummativeassessmentMarks

DSCC-12	Practical 1	02	04	56hrs.	3hrs.	25	25

CourseOutcomes(COs): Attheendofthecourse,studentswillbeableto:

COl:	LearnPerformbasiccomputations ofANOVAwithR-programmingand interprettheresults.
C02:	CanyouttheTukeypail.wisemeancomparisonmethodandLearnaboutotherpail.wise meancompruisonmethodswith R-programming.
C03:	Constructandevaluateappropriatestatisticalmodel(CRD,RBD,LSD,etc.) inordertoanswerimpmtantscientificorbusiness-relatedquestionswithRprogramming.
C04:	Sketchandinterpretbargraphsandlinegraphsshowing theresultsofstudieswithsimplefactorialdesignswithStatisticalsoftware's.
COS:	Performanalysistodistinguishbetweenmaineffectsandsimple effectswithStatisticalsoftware'sandrecognizewhenanrurnlvsisofsimpleeffectsis required.
C06	AnalysesConfounding,Partial and TotalconfoundinginfactorialexperimentwithStatisticalsoftware's.

B.Sc.Semester–V
SkillEnhancementCourse:SEC-4(EmployabilitySkills)ProgramName:B.Sc. inSTATISTICS
Semester:V

CourseTitle:EmployabilitySkills

TypeofComse	Theory/ Practical	Credits	Instructionhour/	TotalNo.of Lectures/Ho	IDmationoExan1	Formative Assessmt	Summativeasses	Total Marks
SEC-4	Theory	2	2 hours	28hrs.	2hrs.	40	60	100

CourseOutcomes(COs):Thiscourseaugmentsthecoursesstudiedbythestudentinprevesteriousse mand is intendedto refreshthemethodslearnthroughR/Pythontoenablethestudenttopracticallyanalysedata.Stressisa pplyingmethodslearninearliersemestersandnoton repetitionoftheo1yaspects.Teacherhasthediscretiontochoosedistributions*I*modelsfromoutofthe prescribedcontentsofthesyllabusdependingontimeavailable.Aftersuccessfulcompletionofthec ourse,studentshouldbeableto:

COl:Usesamplingmethodstodrawsamples.
C02:Generaterandomobse1vationsfromstandarddiscreteandcontinuousdistiibutions.
C03:Detenninesamplesizeasafunctionof alpha,betaandconfidencecoefficient
C04:Fitstandarddistiibutionstodataandtestforgoodness-of-fit
COS:Fitsimplelinearregressionandmultiplelinear regressionmodelstodata
C06:Canyouttestofsignificance
C07:Learncodewritingin*RI*Python

B.Sc.Semester-V
EmployabilitySkills

TypeofCourse	Theory/ Practical	Credits	Instluctionhourperweek	TotalNo. ofLectures /Hours/Semester	DurationofExain	FormativeAssessmentMarks	SummativeassessmentMarks
SEC-4	Practical	01	02	28hrs.	3h1s.	40	60

CourseOutcomes(COs): Attheendofthecourse,studentswillbeableto:

CO1:Determineofsamplesizeasa functionofalpha,betaandconfidencecoefficient.

CO2:Generaterandomnumbers;andfitting ofstandarddiscreteandcontinuousdistributions.
CO3:Testthesignificance,confidenceintervalsformean(s),variance(s)etc.,forbothlargean dsmall samples
CO4:applysimple,multiplelinearregression,logisticregression.

B.Sc.Semester-VI

DisciplineSpecificCourse(DSC)-14

CourseTitle: StatisticalInference-II **CourseCode:**

TypeofCourse	Theory/ Practical	Credits	lnstructionhours perweek	TotalNo.ofLectures/Hour	DurationofExam	FormativeAssessmentMarks	SummativeassessmentMarks
DSC-14	Theory	04	04	56hrs.	2hrs.	40	60

ComseOutcomes(Cos):Atthe endofthecourse,students willbeableto:

COl:	Understand expectedloss,decisionrules,decisionprinciples andBayesandminimaxdecisionrnle.
C02:	LearnaboutUMPtest,MLRpropertyandLikelihoodratiotests.
C03:	LearnaboutUMPtest,MLRpropertyandLikelihoodratiotests.
C04:	Explore aboutsequentialinference.
COS:	Learnaboutonesample andtwosamplenonparametrictests.

B.Sc.Semester–VI
CourseTitle:Statistical Inference-IICourseCode:

TypeofCourse	Theory*I* Practical	Credits	Instmction hourperweek	TotalNo.ofLech 1res/Hou	DurationofExam	Fo1mativeAssessmentMarks	SummativeassessmentMarks
DSC-15	Practical	02	04	56hrs.	3hrs.	25	25

CourseOutcomes(COs): Attheendofthecourse,studentswillbeableto:

CO1: constrnctUMPtestsforsomediscreteandcontinuousdistributions.
CO 2:constructsequentialprobabilityratiotestsforsomediscreteandcontinuousdistributions.
CO3:drawOCandASNcurves.
CO4:knowsomeimportantnon-parametrictests.

B.Sc.Semester-VI
DisciplineSpecificCourse(DSC)-16
CourseTitle:SamplingTechniquesandStatisticsforNationa lDevelopment

Typeof Course	Theory*I* Practical	Credits	Instructionh ourperweek	TotalN o.ofLect ures/Ho	Duration ofExam	Formative Assessmen tMarks	Summativeasses sessmentMarks
DSC-16	Theory	04	04	56hr s.	2hrs.	40	60

CourseOutcomes (COs):Attheendofthecourse,studentswillbeableto:

CO1:	Understandtheprinciplesunderlyingsamplingasameansofmakinginferencesabouta population.
C02:	Understandthe differencebetweenprobabilityand nonprobabilitysampling.
C03:	Understanddifferentsrunplingtechniques.
C04:	Toleruntoestimatepopulationparametersfromasrunple.
CO5:	Understandofficialstatisticalsystemin Indiaandtheirfunctions.
C06:	Understand therolestatisticsinnationaldevelopment.

B.Sc.Semester–
VIDisciplineSpecificCour se(DSC)-17
CourseTitle:SamplingMethods,OfficialStatisticsand Econometlics. CourseCode:

TypeofCo urse	Theory/ Practical	Credits	Instructionh ourperweek	TotalNo. ofLecture s/Hours	Durationof Exam	Formative Assessmen tMarks	Summativeas sessmentMa rks
DSCC-17	Practica	02	04	56hrs.	3hrs.	25	25

CourseOutcomes(COs): Attheendofthecou1se,studentswill beableto:
CO1:Toselect aSimplerandomsample withandwithoutreplacementfromafinitepopulationandestimationofthemeanandtotalandthestandar derroroftheestimator.
CO2:ToselectaStratifiedrandomsamplingandSystematic Samplingfromafinitepopulationandestimationofthemeanandtotalandthestandarde1rnroftheestimat or.
CO3:Estimationofthe propotion,totalandthestandardenors

oftheestimatorsbasedonarandomsampleunderSRSWRand SRSWOR.

CO4:ComputeandanalyzeMultiple linearregressionmodelswithR-codesby addressingtheconsequencesofMulticollinea1ityand Diagnostics ofMulticollinea1ity.
CO5:ComputeandanalyzeMultiple linearregressionmodelswithR-codesbyaddressingtheconsequencesofautoconelationandheteroscedasticity.

B.Sc.Semester–VI

Semester:VICourseTitle:Intemship*/*ProjectWork
CourseCode: No.ofcredits:2
Contacthours:30duration ofSEA/Exam:2hours

TypeofCourse	Theory/ Practical	Credits	Instrnctionhorus·/week	TotalNo.of ContactHours/ Semester	Durationof Exam	FonuativeAssessmentMarks	SummativeassessmentMarks
INTERNSHIP	Practical	02	03	30hrs.	3lu-s.	40	60

CourseOutcomes(COs): Attheendofthecoursestudentswillbeableto:

CO1:Accountableforindividualandteamresponsibilitiesanddeliverable.
CO 2:Exercisetheabilitytocompromiseandproblemsolvewithinvolvedparties.
CO3:Applycomputingtheory,languages,andalgorithms,aswellasmathematicalandstatisticalmodels,andtheprinciplesofoptimizationtoappropriatelyformulateandusedataanalyses
CO4:Formulateanduseappropriatemodelsofdataanalysistollstosolvehiddensolutionstobusiness-relatedchallenges
CO5:Interpretdatafindingseffectivelytoanyaudience,orally,visually, andinwrittenformats.

BachelorofScience(Basic/Hons.)DegreeinZoologyChoiceBasedCredit System(CBCS)With Multiple EntriesAndExitOptionsunderNew Education Policy (NEP) – 2020

(2021-22 Batch Onwards)DetailsofCourseofStudy:I,II,III,IV,V andVI Semesters

Sem.	DisciplineCore/ Open Elective Paper(L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	DSC-1:Cytology,Genetics &InfectiousDiseases (4+0+0)	**4**	**4**	**40**	**60**
	DSCP-1:Cytology,Genetics& InfectiousDiseases(0+0+2)	**4**	**2**	**25**	**25**
	OE-1:EconomicZoology (3+0+0)	**3**	**3**	**40**	**60**
II	DSC-2: and Biochemistry Physiology(4+0+0)	**4**	**4**	**40**	**60**
	DSCP-2: and Biochemistry Physiology(0+0+2)	**4**	**2**	**25**	**25**
	OE-2:Parasitology(3+0+0)	**3**	**3**	**40**	**60**

ISEMESTER

Learning/Courseoutcome:

Cellbiology: Afterstudyingthisportionofsyllabusstudentsareabletolearnand understand the fundamentals of Cell biology like;

- Cell organelles, Cytoskeleton, Cellular transport, Cell-extracellular matrix interaction, Cell division, and Protein trafficking etc.,
- Students willbe able to understand the structuresand basic components ofProkaryotic and Eukaryotic cells, especially Macromolecules, Membranes, andOrganelles
- Studentswillunderstand howthesecellularcomponentsareusedto generateandutilize energy in cells
- Beabletoknowthebasicelementsofintercellularsignaltransductionpathways, including nuclear receptors and cell surface receptors.
- Todemonstratetheknowledgeofcommonandadvancedlaboratorypracticesincelland molecular biology.
- Cellshouse thebiologicalmachinery thatmakesthe proteins,chemicals,andsignals responsible for everything that happens inside our bodies.
- The learner willunderstandtheimportanceofcellasastructural/functionalunitoflife.
- Thedynamismofbiomembranesindicatesthedynamismoflife.Itsworkingmechanism and precision are responsible for our performance in life.
- To acquireknowledgeofprinciplesandworking mechanismsofsimpleand compound Microscopes.
- Beableto understandthemechanismofMitosisandMeiosis.
- To gain knowledge about slide preparation to observe Giant chromosome, Epithelial, Nerve cell, Muscle cells and Blood cells.

OpenElectiveCourse (OE):

OE-1:ECONOMICZOOLOGY(THEORY): 2 Credits 42Hrs.

Courseoutcome: Attheendofthecoursethestudentwill beableto:

- Gain knowledge to define the concepts of the applied subjects like Fisheries, Aquaculture,Sericulture,Apiculture,Vermiculture,Lacculture,Dairy,Poultryetc.,
- GainknowledgeaboutSilkwormsrearingandtheirproducts.
- GainknowledgeinBeekeepingequipment andApiarymanagement.
- Acquaint knowledgeondairyanimal management, the breeds and diseases ofcattleand learn the testing of egg and milk quality.
- Acquaintknowledgeabouttheculturetechniquesoffishand poultry.
- Thestudentwillbeabletoidentify,freshwater,marinewaterfishes.
- Tounderstandthephysiologyandreproductivemechanismsofimportantfishes.

- Attained knowledge about important cultivable fin fishes, shell fishes andimportanceof value added fishery products.
- Be able to gainknowledge to explain the toolsand techniques used inaquaculture, agriculture, apiculture and sericulture practices.
- Studentswill beabletocategorizeeconomicallyimportantfishspecies.
- Beabletodescribetheeconomicimportanceofhoneybeeandsilkworm.
- Acquaintheknowledgeabout basicprocedureandmethodologyofVermiculture.
- Learnvariousconceptsoflac cultivation.
- Studentscanstarttheirownbusinessi.e.self-employments.
- Getemployment indifferentappliedsectors.

IISEMESTER

Learning/Courseoutcome:

Biochemistry: Study of biochemistry help student to understand the chemical structure of carbohydrates, proteinsand lipidsand also mechanismoftheir metabolism. Thiscourse lays the foundation for other advanced courseslike physiology, molecular biology and immunology. The student at the completion of the course will learn;

- The importance of chemical foundation in living organisms to attain the knowledgeof macromolecule such as carbohydrates, protein and fat, their types andsignificance.
- Correlatehowthelargebiomoleculessuchasproteins,carbohydrates,lipids,nucleicacids are made from the simple precursors.
- Interpret the structure-function relationships of the proteins, carbohydrates, lipids,and nucleic acids.
- Be able to familiar withthe enzymes(biocatalysts), and their salient attributes including unique conformation and amazing catalytic properties.
- Torecognizehowthecatabolicbreakdownofthesubstancesisassociatedwithreleaseof free energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways.
- Comprehended the energysource, chemicalbonds and the principlesofthermo dynamic understood the importance of acid base balance.

Physiology: This course is designed to impart knowledge of functioning of circulatory, respiratory, digestive, muscular and excretory system. After successfully completing this programme;

- Studentswillbeabletoawarethemolecularandcellularbasisofphysiological functions in animals.
- Thecoursewillaidtounderstandthebasicsofexcretorysystemlikestructureofnephron, glomerular filtration, reabsorptionand tubular secretion, homeostatic regulationofwater and electrolyte.

- To learn and understand the fundamentals of Respiratory system & chemicalregulation of respiration.
- Be able to illustrate the physiological adaptations, development, reproduction and behaviour of different forms of life.
- Students will be able to understand about the composition of food and mechanismof digestion, absorption and assimilation.
- Todescribedthemechanismofcirculationandcompositionofblood.
- Students will acquire knowledge of neuromuscular coordination andthe mechanism ofOsmoregulation in animals and endocrine systemand their function.

Practicals: Attheendofthecoursethestudent should beabletounderstandthe:

- Basicstructureofbiomoleculesthroughmodelmaking.
- Developtheskillstoidentifydifferenttypesofbloodcells.
- Enhancebasiclaboratoryskilllikekeenobservation,analysisanddiscussion.
- Learnthefunctionalattributesofbiomolecules inanimalbody.
- Know uniqueness of enzymes in animal body and theirimportancethroughenzyme kinetics.

OpenElectiveCourse (OE):

OE-2:PARASITOLOGY(THEORY): 2 Credits 42Hrs.

Courseoutcome:

Parasitology: Parasitologyisthescientificdisciplineconcernedwiththestudyofthe biology of parasites and parasitic diseases, including the distribution, biochemistry, physiology, molecular biology, ecology, evolutionand clinical aspectsofparasites, and the host response to these agents. This course will be able to know the students to;

- Identify,describeandcontrastunicellularparasitesandparasiticworms.
- Helpstounderstandthespecifichumanandnon-humanparasiticdiseases.
- Be able to prepare and observe live parasitic specimens and test students' own seropositivity for a particular parasitic infection.
- It is estimated that at least half of all known species are parasitic, so understanding the lifecycleandinteractionoftheseorganismswiththeirhostsisoftenkeytounderstanding the dynamics of ecosystems generally.
- Byanalyzing microorganisms up close, microbiologists play a crucialrole in combating disease, creating chemical products for agriculture, and even helping to keep our planet earth healthy.

III semesters

MolecularBiology,Bioinstrumentation&Techniques inBiology

1. Learners will gain a thorough understanding of the fundamental concepts and advanced topics in molecular biology.
2.Learners will understand the principal molecular events in cells, including DNA replication, transcription, and translation, in both prokaryotic and eukaryotic systems.
3.They will explore the regulation and coordination of these processes and their implications in cellular function and gene expression.
4.Learners will acquire knowledge of key instruments and techniques used in molecular biology, such as PCR, gel electrophoresis, spectrophotometry, and microscopy.

SemesterIV

Gene Technology Immunology and Computational Biology

1.Gain knowledge of versatile tools and techniques used in genetic engineering and recombinant DNA technology.
2.Develop the ability to analyze and manipulate genetic material for research and applied purposes.
3.Demonstrate an understanding of the application of genetic engineering in basic and applied experimental biology.
4.Acquire foundational knowledge of immunological principles, including immune system components, antigen-antibody interactions, and cellular immunity.

V&VIsemester

COURSEOUTCOME:

1.UnderstandthebasicconceptsofCellbiology,Developmentalbiology,Biochemistry, Taxonomy and ecology.

2.Analysetherelationshipsamonganimals,plantsandmicrobeswhichwillenablethe students to think of applications related to the interdisciplinary fields.

3.PerformproceduresasperlaboratorystandardsintheareasofBiochemistry, Bioinformatics, Taxonomy, Economic Zoology and Ecology.

4.UnderstandtheapplicationsofbiologicalsciencesinBiotechnologyviz., Apiculture, Aquaculture, Agriculture and Medicine

BachelorofComputerApplications(BCA)(Basic/Hons.)DegreeProgramme
ChoiceBasedCreditSystem(CBCS)WithMultipleEntriesandExitOptions
UnderNewEducationPolicy(NEP) –2020
(2021-22 Batch Onwards)
DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	CA C-1: Fundamentals of Computers(3+0+0)	**3**	**3**	**40**	**60**
	CACP-1:Information Technology (0+0+2)	**4**	**2**	**25**	**25**
	CAC-2:Programmingin C (3+0+0)	**3**	**3**	**40**	**60**
	CACP-2:C Programming (0+0+2)	**4**	**2**	**25**	**25**
	CAC-3:Accountancy(3+0+0)	**3**	**3**	**40**	**60**
II	CAC-4:DataStructuresusing C(3+0+0)	**3**	**3**	**40**	**60**
	CACP-3:DataStructure (0+0+2)	**4**	**2**	**25**	**25**
	CAC-5:ObjectOriented ConceptsusingJAVA(3+0+0)	**3**	**3**	**40**	**60**
	CACP-4: JAVA(0+0+2)	**4**	**2**	**25**	**25**
	CAC-6:Discrete MathematicalStructures (3+0+0)	**3**	**3**	**40**	**60**

Objectives:

- The primary objective of this program is to provide a foundation of computing principles and business practices for effectivelyusing/managing information systems and enterprise software.
- It helps students analyze the requirements for system development and exposes students to business software and information systems.
- Thiscourseprovidesstudentswithoptionstospecializeinlegacyapplicationsoftware, system software or mobile applications.

- Toproduceoutstanding IT professionalswhocanapplythetheoreticalknowledgeinto practice in the real world and develop standalone live projects themselves.

- Toprovide opportunity forthe study of modern methods of informationprocessing and its applications.
- To develop among students, theprogramming techniquesand theproblem-solving skills through programming.
- To prepare students who wish to go on to further studies in computer scienceandrelated subjects.
- To acquaint studentsto Workeffectivelywith arangeofcurrent,standard, Office Productivity software applications.

Programmeoutcome:

The Bachelor of Computer Application (BCA (Hons)) program enables studentsto attain following additional attributes besides the afore-mentioned attributes, by the time of graduation: At the end ofthe course the student should be able to:

- **Discipline knowledge:** Acquiring knowledge on basics of ComputerScience and ability to apply to design principles in the development of solutions for problems of varying complexity.
- **Problem Solving:** Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
- **Design and Development of Solutions:** Ability to design and development of algorithmic solutionstorealworldproblemsandacquiringaminimumknowledgeon statistics and optimization problems. Establishing excellent skillsin applying various design strategies for solving complex problems.
- **Programming a computer:** Exhibiting strong skills required to programa computer for various issues and problems ofday-to-dayapplications withthorough knowledge on programming languages of various levels.
- **Application Systems Knowledge**: Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.
- **Modern Tool Usage:** Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the areaof Computer Science and making them mobile based application software.
- **Communication:** Must have a reasonably good communication knowledge bothin oral and writing.
- **Project Management:** Practicing of existing projects andbecoming independent to launch own project by identifying a gap in solutions.

- **Ethics on Profession, Environment and Society:** Exhibitingprofessional ethics to maintain the integrity in a working environment and alsohave concern on societal impacts due to computer-based solutions for problems.
- **LifelongLearning:** Should becomeanindependentlearner.So,learntolearnability.
- **Motivation to take up Higher Studies:** Inspiration to continue educations towards advanced studies on Computer Science.
- Apply standard Software Engineering practices and strategies in real -time software project development.
- Designand develop computer programs/computer -based systems in the areas related toAI, algorithms, networking, webdesign, cloudcomputing, IoT and dataanalytics.
- Acquaintwiththecontemporarytrendsinindustrial/researchsettingsandthereby innovate novel solutions to existing problems.
- Theabilityto applytheknowledgeandunderstanding notedabovetotheanalysisofa given information handling problem.
- Theabilitytoworkindependentlyonasubstantialsoftwareprojectandasaneffective team member.

I SEMESTER

CourseOutcomes:

- Introduction tocomputers,classificationofcomputers,anatomyofcomputer, constituents and architecture, micro controllers.
- Operating systems, functions of operating systems, classification of operatingsystems, kernel, shell, basics of Unix, shell programming, booting.
- Databases,whydatabasesareused,users,SQL,datatypesinSQL,introductionof queries - select, alter, update, delete, truncate, using where, and or in not in.
- Internetbasics,features, applications, services, internetserviceproviders,domainname system, browsing, email, searching.
- WebProgrammingbasics,introductionofHTMLandCSSprogramming.
- Introductionofcomputers,classificationofcomputers,anatomyofcomputer,constituents and architecture, micro controllers.
- ConfidentlyoperateDesktopComputerstocarryoutcomputationaltasks.
- UnderstandworkingofHardwareandSoftwareandtheimportanceofoperatingsystems.
- Understand programming languages, number systems, peripheral devices,networking, multimedia and internet concepts.
- Read,understandandtracetheexecutionofprogramswritteninClanguage.
- Writethe Ccodeforagivenproblem.
- PerforminputandoutputoperationsusingprogramsinC.
- Writeprogramsthat performoperationsonarrays.
- Study and understand Accounting, systems of Book, Branches of accounting advantage and limitations.
- Knowtheconceptofaccounting,financialaccounting processandJournalization.
- Maintenancedifferentaccountbookandreconciliations.
- Preparationsofdifferent bills,andtrialbalance.
- UnderstandthebasicconceptsofMathematicalreasoning,setand functions.

IISEMESTER

CourseOutcomes: Aftercompletingthiscoursesatisfactorily,astudentwillbeableto:

- Describe how arrays, records, linked structures, stacks, queues, trees, and graphsare represented in memory and used by algorithms.

- Describecommonapplicationsforarrays,records,linkedstructures,stacks,queues, trees, and graphs.
- Write programs thatuse arrays,records, linked structures,stacks,queues, trees,andgraphs.
- Demonstratedifferentmethodsfortraversingtrees.
- Compare alternative implementations of data structures with respect to performance
- Describetheconceptofrecursion,giveexamplesofitsuse.
- Discussthecomputationalefficiencyof theprincipalalgorithmsforsorting, searching, and hashing.
- Understand thefeaturesofJavaandthearchitectureofJVM.
- Write,compile,andexecuteJavaprogramsthat mayincludebasicdatatypesand control flow constructs and how type casting is done.
- Identify classes, objects, members ofa class and relationships among themneeded for a specific problem and demonstrate the concepts of polymorphism and inheritance.
- The students will be able to demonstrate programs based on interfacesand threads and explain the benefits of JAVA's Exceptional handling mechanism compared to other Programming Language.
- Write,compile,executeJavaprogramsthatincludeGUIsandeventdrivenprogramming and also programs based on files.
- Implement Object Oriented programming concept using basic syntaxes of control Structures.
- Identifyclasses,objects,membersofaclassandtherelationshipsamongthemneededfor a finding the solution to specific problem.
- Demonstrateshowtoachievereusabilityusinginheritance.
- Demonstrateunderstandinganduseofinterfaces,packages,different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
- Identify and describe common user interface components to design GUI in Java using Applet & AWT along with response to events.

CAC-6:DISCRETEMATHEMATICALSTRUCTURES (THEORY):

3 Credits **42Hrs.**

CourseOutcomes: Aftercompletingthiscoursesatisfactorily,astudentwillbeableto:

- TounderstandthebasicconceptsofMathematicalreasoning,setandfunctions.
- To understand various counting techniques and principle of inclusion and exclusions.
- Understand the concepts ofvarious types ofrelations, partial ordering and equivalence relations.
- Applytheconceptsofgeneratingfunctionstosolvetherecurrencerelations.
- Familiarizethefundamentalconceptsofgraphtheoryandshortestpathalgorithm.

III&IVsemester

Curriculum for BCA

Semester	Core Courses	Hour / Week		DS Elective Courses	Hours/ Week
		Theory	Lab		
III	Database Management Systems	3			
	C# and .NET Technologies	3			
	Computer Networks	3			
	DBMS Lab		4		
	C# and .NET Technologies Lab		4		
IV	Python Programming	3			
	Multimedia Animation	3			
	Operating System Concepts	3			
	Multimedia Animation Lab		4		
	Python Programming Lab		4		

Open Source Tools
(Skill Enhancement Course: SEC for BCA Course)

Semester: III

Course Title: **Open Source Tools**	Course Credits: 2 (1L+0T+2P)
Semester: III	Duration of SEE: 01 Hour
Total Contact Hours: 13 hours of theory and 26-28 hours of practicals	SEE: 30 Marks IA: 20 Marks

Course Outcomes (COs):

- Recognize the benefits and features of Open Source Technology and to interpret, contrast and compare open source products among themselves
- Use appropriate open source tools based on the nature of the problem
- Write code and compile different open-source software.

Model Syllabus for BCA (Basic and Honors), Semesters III and IV

Semester: III

Course Title: Database Management Systems	Course code: CAC07
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database usingDBMS.
- Demonstrate a Data model and Schemas in RDBMS.
- Identify entities and relationships and draw ER diagram for a given real-worldproblem.
- Convert an ER diagram to a database schema and deduce it to the desired normalform.
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation.
- Explain the transaction processing and concurrency control techniques.

Course Title: DBMS Lab	Course code: CAC07P
Total Contact Hours: 52	Hours/week : 04
Formative Assessment Marks: 25	Course Credits: 02
Exam Marks: 25	Duration of Exam: 03 Hours

Course Outcomes (COs):

Student would be able to create tables, execute queries

1. Execute a single line query and group functions.
2. Execute DDL Commands.
3. Execute DML Commands
4. Execute DCL and TCL Commands.
5. Implement the Nested Queries.
6. Implement Join operations in SQL
7. Create views for a particular table
8. Implement Locks for a particular table

Course Title: C# and .Net Technologies	Course code: CAC08
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Describe Object Oriented Programming concepts like Inheritance and Polymorphismin C# programming language.
- Interpret and Develop Interfaces for real-time applications.
- Build custom collections and generics in C#.

Course Title: Computer Networks	Course code: CAC09
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the transmission technique of digital data between two or more computersand a computer network that allows computers to exchange data.
- Apply the basics of data communication and various types of computer networks inreal world applications.
- Compare the different layers of protocols.
- Compare the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI.

Semester: IV

Course Title: Python Programming	Course code: CAC10
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in the handling of loops and creation of functions.
- Identify the methods to create and manipulate lists, tuples and dictionaries.
- Discover the commonly used operations involving file handling.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Develop the emerging applications of relevant fields using Python.

Course Title: Multimedia Animation	Course code: CAC11
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Write a well-designed, interactive Web site with respect to current standards and practices.
- Demonstrate in-depth knowledge of an industry-standard multimedia development tool and its associated scripting language.
- Determine the appropriate use of interactive versus standalone Web applications.

Course Title: Operating System Concepts	Course code: CAC12
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the fundamentals of the operating system.
- Comprehend multithreaded programming, process management, process synchronization, memory management and storage management.
- Compare the performance of Scheduling Algorithms
- Identify the features of I/O and File handling methods.

Program Name	BCA	Semester	V
CourseTitle	DesignandAnalysisofAlgorithm(Theory)		
CourseCode:	DSC13	No.ofCredits	04
Contacthours	52Hours	DurationofSEA/Exam	2hours
FonuativeAssessment Marks	40	SummativeAssessment Marks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1Understandthefundamentalconceptsofalgorithmsandtheircomplexity,includingtime andspacecomplexity,worst-caseandaverage-caseanalysis,andBig-0notation.BL(Ll,L2).

C02.Designalgorithmsforsolvingvarioustypesofproblems,suchasSorting,Searching,Graph traversal,Decrease-and-Conquer,Divide-and-ConquerandGreedyTechniques.BL(Ll,L2,L3,L4)

C03.Analyzeandcomparethetimeandspacecomplexityofalgorithmswith otheralgorithmictechniques.BL(Ll,L2,L3,L4)

C04.Evaluatethe performanceofSorting,Searching,Graphtraversal,Decrease-and-Conquer,Divide-and-ConquerandGreedyTechniquesusingempiricaltestingandbenchmarking,andidentifytheir limitationsandpotentialimprovements.BL(Ll,L2,L3,L4)

CO5.Applyvariousalgorithmdesigntoreal-worldproblemsandevaluatetheireffectivenessandefficiencyinsolvingthem. BL(Ll,L2,L3)

Note:BloomsLevel(BL):Ll=Remember,L2=Understand,L3=Apply,L4=Analyze,L5=Evaluate,L6=Create

ProgramName	BCA	Semester	V
CourseTitle	StatisticalComputing&RProgramming(Theory)		
CourseCode:	DSC14	No.ofCredits	04
Contact hours	52Hours	DurationofSEA/Exam	2hours
Fonnative Assessment Marks	40 I	SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionof thecourse,thestudent willbeableto:

CO1.Explorefundamentalsofstatisticalanalysisin Renvironment.

C02.Desc1ibekeytenninologies,conceptsandtechniquesemployedinStatistical Analysis.

C03.DefineCalculate,ImplementProbabilityandProbabilityDistributionstosolveawidevarietyofproblems.

C04.Conductandinterpretava1ietyofHypothesisTeststoaidDecisionMaking.

CO5.Understand,Analyse,andInterpretCorrelationProbabilityandRegressiontoanalysetheunderlyingrelationships between differentvariables.

Program Nfilue	B.C.A I	Semester	v
CourseTitle	RProgrammingLab		
CourseCode:	DSC14-Lab	No.of Credits	02
Contacthours	04Hou1-sperweek	DurationofSEA!Exfilu	2hours
Formative Assessment Marks		SummativeAssessmentMarks	25

Overview

Thefollowingprogramproblematiccomprisesof Rprogrammningbasicsandapplicationofseveral StatisticalTechniquesusingit.The moduleaimstoprovideexposureintermsofStatistical Analysis,HypothesisTesting,and RegressionandCorrelationusingRprogramminglanguage.

LearningObjectives

TheobjectiveofthisLaboratorytomakestudentsexercisethefundamentalsofstatisticalanalysisinRenviromnent. Theywouldbeabletoanalysisdataforthepurposeofexplorationusing DescriptiveandInferentialStatistics.Students willunderstandProbabilityandSamplingDistributionsandlearnthecreativeapplicationofLiner·Regressionin multivanatecontextforpredictivepurpose.

CourseOutcomes:

- InstallCodeandUseRProgrammningLanguageinRStudioIDEtoperformbasictaskson Vectors,Matricesand Dataframes.Explorefundamentalsofstatisticalanalysisin Renviromnent.
- Descrbekeyterminologies,conceptsandtechniquesemployedinStatistical Analysis.
- DefineCalculate,ImplementProbabilityandProbabilityDistributionstosolveawide Varietyofproblems.
- Conductandinterpreta VarietyofHypothesisTeststoaidDecisionMaking.
- Understfil1d,Analyse,and interpretCorrelationProbabilityandRegressiontoanalysetheunderlyingrelationshipsbetweendifferent Variables.

Program Name	B.C.A I	Semester	v
CourseTitle	SoftwareEngineering(Theory)		
CourseCode:	DSC15	No.ofCredits	04
Contacthours	52Hours	DurationofSEA/Exam	2hours
FormativeAssessment Marks I	40	SwmuativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl	Howto apply thesoftware engineering lifecycle by demonstrating competence in communication,planning,analysis,desingn,constraction, and deployment.
C02	Anabilitytoworkinoneormoresignificantapplicationdomains.
C03	Workasanindividualandaspartofamultidisciplinaryteamtodevelopanddeliverquality software. software.
C04	Demonstrateanunderstanding ofandapplycurrenttheories,models,andtechniques thatprovideabasisforthesoftwarelifecycle.
C05	Demonsti ateanabilitytousethetechniquesandtoolsnecessaryforengineeringpractice.

Program Name	B.Sc./B.C.A	Semester	v
CourseTitle	CloudComputing(Theory)		
CourseCode:	DSE-El	No.ofCredits	03
Contacthours	42Hours	DurationofSEA/Exam	2hours

FormativeAssessment Marks	40	SummativeAssessmentMarks	60

Course Outcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:	
CO1	Explainthecoreconceptsofthecloudcomputingparadigmsuchashowand whythisparadigmshiftcame about,thecharncteristics,advantagesand challengesbrought aboutbythevariousmodelsandservicesincloudcomputing.
CO2	Applythe fundamental concepts in data center to understandthe trade-offs inpower,efficiency and cost.
C03	Identify resourcemanagementfundamentalslikeresource abstraction,sharing andsandboxingandoutlinetheirroleinmanaginginfrastructureincloudco mputing.
C04	Analyze various cloudprogrammingmodelsand applythemtosolveproblems onthecloud.

ProgramName	B.Sc.	I Semester	v
CourseTitle	BusinessIntelligence(Theory)		
CourseCode:	DSE-El	No.of Credits	03
Contacthours	42Hours	DurationofSEA/Exam	2hours
FormativeAssessment Marks	I 40	SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO 1 DescribetheDecisionSupportsystemsandBusinessIntelligence framework.
C0 2 Exploreknowledgemanagement,explainitsactivities,approaches,anditsimplementation.
C0 3Describebusinessintelligence,analytics,anddecisionsupportsystems

ProgramName	BCA	Semester	v
CourseTitle	StatisticalComputing&RProgramming(Theory)		
CourseCode:	DSC14	No.ofCredit	04
Contact hours	52Hours	DurationofSEA/Ex	2hours
FormativeAssessment Marks I	40	SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionof thecourse,thestudent willbeableto:

CO1.Explorefundamentalsofstatisticalanalysisin Renvironment.

C02.Describekeyterminologies,conceptsandtechniquesemployedinStatisticalAnalysis.

C03.DefineCalculate,ImplementProbabilityandProbabilityDistributionstosolveawidevarietyof problems.

C04.ConductandinterpretavarietyofHypothesisTeststoaidDecisionMaking.

CO5.

Understand,Analyse,andInterpretCorrelationProbabilityandRegressiontoanalysetheunderlyingrela tionships b e t w e e n differentvariables.

Program Name	B.C.A I	Semester	v
CourseTitle	RProgrammingLab		
CourseCode:	DSC14	No.of	02
Contacthours	04Hou	DurationofSEA!Exf	2hours
FormativeAssessment Marks	25	SummativeAssessmentMfil-l<s	25

Overview

ThefollowingprogramproblematiccomprisesofRprogrammningbasicsandapplicationofseveralStatisticalTec hniquesusingit.The moduleaimstoprovideexposureinterusofStatistical Analysis,HypothesisTesting,RegressionandCorrelationusingRprogrmminglanguage.

LearningObjectives

TheobjectiveofthisLaboratmytomakestudentsexercisethefundamentalsofstatisticalanalysisinRenviromnent. TheywouldbeabletoanalysisdataforthepurposeofexplorationusingDescriptiveandInferentialStatistics.Studen tswillunderstandProbabilityandSamplingDistributionsandlearnthecreativeapplicationofLinear·Regressionin multivariatecontextforpredictivepurpose.

CourseOutcomes:

- InstallCodeandUseRProgrammingLanguageinRStudioIDEtoperformbasictasksonVectors,Matricesand Dataframes.Explorefundamentalsofstatisticalanalysisin Renvironment.
- Describekeyterminologies,conceptsandteclniquesemployedinStatistical Analysis.
- DefineCalculate,ImplementProbabilityandProbabilityDistributionstosolveawideVarietyofproblems.
- Conductand interpretaVarietyofHypothesisTeststoaidDecisionMaking.
- Understand,Analyse,and interpretCorrelation Probability and Regression to analyse the underlyingrelationshipsbetweendifferentVariables.

Program Name	B.C.A	Semester I	v
CourseTitle	SoftwareEngineering(Theory)		
CourseCode:	DSC15	No.ofCredits	04
Contacthours	52Hou1·s	DurationofSEA/Exam	2hour·s
FormativeAssessment Marks I	40	SwmuativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl	Howto apply the software engineering lifecycle by demonstrating competence incommunication,planning,analysis,design, construction,anddeployment.
C02	Anabilitytoworkinoneormoresignificantapplicationdomains.
C03	Workasanindividualandaspartofamultidisciplinaryteamtodevelopanddeliverquality software. software.
C04	Demonstiateanunderstanding ofand apply current theories,models,andtechniques thatprovideabasisforthesoftwarelifecycle.
C05	Demonstrateanabilitytousethetechniquesandtoolsnecessaryforengineeringpractice.

Program Name	B.Sc./B.C.A	Semester	v
CourseTitle	CloudComputing(Theory)		

CourseCode:	DSE-El	No.ofCredit	03
Contacthours	42Hours	DurationofSEA/Exam	2hours
FormativeAssessment Marks	40	SummativeAssessmentMarks	60

Course Outcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:	
CO1	Explainthecoreconceptsofthecloudcomputingparadigmsuchashowand whythisparadigmshiftcame about,thecharacteristics,advantagesand challengesbrought aboutbytheva1iousmodelsandservicesincloudcomputing.
CO2	Applythe fundamental concepts in data center to understandthe trade-offs inpower,efficiencyandcost.
C03	Identify resourcemanagement fundamentalslikeresource abstraction,sharing andsandboxingandoutlinetheirroleinmanaginginfrastructureincloudcomputing.
C04	Analyze variouscloud programming modelsand applythemtosolveproblems onthecloud.

ProgramName	B.Sc. Semester		v
CourseTitle	BusinessIntelligence(Theory)		
CourseCode:	DSE-El	No.of	03
Contacthours	42Hours	DurationofSEA/	2hours
FormativeAssessment Marks	40	SummativeAssessment Marks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto

CO1	DescribetheDecisionSupportsystemsandBusinessIntelligence framework.
C02	Exploreknowledgemanagement;explainitsactivities,approaches,anditsimplementation.
C03	Describebusinessintelligence,analytics,anddecisionsupportsystems

Program Name	**B.Sc./B.C.A**	Semester	**VI**

CourseTitle	**DigitalMarketing(Theory)**		
CourseCode:	**Voc-2**	No.ofCredits	**03**
Contacthours	**42Hours**	DurationofSEA/Exam	**2hours**
FormativeAssessment Marks		SmrunativeAssessmentMarks	**60**

CourseOutcomes(COs): Afterthesuccessful completionofthecourse,thestudentwill beableto:

1.Understandthefundamentalconceptsandprinciplesofdigitalmarketing.
2. Developpracticalskillstoimplementvariousdigitalmarketingstrategiesandtechniques.
3. Analyzeandevaluatetheeffectivenessofdigitalmarketingcampaigns.
4. Applycriticalthinkingandproblem-solving skillstoreal-worlddigitalmarketingscenarios.
5.Createcomprehensivedigitalmarketingplansandstrategies.

Note: BloomsLevel(BL): Ll=Remember, L2=Understand,Ll=Apply, L4=Analyze,LS=Evaluate,L6=Create

Program Name	B.C.A	Semester	VI
CourseTitle	ArtificialIntelligenceandApplications(Theory)		
CourseCode:	DSC16	No.ofCredits	04
Contacthours	52Houl'S	DurationofSEA/Exam	2Hours
FormativeAssessment Marks	40	SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1	Gainahistoricalperspectiveof AIand itsfoundations.
CO2	Becomefam1iliarwithbasicprinciplesandstrategiesofAItowardsproblemsolving
CO3	Understand andapplyapproaches ofinference,perception,knowledge representation,and learning.
CO4	UnderstandthevariousapplicationsofAI

Program Name	BCA	Semester	VI
CourseTitle	PHP&MySQL(Theory)		
CourseCode:	DSC17	No.ofCredit	04
Contacthours	52Homs	DurationofSEA/Exa	2hours
FormativeAssessment Marks I 40		SummativeAssessmentMarks	60

CourseOutcomes:Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1.Designdynamicandinteractivewebpagesandwebsites.

C02.RunPHPscripts ontheserverandretrieveresults.

C03.HandledatabaseslikeMySQLusingPHPinwebsites.

Note:BloomsLevel(BL):Ll=Remember,L2=Understand,L3=Apply,L4=Analyze,LS=Evaluate,L6=Create.

ProgramName	B.Sc./B.C.A	Semester	VI
CourseTitle	FundamentalsofDataScience(Theory)		
CourseCode:	DSE-E2	No.ofCredits	03
Contacthours	42Hours	DurationofSEA/Exam	2Hours
FormativeAssessment Marks I 40		SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl	Understandtheconceptsofdataandpre-processing ofdata.
C02	Knowsimplepatternrecognitionmethods
C03	UnderstandthebasicconceptsofClusteringandClassification
C04	KnowtherecenttrendsinDataScience

Program Name	B.Sc./B.C.A	Semester	VI
CourseTitle	MobileApplicationDevelopment(Theory)		

CourseCode:	DSE-E2	No. ofCredits	03
Contacthours	42Houl'S	DurationofSEA/Exam	2 hOUl'S
FormativeAssessment Marks	40	SummativeAssessmentMarks	60

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse
t h e studentwillbeableto:

CO1	CreateServletsforserver-side programming Create,testanddebugAndroid applicationby Application by settingupAndroid developmentenvironment
C02	Critiquemobileapplicationsontheirdesignprosandcons,
C03	ProgrammobileapplicationsfortheAndroidoperatingsystemandunderstandtechniquesfordesigninganddevelopingsophisticatedmobileinterfaces
C04	DeployapplicationstotheAndroidmarketplacefordistribution.

ProgramName	B.Sc./B.C.A	Semester	v
CourseTitle	WebContentManagementSystem(Theory)		
CourseCode:	Voc-1	No.ofCredit	03
Contacthours	42Hours	DurationofSEA/Exa	2hours
F01mativeAssessment Marks	40	SmnmativeAssessmentMarks	60

Cou1·seOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

COl	Understandcontentdevelopment basics.
C02	GainKnowledgeoftoolsformultimediacontentdevelopmentforaudio/video,graphics,animations,presentations,screencasting.
C03	Hostwebsitesanddevelopcontentforsocialmediaplatformssuchaswikiandblog
C04	Understande-publicationsandviltualreality
CO5	Useofe-learningplatformMoodleandCMSapplicationsDrupalandJoomla

BachelorofBusinessAdministration(BBA)(Basic/Hons.)DegreeProgramme Choice Based Credit System(CBCS) With Multiple EntriesAndExitOptions under New Education Policy (NEP) – 2020

(2021-22BatchOnwards)

DetailsofCourse ofStudy:I, II, III, IV, V and VISemesters

Sem.	DisciplineCore/ Open Elective Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	BBAC-1:Management Principles&Practice(4+0+0)	4	4	40	60
	BBAC-2: Fundamentals ofBusinessAccounting (4+0+0)	4	4	40	60
	BBAC-3:Marketing Management(4+0+0)	4	4	40	60
	OE-1:Business Organization(3+0+0)	3	3	40	60
	OE-2:OfficeOrganizationand Management(3+0+0)	3	3	40	60

II	BBAC-4:Financial AccountingandReporting (4+0+0)	**4**	**4**	**40**	**60**
	BBAC-5:Human ResourceManagement (4+0+0)	**4**	**4**	**40**	**60**
	BBA C-6A:Business EnvironmentOR BBAC-6A:Business Mathematics(4+0+0)	**4**	**4**	**40**	**60**
	OE-3: People Management(3+0+0)	**3**	**3**	**40**	**60**
	OE-4:RetailManagement (3+0+0)	**3**	**3**	**40**	**60**

Objectives:

- Todevelop the skills requiredfor the application of business concepts and techniqueslearned in the classroom at the workplace.
- Toprovidecompetentandtechnicalskillspersonneltotheindustryinthearea

of Marketing, Finance, Human Resource, Data Analytics, Retailing and Logistics and Supply Chain Management. To enhance the employability skills of the management students.

- Toenhancethecapabilityofthestudents,improvetheir decision-making skills.
- Toencourage entrepreneurship among students pursuing education in the field of Business Administration.
- To empower students for pursuing professionalcourses like MBA,Chartered Accountancy, Company Secretary, etc.,
- ToensureholisticdevelopmentofBusinessadministrationstudents.

ISEMESTER

BBAC-1:MANAGEMENTPRINCIPLES&PRACTICE(THEORY):4Credits56 Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate;

- Theability tounderstandconcepts of businessmanagement,principlesandfunction of management.
- Theabilityto explaintheprocessofplanning anddecisionmaking.
- Theabilitytocreateorganizationstructures basedonauthority,taskandresponsibilities.
- Theabilitytoexplaintheprinciplesof direction,importanceof communication, barrier of communication, motivation theories and leadership styles.
- Theabilitytounderstandthe requirementofgoodcontrolsystemandcontroltechniques.

BBAC-2:FUNDAMENTALS OFBUSINESSACCOUNTING(THEORY):

4 Credits 56Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate;

- Understandtheframeworkofaccountingaswellaccountingstandards.
- TheAbilityto passjournalentriesandprepareledgeraccounts.
- TheAbilitytopreparesubsidiariesbooks.
- TheAbilitytopreparetrialbalanceandfinalaccountsofproprietaryconcern.
- Constructfinalaccountsthroughapplicationoftally.

BBAC-3:MARKETINGMANAGEMENT(THEORY): 4 Credits 56Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate;

- Understandtheconceptsandfunctionsofmarketing.
- Analysemarketingenvironment impactingthebusiness.
- Segmentthemarketandunderstandtheconsumerbehavior.
- Describethe4p'sofmarketingandalsostrategizemarketingmix.
- Describe7p'sofservicemarketingmix.

OpenElectiveCourse (OE):

OE-1:BUSINESSORGANIZATION(THEORY): 3 Credits 45Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate:

- Anunderstandingofthenature,objectivesandsocialresponsibilitiesofbusiness.
- Anabilitytodescribethedifferentformsoforganisations.

- Anunderstandingofthebasicconceptsofmanagement.
- Anunderstandingoffunctionsofmanagement.
- Anunderstanding ofdifferenttypesofbusinesscombinations.

OE-2:OFFICEORGANIZATIONANDMANAGEMENT(THEORY):3Credits45 Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate;

- Anunderstandingofbasicknowledgeofofficeorganisationandmanagement.
- Demonstrateskillsineffectiveofficeorganization.
- Abilitytomaintainofficerecords.
- Abilitytomaintaindigitalrecord.
- Understanding of different types of organisation structures and responsibilitiesas future office managers.

IISEMESTER

BBAC-4:FINANCIALACCOUNTINGANDREPORTING(THEORY):4Credits56Hrs.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswilldemonstrate;

- Theabilitytopreparefinalaccountsofpartnershipfirms.
- The ability to understand the processofpublic issue ofshares and accounting forthe same
- Theabilitytopreparefinalaccountsofjointstockcompanies.
- The ability toprepare and evaluate vertical andhorizontal analysis of financialstatements.
- Theabilitytounderstandcompany'sannualreports.

BBAC-5:HUMANRESOURCEMANAGEMENT(THEORY): 4 Credits 56Hrs.

Course Outcomes: Onsuccessful completionofthe course, the studentswill be able to demonstrate;

- Abilityto describe the role and responsibility ofHumanresources management functions on business.
- AbilitytodescribeHRP,Recruitment andSelectionprocess.
- Abilitytodescribetoinduction,training,andcompensationaspects.
- Abilitytoexplainperformanceappraisalandits process.
- AbilitytodemonstrateEmployeeEngagementandPsychologicalContract.

BBAC-6A:BUSINESSENVIRONMENT(THEORY):4 Credits 56Hrs.

CourseOutcomes: OnsuccessfulcompletionStudent willdemonstrate;

An Understanding of components of business environment.Ability to analyse the environmental factorsinfluencing business organisation.Abilityto demonstrate Competitivestructureanalysisforselectindustry.Abilitytoexplaintheimpactoffiscalpolicy and monetary policy on business.Ability to analyse the impact of economic environmental factors on business.

BBAC-6B:BUSINESSMATHEMATICS(THEORY):4Credits 56Hrs.

CourseOutcomes: OnsuccessfulcompletionStudentwilldemonstrate;

- The Understanding of the basic concepts of business maths and apply them tocreate solve and interpret application problems in business.
- Abilitytosolveproblemsonvarioustypesofequation.
- Abilityto solveproblemsonMatricesand executethe lawsofindices, lawof logarithm and evaluate them.
- Abilityto applythe conceptofsimple interest and compound interest billsdiscounted etc. and apply them in day-to-day life.
- Abilityto solveproblemsonArithmeticprogression,Geometric progressionand construct logical application of these concepts.

OpenElectiveCourse (OE):

OE-3:PEOPLEMANAGEMENT(THEORY):3Credits 45Hrs.

Courseoutcome: Onsuccessfulcompletionofthecourse,studentwilldemonstrate:

- Ability toexaminethe differencebetweenPeopleManagementwithHuman Resource Management.
- AbilitytoexplaintheneedforandimportanceofPeopleManagement.
- Ability to explain role of manager in different stages of performance management process.
- Abilityto listmodernmethodsofperformanceandtaskassessment.
- Ability to analyse the factors influencing the work life balance of a working individual.

OE-4:RETAILMANAGEMENT(THEORY): 3 Credits 45Hrs.

CourseOutcomes: OnsuccessfulcompletionStudentwilldemonstrate;

- AnunderstandingofthetypesandformsofRetailbusiness.
- AbilitytoexamineConsumerBehaviour invariousenvironment.
- Abilitytoanalyse variousRetailoperationsandevaluatethem.
- Abilitytoanalysevariousmarketingmixelementsinretailoperations.
- AnunderstandingofInformationTechnologyinretailbusiness.

SYLLABUSFORBBADEGREEASPERNEP–2020REGULATIONS IMPLEMENTED FROM THE ACADEMIC YEAR 2021-22

BBA PROGRAM

ProposedSchemeofTeaching&EvaluationforBBA(Basic/Hons)withBusiness Administration as Core subject

SemesterIII								
Sl. No.	**Course Code**	**Titleofthe Course**	**Categoryof Courses**	**Teaching Hours per Week (L +T+**	**SEE**	**CIE**	**Total Marks**	**Credits**

				P)				
16	Lang.1.1	Language– I	AECC	3+1+0	60	40	100	3
17	Lang.1.2	Language–II	AECC	3+1+0	60	40	100	3
18	BBA.3.1	Cost Accounting	DSC	3+2+0	60	40	100	4
19	BBA.3.2	Organizational Behavior	DSC	3+2+0	60	40	100	4
20	BBA.3.3	StatisticsforBusiness Decisions	DSC	3+2+0	60	40	100	4
21	BBA.3.4	Artificial Intelligence/Critical thinking&Problem Solving	SEC	1+0+2	25	25	50	2
22	BBA.3.5	Social Media Marketing/Rural Marketing	OEC	3+0+0	60	40	100	3
Sub–Total (C)					385	265	650	23

SemesterIV								
Sl. No.	Course Code	Titleofthe Course	Category of Courses	Teaching Hours per Week (L+ T +P)	SEE	CIE	Total Marks	Credits
23	Lang.1.1	Language– I	AECC	3+1+0	60	40	100	3
24	Lang.1.2	Language–II	AECC	3+1+0	60	40	100	3
25	BBA.4.1	Management Accounting	DSC	3+2+0	60	40	100	4
26	BBA.4.2	Business Analytics/ Financial Markets&Services	DSC	3+2+0	60	40	100	4
27	BBA.4.3	Financial Management	DSC	3+2+0	60	40	100	4

28	**BBA.4.4**	**Constitutionof India**	**AECC**	**2+0+0**	**30**	**20**	**50**	**2**

29	BBA.4.5	Sports/NCC/NSS/YOGA	SEC-VB	1+0+2	25	25	50	2
40	BBA.4.6	BusinessLeadership Skills/Personal WealthManagement	OEC	3+0+0	60	40	100	3
Sub–Total(D)					415	285	700	25

Curriculumasper NationalEducationalPolicy(NEP2020)

SemesterIII								
Sl. No.	CourseCode	TitleoftheCourse	Categoryof Courses	Teaching Hours per Week(L+T+P)	SEE	CIE	Total Marks	Credits
16	Lang.1.1	Language–I	AECC	3+1+0	70	30	100	3
17	Lang.1.2	Language–II	AECC	3+1+0	70	30	100	3
18	BBA.3.1	CostAccounting	DSC	3+0+2	70	30	100	4
19	BBA.3.2	Organizational Behavior	DSC	4+0+0	70	30	100	4
20	BBA.3.3	Statisticsfor Business Decisions	DSC	3+0+2	70	30	100	4
21	BBA.3.4	ArtificialIntelligence	SEC	1+0+2	50	50	100	2
22	BBA.3.5	Social Media Marketing/Rural Marketing	OEC	3+0+0	50	50	100	3
Sub–Total (C)					450	250	700	23

SemesterIV								
Sl. No.	Course Code	TitleoftheCourse	Categoryof Courses	TeachingHours per Week(L+T+P)	SEE	CIE	Total Marks	Credits
23	Lang.1.1	Language–I	AECC	3+1+0	70	30	100	3
24	Lang.1.2	Language–II	AECC	3+1+0	70	30	100	3
25	BBA.4.1	Management Accounting	DSC	3+0+2	70	30	100	4
26	BBA.4.2	BusinessAnalytics /Financial	DSC	4+0+0	70	30	100	4

		Markets& Services						
27	**BBA.4.3**	**Financial Management**	**DSC**	**3+0+2**	**70**	**30**	**100**	**4**
28	**BBA.4.4**	**ConstitutionofIndia**	**AECC**	**2+0+0**	**50**	**50**	**100**	**2**
29	**BBA.4.5**	**Sports/NCC/NSS/other s (ifany)**	**SEC-VB**	**1+0+2**	**-**	**100**	**100**	**2**
30	**BBA.4.6**	**Business Leadership Skills/Personal Wealth Management**	**OEC**	**3+0+0**	**50**	**50**	**100**	**3**
Sub–Total (D)					**450**	**350**	**800**	**25**

EXITOPTIONWITHDIPLOMA–Abilitytosolvebroadlydefinedproblems.

Name of the Program: **BBACourse Code: BBA 3.1** **NameoftheCourse:COST ACCOUNTING**		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs**	**56Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		
CourseOutcomes:Onsuccessfulcompletionof thecourse,the Studentswill demonstrate. • Understandtheelementsofcostingandpreparationofcostsheet. • Theabilitytopreparematerialrequisitionsandmanagementofstore. • Theabilitytocompareandcontrastlabourcosttechniques. • Abilitytodifferentiatekindsofoverheadcosting. • Abilitytoreconcilethecost.		

Name of the Program: **BBACourseCode:BBA 3.2** **NameoftheCourse:ORGANIZATIONALBEHAVIOR**		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs**	**56 Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		

CourseOutcomes:Onsuccessfulcompletionof thecourse,the Studentswill demonstrate:

- TorecallroleofOBinbusinessorganization.
- Abletounderstandgroupdynamicsinanorganization.

- Abletounderstandthechangemanagement.
- Abletoconstructtheprocessoforganizationaldevelopment.
- AbilitytounderstandthekindsofInterventionsinOB.

Name of the Program: BBACourse Code: BBA 3.3 **NameoftheCourse:StatisticsforBusinessDecisions**		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs**	**56Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate • Tounderstandtherequirements ofstatisticalframework • Toconstructandvisualizethedata. • Todeterminethedataadequacyforanalysis. • ToReviewthedatabyusingvarioustools. • Tounderstandandanalyzetheimpactofprobability.		

NameoftheProgram:BBACourseCode:BBA3.5 **NameoftheCourse:SocialMediaMarketing(OEC)**		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
3Credits	**3Hrs**	**42Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate: • Definesocialmediamarketinggoalsettingforsuccessfulonlinecampaigns. • Analyze theeffective social media marketing strategies for various types of industries and businesses. • Designsocialmediacontent and create strategies to optimize the content's reachto the target audience. • Appraise the reach and trackprogress inachieving social media objectives witha variety of measurement tools and metrics. • Designasuitablesocialmediacampaignforthebusinessgoals.		

Nameofthe Program:BBACourseCode:BBA3.5 **NameoftheCourse:RuralMarketing(OEC)**		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
3Credits	**3Hrs**	**42Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		

CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate

- Describetheimportanceandapplicationofvariousconceptsofruralmarketing.
- Demonstrate the appropriate selection of the segmentation, targeting and positioning strategiesalongwiththeenvironmentalfactorsthatinfluencerural consumers'buying behavior.
- Design a Pricing Strategy that suits the characteristics of rural products and the stage in the product life cycle.
- Formulatetheappropriatemarketingcommunicationandruraldistributionchannel plans to promote and deliver the rural products.
- Appraisetherecenttrendsinruralmarketingandtheapplicationofdigitaltechnology in rural marketing.

NameoftheProgram:BBACourse Code:BBA4.1 Nameof the Course: MANAGEMENTACCOUNTING		
CourseCredits	**No.ofHoursper Week**	**TotalNo. ofTeachingHours**
4Credits	**4Hrs**	**56Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		

CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate:

- AbletounderstandtheconceptofManagementAccounting.
- ToUnderstandandrecallratiosandapplythesameongivencase.
- Toconstructcashflowstatement.
- ShouldbeabletoapplyMarginalcostrationstomakebusinessdecisions.
- Studentshouldbeabletoanalyzebusinessproblemsthroughapplications.

NameoftheProgram:BBACourse Code:BBA4.2 Name of the Course:Business Analytics		
CourseCredits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs**	**56Hrs**
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		

CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate

- AbletounderstandDataTypesandstorageofData.
- Tounderstandtypesofanalyticsanddatamodels.
- Todemonstratevisualizationofdata.
- Torecallthedataminingandprocessingofdata.
- Abletounderstandconceptsofdifferentanalyticsmodel.

NameoftheProgram:BBA Course Code: BBA 4.2
NameoftheCourse:FinancialMarkets&Services

3Credits	3Hrs	42Hrs
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswillDemonstrate ◎ Tomakestudentsunderstandthesignificanceofleadershipskillsforeffectivepeople management		
◎ Toincreasethecomprehensionofleadershipthroughvariousleadershiptheories ◎ Tomakestudentsunderstanddifferentleadershipstyles,types,patternsandfunctions ◎To introduce various leadership approaches for effective management ofpeople		
◎ Tomakestudentsawareofrecenttrendsintheareaofbusinessleadership		

CourseCredits	No.ofHoursper Week	TotalNo.ofTeachingHours
4Credits	4Hrs	56Hrs
Pedagogy: Classroomslecture,tutorials,andProblemSolving.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate • Toabletorecallconceptsoffinancialsystem. • Abletodifferentiatetherolesoffinancialinstitutions. • Ableunderstandconceptoffinancialservices. • TounderstandthetradingprocessofInstruments. • Abletosummarizetheconceptofstockmarket.		

NameoftheProgram:BBACourseCode:BBA4.3
NameoftheCourse:FINANCIALMANAGEMENT

CourseCredits	No.ofHoursper Week	TotalNo.ofTeachingHours
4Credits	4Hrs	56Hrs
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswill demonstrate. • Toidentifythegoalsoffinancialmanagement. • Toappraisetheconceptsoftimevalueofmoney. • Tounderstandthedifferentmodelsofdividendpolicy. • Abletoanalyzethebusinessproblemrelatedtoinvestments. • Abletoappraisetheworkingcapital requirementsinanorganization.		

NameoftheProgram:BBA Course Code: BBA 4.6
NameoftheCourse:BusinessLeadershipSkills(OEC)

CourseCredits	No.ofHoursper Week	TotalNo.ofTeachingHours

NameoftheProgram:BBA Course Code: BBA 4.6 NameoftheCourse:PersonalWealthManagement	
No.ofHoursper Week	
3Hrs	
Pedagogy: Classroomslecture,tutorials,andProblemSolving.	
CourseOutcomes:Onsuccessfulcompletionofthecourse,theStudentswilldemonstrate • Demonstrateanunderstanding oftheimportanceofWealthManagementand Financial Planning in personal life • Identifythe Real Estate InvestmentRoutes andunderstandthetaxplanningthat minimises tax burden • SelectandApplytheAssetAllocationstrategiestobalancebetweenRisk and Return • Anlayse the Retirement PlanningBenefits and retirement strategiesto provide regular income for life. • Understandthebasicprinciplesandimportancevariousinsurancepolices	

Nameofthe Program: BachelorofBusinessAdministration(BBA) **CourseCode:**BBA5.1 **NameoftheCourse:ProductionandOperationsManagement**		
CourseCredits	No.ofhours perweek	TotalNo.ofTeachinghours
4Credits	4hours	56hours
Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Case studies &fieldworketc.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,thestudents'willbeableto a) Understandevergrowingimportanceof ProductionandOperationsManagementinuncertainbusinessenvironment. b) Gainanin-depthunderstandingofPlantLocationandLayout c) Appreciatetheuniquechallengesfacedbyfirmsin InventoryManagement. d) UnderstandthesubjectastoProductionPlanningandControl. e) Develop skillstooperatecompetitivelyinthecurrent business sscenario.		

NameofTheProgram: BachelorofBusinessAdministration(BBA)
CourseCode: BBA5.2
NameoftheCourse:IncomeTax–I

CourseCredits	No.ofhoursper week	TotalNo.ofTeachinghours
4Credits	4hours	56hours

Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Casestudies&fieldworketc..

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Comprehendthe procedure for computationofTotalIncomeandtaxliabilityofanindividual.
b) Understandtheprovisionsfordeterminingtheresidentialstatusofan Individual.
c) ComprehendthemeaningofSalary, Perquisites, Profitinlieuofsalary, allowances andvarious retirementbenefits.
d) Computetheincomehousepropertyfordifferentcategoriesofhouseproperty.
e) Comprehend TDS &advancestaxRulingandidentifythevariousdeductionsundersection80.

Name of theProgram: Bachelor of Business Administration(BBA)
CourseCode:BBA5.3
NameoftheCourse: Banking Law and Practice

CourseCredits	No.ofhours perweek	TotalNo.ofTeachinghours
4Credits	4hours	56hours

Pedagogy: Class room lectures, tutorials, Groupdiscussion, Seminar, Casestudies&fieldworketc.

CourseOutcomes: On successful completion of the course,the students will be able to:

a) Understand the legal aspects of banker and customer relationship.
b) Open the different types of accounts.
c) Describe the various operations of banks.
d) Understand the different types of crossing of cheques and endorsement.
e) Understanding of different types of E-payments.

NameoftheProgram: BachelorofBusinessAdministration**(BBA)Finance**

Elective

CourseCode:FN1

NameoftheCourse:AdvancedCorporateFinancialManagement

CourseCredits	No.ofhoursperweek	TotalNo.ofTeachinghours
3Credits	3hours	45hours

Pedagogy: Classroomlectures, tutorials, Groupdiscussion, Seminar, Casestudies&fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understanddeterminetheoverallcostofcapital.
b) Comprehendthedifferentadvancedcapitalbudgetingtechniques.
c) Understandtheimportanceofdividenddecisionsanddividendtheories.
d) Evaluatemergers andacquisition.
e) Enabletheethicalandgovernanceissuesinfinancialmanagement.

NameoftheProgram: BachelorofBusinessAdministration(BBA)

Marketing

ElectiveCourseCode:MK1

NameoftheCourse:ConsumerBehaviour

CourseCredits	No.ofhours perweek	TotalNo.ofTeachinghours
3Credits	3hours	45hours

Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Case studies &fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understanding of consumer behaviour towards products, brands andservices.
b) Distinguish between different consumer behavior influences andtheirrelationships.
c) Establishtherelevanceofconsumer behavior theories andconceptstomarketingdecisions.
d) Implementappropriatecombinationsoftheoriesandconcepts.
e) Recognisesocialandethicalimplicationsomarketingactionsonconsumerbehaviour.

Nameofthe Program: BachelorofBusinessAdministration(BBA)

HumanResourceElectiveCourse

Code:HRM1

NameoftheCourse:CompensationandPerformanceManagement

COURSECREDITS	NO.OFHOURSPERWEEK	TOTAL NO. OFTEACHINGHOURS
3CREDITS	3HOURS	45 HOURS

Pedagogy: Class roomlectures, tutorials, Group discussion, Seminar, Casestudies&fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understandtheconceptsof Compensationmanagement.
b) Describejobevaluationanditsmethods.
c) Evaluatethedifferentmethodsofwages.
d) Describeperformancemanagementandmethodsofperformancemanagement.
e) PreparationofPayroll.

Name of the Program: Bachelor of Business Administration(BBA)

DATA ANALYTICS

CourseCode:DA1

Name of the Course: Financial Analytics

Course Credits	No.ofhours perweek	Total No.of Teaching hours
3credits	3hours	45hours

Pedagogy: Class room lectures, tutorials, Groupdiscussion, Seminar, Case studies & fieldworketc.

Course Outcomes: On successful completion student will demonstrate:

a) Analyze and model financialdata.
b) Access the different open-sourcedomains.
c) Evaluate and build model on time series data.
d) Execute the statistical analysis using python.

NameoftheProgram: BachelorofBusinessAdministration(BBA) **Retail ManagementCourseCode: RM1** **NameoftheCourse:FundamentalsofRetailManagement**		
CourseCredits	No.ofhours perweek	TotalNo.ofteachinghours
3Credits	3hours	45hours
Pedagogy:Classroomlectures,Casestudies,Groupdiscussion,Seminar&fieldworketc.,		
CourseOutcomes:Onsuccessfulcompletionstudentwilldemonstrate: a) UnderstandtheRetailBusiness. b) Understandthebusinessoperationsin Retailing. c) Formulatetheretailstrategiesof RetailBusiness. d) ApplytheRetailingprinciplesandtheories. e) Explorethecareeropportunitiesin theRetailsector.		

Name of the Program: Bachelor of Business Administration(BBA) **Logistic and Supply Chain Management Course Code:LSCM 1** **NAME OF THE COURSE:Freight Transport Management**		
Course Credits	No.ofhours perweek	Total No.of teachinghours
3Credits	3hours	45hours
Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Case studies & fieldworketc.		
CourseOutcomes: On successful completion of the course,the students will be able to: a) Understand the different functions of Commercial transport. b) Analyse pricing and pricing strategy. c) Understand transport administration. d) Understand of transport and export documentations.		

NameoftheProgram: BachelorofBusinessAdministration(BBA) **CourseCode:BBA5.6(A)Vocational** **NameoftheCourse:InformationTechnologyforBusiness**		
CourseCredits	**No.ofHoursperWeek**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs.**	**56Hrs.**
Pedagogy: Classroom'slecture, tutorials, Groupdiscussion, Seminar, Casestudies.		
CourseOutcomes: OnsuccessfulcompletionStudent willdemonstrate; a) Understandthefundamentalsofinformationtechnology b) Understandusageofinformationtechnologyinbusiness. c) Learncoreconceptsofcomputingandmodernsystems d) ApplicationsofExcelandSQL. e) Awarenessaboutlatestinformation.		

Name of the Program: Bachelor of Business Administration(BBA) **CourseCode:**BBA5.6(B) **Name of theCourse: Digital Marketing**		
Course Credits	**No.of Hours per Week**	**Total No.of Teaching Hours**
3Credits	**(2+0+2)4Hrs**	**45Hrs**
Pedagogy: Class rooms lecture, Casestudies, TutorialClasses, Groupdiscussion, Seminar&fieldworketc.		
CourseOutcomes:Onsuccessfulcompletionofthecourse,thestudentswillbeableto a) Gain knowledge on Digital Marketing and strategies. b) Gain knowledge on Emailmarketing and Contentmarketing. c) Gain knowledge on SocialMedia Marketing and WebAnalytics. d) Gain knowledge on YouTube Advertising & Conversions.		

NameoftheProgram: Bachelor ofBusinessAdministration(BBA)
CourseCode: BBA5.7SEC-VB
NameoftheCourse:EmployabilitySkills

Course Credits	No.ofHoursperWeek	TotalNo.ofTeachingHours
3Credits	**3Hrs**	**45Hrs**

Pedagogy: Classrooms lecture, Casestudies, Groupdiscussion, Seminar&fieldworketc.

CourseOutcomes:Onsuccessfulcompletionofthecourse,thestudents'willbeableto

a) HavetheinformationonvariousvacanciesnotifiedbyCentralandStateGovernmentauthority'saswellasPrivateorganizations.
b) Solvetheproblemsonquantitativeaptitude, logicalreasoningandanalyticalability.
c) DemonstratethebasiccomputerskillsMSword, MSexcel, MSPPTsEmailetiquettesEtc.
d) Exhibitthecommunicationandleadershipskills.
e) ConductselfSWOCanalysisandsethiscareergoals.

NameoftheProgram: Bachelor of BusinessAdministration (BBA.)
CourseCode:
BBA.6.1NameoftheCourse:BusinessLaw

CourseCredits	No.ofhoursperweek	TotalNo.ofteachinghours
4Credits	**4Hrs.**	**56Hrs.**

Pedagogy: Classroom lectures, Case studies, Tutorial classes, Group discussion, Seminar &fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto

a. Comprehend the laws relating to Contracts and its application in businessactivities.
b. Comprehend the rules for Sale of Goods and rightsand duties of a buyer and a Seller.
c. Understand the importance of Negotiable Instrument Act and its provisions relating to Cheque and other Negotiable Instruments.
d. Understand the significance of Consumer ProtectionA ctandits features
e. Understand the need for Environment Protection.

Nameofthe Program: BachelorofBusinessAdministration(BBA)

CourseCode:BBA6.2

NameoftheCourse:IncomeTax– II

CourseCredits	No.ofhoursperweek	TotalNo.ofTeachinghours
4Credits	**4Hrs.**	**56Hrs.**

Pedagogy: Classroomlectures, tutorials, Groupdiscussion, Seminar, Casestudies&fieldworketc.

CourseOutcomes:Onsuccessfulcompletionofthecourse,thestudentswill:

a) Understand the procedure for computation of income from business and otherProfession.

b) Theprovisionsfordeterminingthecapitalgains.

c) Computetheincomefromothersources.

d) DemonstratethecomputationoftotalincomeofanIndividual.

e) Comprehend theassessmentprocedureandtoknowthepowerofincometaxauthorities.

Name of theProgram: Bachelor of Business Administration(BBA)

CourseCode:BBA6.3

Name of the Course:International Business

CourseCredits	No.ofHoursperWeek	TotalNo.ofTeachingHours
4Credits	**4Hrs.**	**56Hrs.**

Pedagogy: Class room lectures, tutorials, Groupdiscussion, Seminar, Casestudies&fieldworketc.

Course Outcomes:On successful completion of the course,the students will able to:

a) Understand the concept of International Business.
b) Differentiate the Internal and External International Business Environment.
c) Understand the difference MNC and TNC
d) Understand the role of International Organisations in International Business.
e) Understand International Operations Management.

NameoftheProgram: BachelorofBusinessAdministration**(BBA)Finance**

Elective

CourseCode:FN2

NameoftheCourse:SecurityAnalysisandPortfolioManagement

CourseCredits	No.ofhoursperweek	TotalNo.ofteachinghours
3Credits	3hours	45hours

Pedagogy: Classroom lectures, Case studies, Tutorial classes, Group discussion, Seminar&fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understand theconceptof basicsofInvestment.
b) Evaluatethedifferenttypesofalternatives.
c) Evaluatetheportfolioand portfoliomanagement.
d) Understand theconceptofriskandreturns
e) Gaintheknowledgeoffundamentalandtechnicalanalysis.

NameoftheProgram: BachelorofBusinessAdministration(BBA)

Marketing

ElectiveCourseCode:

MK2

NameoftheCourse:AdvertisingandMediaManagement

CourseCredits	No.ofhoursper week	TotalNo.ofteachinghours
3Credits	3hours	45hours

Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Case studies &fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understandthenature,role,andimportance ofIMCinmarketingstrategy
b) Understandeffectivedesignandimplementationofadvertisingstrategies
c) Present a general understanding of content, structure, and appeal ofadvertisements
d) Understandethicalchallengesrelatedtoresponsiblemanagementofadvertisingandbrands trategy.
e) Evaluatetheeffectivenessofadvertisingandagenciesrole

NameoftheProgram: BachelorofBusinessAdministration(BBA)

HumanResourceElectiveCourse

Code:HRM2

NameoftheCourse:Human ResourcesDevelopment

CourseCredits	No.ofhoursperweek	TotalNo.ofTeaching hours
3credits	3hours	45hours

Pedagogy: Class roomlectures, tutorials, Groupdiscussion, Seminar, Casestudies&fieldworketc.

CourseOutcomes: Onsuccessfulcompletionofthecourse,thestudentswillbeableto:

a) Understand theneedofHRD.
b) ComprehendtheframeworkofHRD.
c) KnowthemodelsforevaluatingtheHRDprograms.
d) Comprehendtheneedforemployeecounseling.
e) ApprehendtheHRperformance.

NameoftheProgram: Bachelor of Business Administration(BBA)

DATA ANALYTICS

CourseCode:DA2

Name of the Course:Marketing Analytics

CourseCredits	No.ofhours perweek	Totalno.ofteaching hours
3Credits	3hours	45hours

Pedagogy: Classroom lectures, tutorials, Group discussion, Seminar, Case studies & field worketc.

CourseOutcomes: On successful completion student will demonstrate:

a) Understand the importance of marketing analytics for forward looking and systematic allocation of marketing resources
b) Apply marketing analytics to develop predictive marketing dashboard for organization
c) Analyse data and develop insights to address strategic marketing challenges
d) Execute the models on Predictions and Classifications on RS oftware.Know the applications of analytics in marketing.

NameoftheProgram: BachelorofBusinessAdministration(BBA)

Retail ManagementCourseCode:R M2

NameoftheCourse:RetailOperationsManagement

CourseCredits	No.ofhoursperweek	TotalNo.ofteachinghours
3Credits	3hours	45hours

Pedagogy: Classroomlectures, Casestudies, Groupdiscussion, Seminar&fieldworketc.

CourseOutcomes:Onsuccessfulcompletionstudentwilldemonstrate:

a) Comparevariousretailformatsandtechnologicaladvancements for settingup appropriate retail business.
b) Identifythe competitivestrategiesforretailbusinessdecisions.
c) Examinethesitelocationandoperationalefficiencyformarketingdecisions.
d) Analysetheeffectivenessof merchant disingandpricingstrategies.
e) Assessstorelayoutandplanogramforretailbusiness.

NameoftheProgram: Bachelor of Business Administration(BBA)

LogisticandSupplyChainManagementCourse Code:LSCM 2

NAMEOFTHECOURSE:SourcingforLogisticsandSupplyChainManagement

CourseCredits	No. of hours perweek	TotalNo.ofTeachinghours
3Credits	3hours	45hours

Pedagogy: Classroom lectures, tutorials, Groupdiscussion, Seminar, Case studies& fieldworketc.

CourseOutcomes: On successful completion of the course,the students will be able to:

a) Understand the role of sourcing in logistics and supply chain management, and its impact on overall business performance.
b) Analyze and evaluate sourcing strategies and decisions, includingmake-or-buy, insourcingvs.outsourcing, andsuppliers election criteria.
c) Develop effective supplier relationship management skills, includingnegotiation, communication, andcollaboration.
d) Apply sourcing best practices, including risk management, sustainability, and ethical sourcing.
e) Evaluate the impact of technology and innovation on sourcing, and apply relevant tools and techniques to optimize sourcing processesand outcomes.

NameoftheProgram:BachelorofBusinessAdministration(BBA)CourseCode:BBA6.6(A)Vocational NameoftheCourse:GoodsandServicesTax		
Course Credits	**No.ofHoursper Week**	**TotalNo.ofTeachingHours**
4Credits	**4Hrs.**	**56Hrs.**
Pedagogy: Classroom'slecture, tutorials, Groupdiscussion, Seminar, Casestudies.		
CourseOutcomes:OnsuccessfulcompletionStudentwilldemonstrate a) Understandthebasicsoftaxation, including themeaning andtypesoftaxes, and thedifferencesbetweendirectand indirecttaxation. b) Analyze the history of indirect taxation in India and the structure of theIndiantaxation system. c) Understand the framework and definitions of GST, including the constitutionalframework, CGST, SGST, IGST, and exemptions fromGST. d) Understandthetime, place, and valueofsupplyunderGST, and applythisknowledge to calculate the value of supply and determine GSTliability. e) Understandinputtax creditunder GST, includingits meaningandprocessforavailing it, and applythisknowledgetocalculatenet GSTliability.		

BachelorofScience(Basic/Hons.)/IntegratedM.Sc.(FiveYears) DegreeinMolecular Biology
Choice Based Credit System(CBCS)With Multiple EntriesandExitOptions under New Education Policy (NEP) – 2020
(2021-22 Batch Onwards)
DetailsofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	DisciplineCore/ Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	MBDSC-1:GeneralBotany (4+0+0)	4	4	40	60
	MBDSCP-1:General Botany (0+0+2)	4	2	25	25
	MBDSC-2:General Zoology (4+0+0)	4	4	40	60
	MBDSCP-2:General Zoology (0+0+2)	4	2	25	25
II	MBDSC-3:CellBiology andPlantPhysiology-I (4+0+0)	4	4	40	60
	MBDSCP-3:Cell Biology andPlant Physiology-I(0+0+2)	4	2	25	25
	MBDSC-4:Inorganic& PhysicalChemistry (4+0+0)	4	4	40	60
	MBDSCP-4:Inorganic & Physical Chemistry (0+0+2)	4	2	25	25

Programmeopportunities:

- StudentswithB.Sc.MolecularBiologyshallbeeligiblefor2yearsM.Sc.in Molecular biology and Biochemistry, Biotechnology, Environmental Science.
- StudentswithB.Sc.HonorsinMolecularBiologyshallbeeligibleforOneyearM.Sc. in Molecular Biology
- StudentswithB.Sc.MolecularBiologyshallbeeligibleforB.Ed.

- Students with B.Sc. Honors/ Integrated M.Sc. (Five years) Molecular biology shall beeligibleforB.Ed.andalsoshallbeeligibleforPUCteachingandcoursesinvolved withinterdisciplinarysubjectsinBiologyatgraduateandMasterslevel after meeting the minimum standards through KSET/NET/Ph. D. degree aspertherulesand regulationslaidbyUGCfromtimetotime.
- Students with B.Sc. degree/ B.Sc. Honors/ Integrated M.Sc. (Five Years) Molecular biologyinMolecularBiologyshallbeeligibletotakeupallcompetitiveexaminations at state/national level.

ISEMESTER

MBDSC-1:GENERALBOTANY(THEORY): 4 Credits 56Hrs.

Courseoutcome:

- Studentsunderstandthebasisforclassifyingfungiandplants.
- Theygainknowledgeonthetypesandimportanceofclassification.
- Studentsknow externalmorphologyofalgae,fungi,bryophytes,pteridophytes, gymnosperms and angiosperms.
- They acquire the knowledge of cellular diversity of fungi and plants starting from unicellular to highly complex angiosperm plants.
- Theygain insightintothevaried typesofreproductivecyclesoffungiandplants.
- Knowledgegainedontheeconomicimportanceofdifferentfungiandplantshelp themin future for research and other applications in agriculture, medicine and industry.
- Studentsunderstandthecourseofevolutioninplants.

MBDSCP-1:GENERALBOTANY(PRACTICALS): 2 Credits 56Hrs.

Courseoutcome:

- Studentsunderstandtheuseofbinocularmicroscopeforunderstandingbiology.
- Theygetpracticalknowledgeoftheaspectsstudied intheory.
- Studentsseeandappreciatethebeautyofphytoplanktonsandotheralgae.
- Theywillseeand understand betterthemicroscopic and macroscopic stagesofsomeof the fungi of kingdom mycota and oomycota.
- Theygain insight intotheviewsofinternalstructureandexternal morphologyof different groupsofplants such as bryophytes, pteridophytes and gymno sperms.
- Studentsgettheskillofherbariumpreparation.

MBDSC-2:GENERALZOOLOGY(THEORY): 4 Credits 56Hrs

Courseoutcome:

- Studentswillunderstandthebasisforclassifying animals.
- Theywillgainknowledgeonthetypesandimportanceofclassification.
- Students will know external morphology of different phyla of animals starting from Protozoa to Chor data.
- They will acquire the knowledge of different types of tissues animals with special emphasis to humans. This gives a clear dimension to the studentsregarding their role in different organs.

- They will gaininsightinto the variedtypes of reproductive behaviorof different groups of animals. This knowledge forms a basis for further research.
- Overviewofhumansystemalsogivesafoundationtounderstandacourseon Animal Physiology in the fourth semester.
- Knowledge gained on the economic importance of differentanimals help them in future for research and other applications in agriculture, medicine and industry.

MBDSC-2;GENERALZOOLOGY(PRACTICALS): 2 Credits 54Hrs.

Courseoutcome:

- Studentsget practicalknowledgeoftheaspectsstudiedintheory.
- Studentsseeand appreciatethebeautyofzooplanktonsandotheraquaticanimals.
- Theywillseeandunderstandbetteranimaldiversity.
- Theygain betterinsightofosteology.
- Studentsgettheskillofplastination.

IISEMESTER

MBDSC -3:CELLBIOLOGYANDPLANTPHYSIOLOGY(THEORY):4Credits56 Hrs.

Courseoutcome:

- Studentswillunderstandthestructureand functionsofcellorganelles.
- Theywillacquireknowledgeofmechanismsofcellmembranetransport.
- Theywillget theknowledgeontheroleofligandsandreceptorsforcellsignaling.
- Thiswillenablethemtounderstandtheinternalfeaturesofthecellandcell mobility.
- Theywillunderstand thestagesofcelldivision,cellcycle.
- Theywillgainknowledgeonprincipleandapplicationsof microscopy.
- Studentswillunderstandtheplantwaterrelation,solutetransport,differentbio-physico-chemicalphenomenon.
- Studentswillunderstandthemechanismofcropstresstolerancetovariousabiotic stresses.
- Studentswillbeabletointegrateandapply theirknowledgeof plantphysiologyfor analytical thinking and solving practicalproblems experienced in agricultural systems.

MBDSCP-3:CELLBIOLOGYANDPLANTPHYSIOLOGY(PRACTICALS):
2 Credit 56Hrs;

Courseoutcome:

- Studentswillpracticalknowledgeofthetheoreticalaspects studied.
- Theywillacquirecellbiologypracticalskillssuchashaematology,cellviability, microtomy and DNA isolation.
- Skillsonestimationofaminoacidrelatedtostressinplantsisalsoimparted.

MBDSC-4:INORGANICANDPHYSICALCHEMISTRY(THEORY)04Credits56Hrs.

Courseoutcome:

- Studentswillunderstandthebehaviorofgasesandtheirlaws,atomicstructureand

chemical bonding.

- Important techniques like chromatography and X-ray crystallographyare discussed which helps students in academia and research.
- They will understand bioinorganic chemistry, chemistry of biologically important elements which bridges the gap between chemistry and biology for better relationship between both.
- Studentswillunderstandthe phenomenonofphotochemistry.
- Studentswill learnabouttheelectrochemicalcellanditsconductanceindetail.
- Basicunderstanding ofchemicalkineticsand catalysisofreactions help studentstobetter understand in higher semester paper enzymology

IIIsemester

DSC-5	4+0+2 Credits	MicrobiologyTheory	4hrs	4credits
		MicrobiologyPractical	4hrs	2credits
DSC-6	4+0+2 Credits	BiochemistryTheory	4hrs	4credits
		BiochemistryPractical	4hrs	2credits

Microbiology – Theory - Credits – 4 **56hrs**

Course objectives:

- To equip the students to gain knowledge about microbes in human health and the environmentin many ways.
- Thiscoursepaperemphasizestoacquireknowledgeaboutmicrobialdiversityandtheirinteractions among themselves, and with the environment and biological systems under various conditions.
- Toaddresstherelevanceofmicrobiologyinotherdisciplines.
- ToimpartpracticalskillsinconceptsofMicrobiology.

Course outcome:

- StudentwillunderstandKoch'spostulateswhichisthebasicrequirementtostudyplant,animaland human diseases.
- Students will learn how to identify and isolate pure cultures, maintenance andpreservation of different microbes.
- Students will acquire the skills to qualify for broad range of positions in academic and research institutions in different discipline to increasing need for skilled scientific manpower with an understandingofresearchinvolvingmicroorganismstocontributetoapplication,advancementand impartment of knowledge in the field of microbiology and molecular biology globally.
- Thelaboratorytrainingwillempower themtopreparefor careersinbroad rangefields.

MicrobiologyPractical-2 Credits,56 hrs

Course outcome:

Studentswilldeveloptheskillsof

1. Bacterialandfungalstainingtechniques
2. Knowledgeofcyanobacterialpracticalapplications
3. Preparationofvarious microbiologicalmedia
4. PureculturingandSinglecolonyisolationandpreservationofcultures,growthcurveplotting,disc diffusion technique which are needed for many biotech industries based on microbes

Biochemistry–Theory–4Credits,56hrs

Course objectives:

- Tostudythebasicsofbiomoleculeslikesugars,aminoacids,fattyacids, andnucleosides.
- Togainknowledgeaboutthestructuresandfunctionsofvitamins.
- Tostudytheinfluence androleof structureinreactivityofbiomolecules.
- Tostudytheclassification,functions,andapplicationaspectsofbiomolecules.
- Totrainstudentstoappreciatethesalientfeaturesofbiomoleculesintheorganizationoflife.
- Tostudythesignificanceandmethodologyinvolvedinisolationandcharacterizingmajorbiomolecules including nucleic acids.

Course outcome:

- Studentswillunderstandindetailaboutstructures,types,andclassificationsoffundamental biomolecules like amino acids, sugars, fatty acids, and nucleotides.

- Thestudentswillhaveathoroughunderstandingonthestructuralandfunctionalroleof biomolecules in the living system.
- Studentswillunderstand the propertiesofcarbohydrates,proteins, lipids, nucleic acids, and their importance in biological systems.
- Thestudentswillbeabletounderstandthechemicalpropertiesandthree-dimensionalstructureof the biological macromolecules in relationship to their biological function.
- Theywillalsogainknowledgeabouttheisolationandidentificationmethodsofmacromolecules.
- Studentswillunderstandthemetabolicandphysiologicalrole,theirdeficiencydisordersand therapeutic functions associated with vitamins.

BiochemistryPractical-2credits,56hours Course objectives:

- Tostudythebasicsofbiomoleculeslikesugars,aminoacids,fattyacids, andnucleosides.
- Togainknowledgeaboutthestructuresandfunctionsofvitamins.
- Tostudytheinfluence androleofstructureinreactivityofbiomolecules.
- Tostudytheclassification,functions,andapplicationaspectsofbiomolecules.
- Totrainstudentstoappreciatethesalientfeaturesofbiomoleculesintheorganizationoflife.
- Tostudy thesignificanceandmethodologyinvolvedinisolationandcharacterizingmajor biomolecules including nucleic acids.

Course outcome:

- Students will develop the skills and knowledge ofanalysis of different sugars and starch in a given sample
- Studentswilldeveloptheskillsandknowledgeestimationmethodsproteinsand Aminoacids
- Studentswilldevelop theskillsand knowledgeofworkingwith lipids
- StudentswilldeveloptheskillsofestimationofAscorbicacidinBiologicalsource.
- Studentswilldeveloptheskillsofextractionoflactoseand caseininmilk.
- Studentswilldevelop theskillsofestimationofInorganicPhosphate,DNA,RNA
- Alltheseskillsarehelpfulfor studentstojoindiagnosticlabsor biotech industry

IVsemester

DSC-7	4+0+2 credits	ReproductiveandDevelopmentalBiology Theory	4hrs	4credits
		ReproductiveandDevelopmentalBiology Practical	4hrs	2credits
DSC-8	4+0+2 Credits	PlantPhysiologyIIandAnimalPhysiology Theory	4hrs	4credits
		PlantPhysiologyIIandAnimalPhysiology Practical	4hrs	2credits

ReproductiveandDevelopmentalBiologyTheory- 4Credits, 56hrs

Course objectives:

- Toimpartknowledgeongametogenesis,fertilizationanddevelopmentinmammals.
- To understand thecytologyofparthenogenesisandcloning.
- Developmental biologyprovides the basis for understanding ofprocesses and mechanisms of development of both plant and animals.

- Toteachthe importance ofdevelopmentalbiologyinagriculture andfoodsectors.
- ToimpartpracticalskillsinconceptsofDevelopmentalBiology

Course outcome:

- Studentswillunderstandtheearlyandpostembryonicdevelopmentinanimals.
- Studentswillacquireknowledgeofmolecular events infertilization.
- Studentswillbeabletounderstandtheprocessesofgastrulation.
- Studentswillacquireknowledgeonmicrosporogenesis, megasporogensisanddevelopment of male and female gametophyte in plants.
- It helps the students tounderstand the development of plants and animals atcellularandembryonic level.
- Applicationsofembryologyisunderstoodasexperimentalembryologywhichhas agricultural relevance.

DevelopmentalBiologyPractical-4Credits,56Hrs Course outcome:

Studentswilldeveloptheskills andknowledgeof:

- Studyingovuleofdifferentflowers
- Observationofmicrosporogenesisand micro gametogenesisinplants
- Studyofendospermsofseeds
- Mountingofembryos
- Structureofseedsandseedcoat

PlantPhysiologyIIandAnimalPhysiology -4credits56hours Course objectives:

- Togivestudentsagreaterunderstandingofthephysiologicalprocesses,plantresponsesand environmental factors affecting growth and development.
- Toidentifythephysiologicalfactorsthatregulatesgrowthanddevelopmentalprocessesofplants.
- To provide a comprehensive overview of physiological systems in a well-organized and concise manner to understand the interaction between animal and its environment.
- To understand physiology and functions of the body parts in regulation of metabolic processes like temperature and hormones etc.
- ToimpartpracticalskillsinconceptsofAnimalPhysiology.

Course outcome:

- Studentswillgainknowledgeaboutvariousplanthormonesandtheirapplications inhorticulture.
- Students will be able tointegrate and apply theirknowledge of plantphysiology for analytical thinking and solving practical problems experienced in agricultural systems.
- This course helps students to understand the biological processes that occur in animal life at various levels of organization such as cells, organ system and complete animal.
- Itprovidesnotableclearanddetailedaccountofphysiologicalprinciplesofdifferentphysiological processes such as digestion, excretion, respiration, circulation in animals, their adaptations to environments.
- Itenablescomprehensiveunderstandingofendocrineandreproductionsystems.
- Students will gain basic knowledge of physiology and related disorders/ diseases; this will open up opportunities in a wide variety of research areas.

PlantPhysiologyIIandAnimalPhysiology -Practical2credits,56hours Course objectives:

- To give students practical skills onphysiological processes, affecting growth and development especially on application of plant hormones
- To giveskillsofextractionofplantmetabolites.
- Toimpart laboratorydiagnosisskillsand itsbasicunderstandingrelatedtovariousparametersof urine analysis and blood analysis

Course outcome:

- Students will develop practical skills onphysiological processes, affecting growth and development especially on application of plant hormones and this will help the students apply when they go to the field
- Studentswilldeveloptheskillsofextractionofplant metabolitesandthiswillhelpthemtousein industry if they are join such profession.
- Students will develop diagnosis skills and its basic understanding related to various parameters ofurineanalysisand bloodanalysis.Thiswillhelpthestudentsto joindiagnostic laboratoriesfor their jobs.

Syllabus for V semester

Sem. No.	Course Category	Course Code	Course Title	Credits Assigned	Hours of teaching/ week
V	DSC	DSC-C9	Metabolism I	4	4
		DSC-C9P	Metabolism I Practical	2	4
		DSC-C10	Enzymology	4	4
		DSC-C10P	Enzymology Practical	2	4
	DSE	DSE-E1 (Any one)	Principles of Genetics Forensic Biology	3	3
		DSE-E2 (Any one)	Biophysics Nannoscience	3	3
	Vocational	VOC-1	Biochemical Techniques	2	2
			Biochemical Techniques	1	2
	SEC	SEC-1	Bioinformatics	2	2
			Bioinformatics Practical	1	2

Course Code : DSC-C9 Metabolism I Credits: 4 4 hrs/week

Course objectives:

- To understand the basic aspects of metabolic pathways and regulation of biomolecules.
- To study and understand the structural and functional aspects of mitochondrial electron transport chain in detail.
- To gain deeper insights on photosynthesis and its associated process.
- To impart practical skills in concepts of Metabolism.

Course outcome:

- Students will acquire the concept of anabolism, catabolism, anapleurotic reactions, redox balance etc. and the role of high energy compounds in the cell.
- They will acquire knowledge related to regulation of various pathways.
- The role of lipids as storage molecules and structural component of bio membranes will be understood in detail.
- Students will learn about importance of high energy compounds, electron transport chain, and synthesis of ATP under aerobic and anaerobic conditions will be understood.

- Students will gain knowledge about the fundament aspects of photosynthesis and its associated processes in depth.

Course Code : DSC-C10 Enzymology Credits: 4 4hrs/week
Course objectives:

- To study general aspects of enzymes and its classification.
- To study the molecular mechanisms of enzyme reactions using inhibitors and activators.
- To learn about kinetics and regulation of enzymes to drug delivery and discovery which helps to establish a strong background for future endeavors.
- To impart practical skills in concepts of Enzymology.

Course outcome:

- Students will be able to understand the general aspect of enzymes, their activity measurements and kinetic reactions.
- They will be able to learn about enzyme reactions using inhibitors and activators.
- Enabling to understand the nature of catalysis, action and type of inhibition.
- Students will understand the regulation of enzymes in metabolic reactions.
- Students will get a deeper level knowledge about the mechanism of action of specific enzymes, important for biological function.

One of the following Discipline Specific Electives has to be opted under DSE-E1:

Course Code : DSE-E1 Principles of Genetics Credits: 3 3hrs/week
Course objectives:

- To understand the basic principles of genetics, Mendelism, extension of Mendelism.
- To learn about chromosome, Chromosomal aberrations and population genetics.;
- To impart practical skills in concepts in Principles of Genetics.

Course outcome:

- Students study about the history, experiments of Mendel`s laws along with statistical testing of hybrid crosses.
- Extension of Mendelism is studied which includes concepts of dominance, alleles, interaction ofgenes, polygenic inheritance, and pleotropism.
- Students will understand chromosomal aberrations and extra chromosomal inheritance which in turn help to understand various disease mechanisms associated with aberrations.
- Enabling students to learn about lethal mutations and mutation detection tests like Ames test, CIB technique.
- Students are exposed to concepts of population genetics and Darwinism and mutation studies.

Course Code: DSE-E1 Forensic Biology Credits: 3 3hrs/week
Course Objectives

- To understand significance of biological and serological evidence.
- To know the forensic importance of hair evidence.
- To gain the knowledge on the importance of biological fluids in crime investigations.
- To understand how wildlife forensics aid in conserving natural resources.
- To know the role of forensic entomology in death investigations.

Course Outcome

- Students will appreciate the significance of biological and serological evidence.
- Will know the forensic importance of hair evidence.
- Will gain the knowledge on the importance of biological fluids in crime investigations.
- Will understand how wildlife forensics aid in conserving natural resources.
- Will get insights on the role of forensic entomology in death investigations.

One of the following Discipline Specific Electives has to be opted under DSE-E2:

Course Code: DSE-E2Biophysics Credits: 3 3 hrs/week
Course Code: DSE-E2Nannoscience Credits: 3 3 hrs/week

Course Code : DSE-E2 Biophysics Credits: 3 3hrs/week

Course outcome:

- To understand the scope and role of biophysics in natural science.
- To understand the various techniques like microscopy, SPR etc associated with it.
- To impart practical skills in concepts of Biophysics.

Course outcome:

- Students will understand the principle and applications of spectroscopy and X-ray diffraction techniques.
- Will get advanced knowledge in the field of radiation biophysics and various advanced microscopy including surface plasma resonance.
- Important biological phenomenon like Neurobiophyscis

Course Code: DSE-E2 Nannoscience Credits: 3 3hrs/week

Course objectives

- To understand the fundamentals of nanoscale materials, synthesis and characterization of different nanomaterials.
- To understand the Basic structure of Nanoparticles and bionanocomposites.
- To understand the sustainable Nanobiotechnology.

Course outcome

- Will beable to understand the different formats of nanomaterials, Cellular nano structure and Bio-inspired Nanostructures.
- Will beable to understand the Synthesis and characterization of nanomaterials.
- Will beable to understand the Applications of nano biotechnology in Plant and animal cellcultures.
- Beable to understand the toxicity testing and Mechanism of nano-size particle toxicity.

Course Code: VOC-1 Biochemical Techniques Credits: (2+0+1), 2hrs/week

Course objectives:

- To give theoretical background regarding biomolecular preparative and analytical methods.
- To impart practical skills regarding the above.

Course outcome:

- This course explores the basic principles of biochemical methods and develops the student's appreciation and understanding of biological process.
- Course will teach the students the various instrumentations that are used in the analytical laboratories.
- Course covers both fundamental and applications of the instruments that are routinely used for the characterization of biomolecules.
- At the end of the course, the student has the basic knowledge on the theory, operation and function of analytical instruments.
- After the completion of this course students will gain a fundamental knowledge of biochemical concepts and techniques which is necessary for future scientific endeavors.

Syllabus for VI semester

Sem. No.	Course Category	Course Code	Course Title	Credits Assigned	Hours of teaching/ week
VI	DSC	DSC-C11	Metabolism II	4	4
			Metabolism II Practical	2	4
		DSC-C12	Molecular Genetics	4	4
			Molecular Genetics Practical	2	4
	DSE	DSE-E3	enetic Engineering	3	3
	DSE	(Anyone to be chosen)	Clinical Biochemistry		
		DSE-E4 (Anyone to be chosen)	Molecular Cell Biology	3	3
			Molecular Endocrinology		
	Vocational	VOC-2	Cell and Tissue culture Technology	2	2
	Internship	INT-1	Internship	1	2

Course Code : DSC-C11 Metabolism II Credits: 4 4 hrs/week

Course objectives:

- To study about the importance of, nitrogen containing compounds, porphyrins, and steroid hormones.
- To study and appreciate the integrated approach of interrelated pathways of catabolism and anabolism.
- To emphasizes on metabolic disorders at molecular level.
- To learn the regulatory aspects of metabolism for better understanding of physiology and therapeutic applications.
- To impart practical skills in concepts of Metabolism.

Course outcome:

- Students will learn about the importance of nitrogen and nitrogen containing compounds in biological system.
- Students will learn to explain/describe the synthesis, degradation and functional aspects of amino acids, nucleic acids, steroid hormones and vitamins in detail.
- Students will learn about the regulatory aspects of metabolic pathways at various phases like transcriptional, translational, and post-translational levels.

Course Code: DSC-C12 Molecular Genetics Credits: 4 4 hrs/week

Course objectives:

- To describe the central dogma of molecular biology.
- To understand crossing over, linkage mapping inboth prokaryotes and eukaryotes.
- To study sex determination.
- To impart practical skills in concepts of Molecular Genetics.

Course outcome:

- Enable students to know about the historical perspective and experiments that led to the discovery of central dogma of molecular biology.
- To briefly understand DNA, replication, transcription, translation processes.
- Students will understand the concept of gene and sex determination and dosage compensation of genes in fruit fly and man.
- Crossing over, linkage and mapping studies in both prokaryotes and eukaryotes are discussed along with problems are studied by students for better understanding and to enable construction of gene maps.

One of the following Discipline Specific Electives has to be opted under DSE-E3:

Course Code: DSE-E3 Genetic Engineering I Credits: 3 3 hrs/week
Course Code: DSE-E3 Clinical Biochemistry Credits: 3 3 hrs/week
Course Code: DSE-E3 Genetic Engineering I Credits: 3 3 hrs/week

Course objectives:

- To understand the different tools of genetic engineering such as enzymes, vectors, labelling methods and PCR.
- To impart knowledge on the use of different tools in genetic engineering.

Course outcome:

- Students will become familiar with the tools and techniques of genetic engineering.
- Students will be able to perform basic genetic engineering experiments at the end of course.
- Students will acquire knowledge of advances in biotechnology through recombinant DNA technology.
- Students will be able to describe the importance of DNA and protein sequence alignments, methods of alignment.
- Students will learn various biological databases and tools in bioinformatics.

Course Code: DSE-E3 Clinical Biochemistry Credits: 3 3 hrs/week

Course objectives:

- To understand the concept of health & diseases, communicable, non-communicable diseases. Metabolic diseases & deficiency.
- To give knowledge on various bio-molecules and their use in diagnosis and treatment of diseases.
- To create awareness of different lifestyle diseases including its management.
- To give insights to the recent developments in clinical diagnosis.

Course outcome:

- It illustrates the mechanism of metabolic disorders at molecular level.
- Students will learn about the normal constituents of urine, blood and their significance in maintaining good health.
- Students will get the knowledge of marker enzymes useful in diagnosis of various diseases.
- It is directed towards the employability in diagnostic centers.

Course Code: DSE-E4 Molecular Cell Biology, Credits: 3 3 hrs/week

Course objectives:

- To give deeper knowledge on cellular processes that drive biological systems.
- To build the fundamental concepts of cellular structural organization and functional understanding of sub-cellular components.
- To impart practical skills in concepts of Molecular Cell Biology

Course outcome:

- Students will obtain understanding of the molecular aspects of biology.
- It also helps in understanding the concepts of cellular function.
- Students obtain fundamental knowledge required for understanding the cancer/apoptosis at molecular level.
- The course addresses molecular mechanisms underlying several central themes in cellular biology like cell division and replication, the transport of proteins and other macromolecules within cells.
- Students of this course will obtain an elementary introduction to the study of molecular biology.

Course Code: DSE-E4 Molecular Endocrinology, Credits: 3 3 hrs/week

Course objectives:

- To understand the molecular structure and function of Endocrine, Paracrine and autocrine secretions, Local hormones, Neuroendocrine secretions and Neurotransmitters
- To understand the genetic control of hormone synthesis

Course outcome:

- understand the basics of endocrine system

- able to discuss the mechanism of hormone action
- get a better understanding of Hypothalamo-Hypophyseal system
- able to explain the Morphology and physiological actions of melatonin
- able to explain the Bio-chemistry of synthesis, secretion and metabolism of thyroid hormones and Parathormone

Course Code: VOC-2 Cell and Tissue Culture Technology Credits: 3 3 hrs/week

Course objectives:

- To develop basic aseptic skills for cell culture and their applications.
- To understand media constituents and media formulation strategies for cell and tissue culture.
- To provide complete exposure as how plant and animal cells are isolated, cultured and genetically manipulated in laboratory.

Course outcome:

- Students will get knowledge of cell and tissue culture which is required for biological science research.
- Based on the knowledge gained after studying this course, students will able to conduct *in-vitro* experiments using different cell lines and tissues during their research work.
- It can create job opportunities in pharmaceutical companies or they can have their own startups.

DetailsofCourse ofStudy:IandIISemesters

Sem.	**DisciplineCore/Paper (L+T+P)**	**Teaching hours/ week**	**Credits**	**Internal Assessment Marks(C1+C2)**	**Semester End Examination Marks (C3)**
I	AECC:(L2–1): English (3+0+0)	**4**	**3**	**40**	**60**
II	AECC:(L2–2): English (3+0+0)	**4**	**3**	**40**	**60**

ISEMESTER

CourseObjectives:

- ❖ Tointroduce basic grammarthrough ample practice exercisesforeffectivelanguage learning.
- ❖ Toteachto usevocabularyappropriatelyandgrammaticalstructurescorrectly.
- ❖ Toadopt strategies fordevelopingeffectivereadingand listeningskillswhileengaging students in using correct pronunciation.
- ❖ Toinstill confidenceanddevelopcompetenceinstudentsin order tocommunicate in grammatically correct English.
- ❖ Developtheskillto translatetextsfromonelanguagetoanother.

Programmeoutcome:

- Studentswillbeableto enrichtheirvocabularyand enhancetheircomprehension skills.

- Theywillacquiregrammaticalcompetenceandcommunicativeskillwhichinturn willimprove their command over English.
- Students will acquire greater fluency in English which is important dimensionof language learning.

IISEMESTER
CourseObjectives:

- Toadopt strategies fordevelopingeffectivereadingand listeningskillswhileengaging students in using correct pronunciation.
- Tointroduce basic grammarthrough ample practice exercisesforeffectivelanguage learning.
- To teach the students to use vocabulary appropriately and grammaticalstructures correctly.
- Toinstilconfidenceanddevelopcompetence instudentsinorderto communicatein grammatically corrects English.

Programmeoutcome:

- Studentswillbeableto enrichtheirvocabularyandenhancetheircomprehension skills.
- Theywillacquiregrammaticalcompetenceandcommunicativeskillwhichinturn willimprove their command over English.
- Students will acquire greater fluency in English which is an important dimensionof language learning.

AbilityEnhancementCompulsoryCourse(AECC)-LanguagesforB.Sc. (Basic/Hons.), B.C.A. (Basic/Hons.), B.B.A. (Basic/Hons.)andB.Sc. (Basic/Hons.)/Integrated Master (Five years) Degree in Molecular Biology Choice Based Credit System(CBCS)With Multiple EntriesAndExitOptions under New Education Policy (NEP) – 2020(2021-22 Batch Onwards)

Details ofCourseofStudy: IandIISemesters

Sem.	Discipline Core/Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	AECC: (L1–1): Kannada (3+0+0)	**4**	**3**	**40**	**60**
II	AECC: (L1–2): Kannada (3+0+0)	**4**	**3**	**40**	**60**

ಮೂರನೆಯ ಚತುರ್ಮಾಸ ಬಿ.ಎಸ್ಸಿ 5 ವರ್ಷದ ಸಂಯೋಜಿತ ಅಣುಜೀವಶಾಸ್ತ್ರ

ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯಕ್ರಮ (ಎನ್.ಇ.ಪಿ – 2022–23)

ವಿಜ್ಞಾನ ಗಂಗೋತ್ರಿ – 3

ಘಟಕ : 1 ಮಾನವೀಯತೆ

1. ಅ. ಚಂದ್ರಹಾಸನ ಪ್ರಸಂಗ – ಲಕ್ಷ್ಮೀಶ
   ಆ. ನನ್ನ ನಾಯಿ – ಪು.ತಿ. ನರಸಿಂಹಾಚಾರ್
2. ತಾಯ್ತನ – ಎಚ್. ನಾಗವೇಣಿ

ಘಟಕ : 2 ಪ್ರವಾಸ

1. ಜೋಗದ ಗುಂಡಿ – ಮೂಗೂರು ಮಲ್ಲಪ್ಪ
2. ಮಹಾನ್ ಗೋಡೆ – ಶೂದ್ರ ಶ್ರೀನಿವಾಸ್
3. ಅನಾಫಿಲ್ಲಮ್ ಮತ್ತು ಕದಂಬ – ಬಿ.ಜಿ.ಎಲ್ ಸ್ವಾಮಿ

ಘಟಕ : 3 ವಿಚಾರಕ್ರಾಂತಿ

1. ಬೆಂಜಮಿನ್ ಮೋಲಾಯಿಸ್ ಹಾಡು – ಡಾ. ಚೆನ್ನಣ್ಣ ವಾಲೀಕಾರ
2. ಮೈಮೇಲೆ ದೆವ್ವ ಬರುವುದೇ? – ಡಾ.ಸಿ.ಆರ್. ಚಂದ್ರಶೇಖರ್
3. ಮಿಂಚಿನ ಅಕ್ಷರ ಮಾಲೆ – ಮೊಗಳ್ಳಿ ಗಣೇಶ್

ಘಟಕ : 4 ಸಂಕೀರ್ಣ

1. ಗಂಡಾಗಿ ಹುಟ್ಟಬೇಕಿತ್ತು – ಶ್ರೀದೇವಿ ಕೆರೆಮನೆ
2. ಹೃದಯ ದುರ್ಬಲವಾಗುತ್ತಿದೆಯೇ? – ಡಾ.ಆರ್.ಕೆ. ಸರೋಜ
3. ಕುಸಿಯುತ್ತಿರುವ ಸಾಂಸ್ಕೃತಿಕ ನೆಲೆಗಳು – ರಂಜಾನ್ ದರ್ಗಾ

ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾನ ಬಿ.ಎಸ್ಸಿ 5 ವರ್ಷದ ಸಂಯೋಜಿತ ಅಣುಜೀವಶಾಸ್ತ್ರ

ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯಕ್ರಮ (ಎನ್.ಇ.ಪಿ – 2022–23)

ವಿಜ್ಞಾನ ಗಂಗೋತ್ರಿ – 4

ಘಟಕ : 1 ದಮನಿತ ಲೋಕ

1. ಅ. ಅಲ್ಲೇ ಕುಂತವರೆ – ಸಿದ್ದಲಿಂಗಯ್ಯ
   ಆ. ಹಡದಿ ಹಾಸುವವರು – ವೀರಣ್ಣ ಮಡಿವಾಳರ
2. ಚೋಮನ ದುಡಿ (ಕಾದಂಬರಿಯ ಅಯ್ದ ಭಾಗ) – ಕೆ.ಶಿವರಾಮಕಾರಂತ

ಘಟಕ : 2 ಸಹಿಷ್ಣುತೆ

1. ಅ. ಭಿನ್ನ ಭೇದವ ಮಾಡ ಬ್ಯಾಡಿರೋ – ಅಜ್ಞಾತ ತತ್ವಪದಕಾರ
   ಆ. ಕುಲ ಕುಲ ಕುಲವೆಂದು – ಕನಕದಾಸ
2. ಒಂದು ಅಪೂರ್ವ ಸಂಸಾರ – ಕರಿಗೌಡ ಬೀಚನಹಳ್ಳಿ

ಘಟಕ : 3 ಶ್ರೀಸಾಮಾನ್ಯದ ಬದುಕು

1. ಅ. ಅಮ್ಮನ ಸೀರೆ – ಬಾನು ಮುಷ್ತಾಕ್
   ಆ. ನಮ್ಮೂರ ಮಳ್ಳೇ ಮನೆ ಸೀತೆ – ಎಚ್.ಆರ್. ಸುಜಾತ
2. ಮಾರಿಕೊಂಡವರು – ದೇವನೂರ ಮಹಾದೇವ

ಘಟಕ : 4 ಸಂಕೀರ್ಣ

1. ಅ. ನಂ ರೂಪ್ಲಿ – ಬಿ.ಟಿ. ಲಲಿತಾ ನಾಯಕ್
   ಆ. ವಕ್ರೀಭವನ – ಲಲಿತಾ ಸಿದ್ದಬಸವಯ್ಯ
2. ಹಬ್ಬ ಮತ್ತು ರಥೋತ್ಸವ – ಗೊರೂರು ರಾಮಸ್ವಾಮಿ ಅಯ್ಯಂಗಾರ್

ಮೂರನೆಯಯ ಚತುರ್ಮಾಸ ಬಿ.ಬಿ.ಎ 2022–23ನೇ ಸಾಲಿನ ಕನ್ನಡಭಾಷಾ ಪಠ್ಯಕ್ರಮ

ನಿರ್ವಹಣಾ ಗಂಗೋತ್ರಿ –03 ಎನ್.ಇ.ಪಿ ಪಠ್ಯಕ್ರಮ

ಘಟಕ : 1 ಸಮಾಜ

1. ಪುರಂದರದಾಸರ ಕೀರ್ತನೆಗಳು – ಪುರಂದರದಾಸರು
2. ಧಣಿಗಳ ಬೆಳ್ಳಿಲೋಟ – ಎಚ್. ನಾಗವೇಣಿ
3. ಔದಾರ್ಯಕ್ಕೆ ಕೊನೆಯುಂಟೆ – ತ.ಸು. ಶಾಮರಾವ್

ಘಟಕ : 2 ವೈಚಾರಿಕತೆ

1. ಅ) ಬ್ಯಾಡ ಬ್ಯಾಡಪ್ಪ ನಮಗಿದು ಸರಿಯಿಲ್ಲ – ಜನಪದ ಮಹಾಭಾರತ
   ಆ) ಅತಿಹಿತದಲಿ ನೀವಿಯಹುದು – ಕನಕದಾಸರು
2. ದೇವರ ಹೆಣ – ಕುಂ. ವೀರಭದ್ರಪ್ಪ

ಘಟಕ : 3 ಜೀವನ ಮತ್ತು ಕಲೆ

1. ಅ. ನುಡಿಬೇಕು ಮೌನವೂ ಬೇಕು – ರತ್ನಾಕರವರ್ಣಿ
   ಆ. ಕಳವಳವ ನೀಗಿ ಬಿಡು – ಡಿ.ವಿ. ಗುಂಡಪ್ಪ
2. ಡಾ. ರಾಜ್‌ಕುಮಾರ್ : ನಾಡಿನ ನುಡಿ – ದೊಡ್ಡಹುಲ್ಲೂರು ರುಕ್ಕೋಜಿ

ಘಟಕ : 4 ಸಂಕೀರ್ಣ

1. ಅ. ಪರಹಿಂಸೆಯಂ ಮಾಡಿ ಮಾನವಂ ಬಾಳ್ದಪನೆ – ಲಕ್ಷ್ಮೀಶ
   ಆ. ಮನೆವೆಳಸಿದವೊಲು ನಡೆಯದಿರು – ನಂಜುಂಡ ಕವಿ
2. ವ್ಯಥಾ ಇತಿಹಾಸವನು ಕೆಣಕದಿರು – ಡಾ. ರಾಗೌ

ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ ಬಿ.ಬಿ.ಎ 2022–23ನೇ ಸಾಲಿನ ಕನ್ನಡ ಭಾಷಾ ಪತ್ಯಕ್ರಮ
ನಿರ್ವಹಣಾ ಗಂಗೋತ್ರಿ – 4 ಎನ್.ಇ.ಪಿ. ಪತ್ಯಕ್ರಮ

ಘಟಕ : 1 ಯುದ್ಧ

1. ಇವರ ಯುದ್ಧವೆಂಬುದತಿ ಕ್ರೂರಗ್ರಹ ಯುದ್ಧದಂತೆ – ಪಂಪ
2. 'ಶ್ಮಶಾನ ಕುರುಕ್ಷೇತ್ರಂ' ನಾಟಕದಿಂದ ಆಯ್ದಭಾಗ – ಕುವೆಂಪು
3. ನಾಗೇಶ ಹೆಗ್ಗಡೆ ಅವರ ಕೃತಿಯಿಂದ ಆಯ್ದ ಲೇಖನ – ನಾಗೇಶ ಹೆಗ್ಗಡೆ

ಘಟಕ : 2 ರಾಷ್ಟ್ರೀಯತೆ

1. ಅ. ಕನ್ನಡಮೆನ್ನಿಪ್ಪಾ ನಾಡು ಚೆಲ್ವಾಯ್ತು – ಆಂಡಯ್ಯ
   ಆ. ಕಿತ್ತೂರ ಚೆನ್ನಮ್ಮ – ಜನಪದ ಕವಿ
2. ಸೆರೆಯಿಂದ ಹೊರಗೆ – ಬಸವರಾಜ ಕಟ್ಟಿಮನಿ

ಘಟಕ : 3 ಶಾಂತಿ

1. ಅ) ಶ್ರೀಕೃಷ್ಣ ರಾಯಭಾರ ಪ್ರಸಂಗ – ಕುಮಾರವ್ಯಾಸ
   ಆ) ಗೋಲ್ಗೊಥಾ – ಎನ್. ಗೋವಿಂದ ಪೈ
2. ವಚನಭಾರತದಿಂದ ಆಯ್ದಭಾಗ – ಎ.ಆರ್. ಕೃಷ್ಣಶಾಸ್ತ್ರೀ

ಘಟಕ : 4 ಸಂಕೀರ್ಣ

1. ಅ) ಶಾಸನ ಸಂಸ್ಕೃತಿ – ಶಾಸನ ಪದ್ಯಗಳು
   ಆ) ಕನ್ನಡ ನಾಡು–ನುಡಿ – ಶ್ರೀವಿಜಯ
2. ಅಗ್ನಿರೆಕ್ಕೆಗಳು – ಎ.ಪಿ.ಜೆ. ಅಬ್ದುಲ್‌ಕಲಾಂ

ಮೂರನೆಯ ಚತುರ್ಮಾಸ ಬಿ.ಎ 2022–23ನೇ ಸಾಲಿನ ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯಕ್ರಮ

ಗಣಕ ಗಂಗೋತ್ರಿ – 3 ಎನ್.ಇ.ಪಿ ಪಠ್ಯಕ್ರಮ

ಘಟಕ – 1 ದೈನಂದಿನ ಲಯ

1. ಅ. ಜನಪದ ತ್ರಿಪದಿಗಳು – ಅಜ್ಞಾತ ಕವಿ
   ಆ. ರಾಮನ್ ಸತ್ತ ಸುದ್ದಿ – ಕೆ.ಎಸ್. ನಿಸಾರ್ ಅಹಮದ್
2. ತಟ್ಟಿಯ ಕೊನೆ ಅಗುಳು – ಸುನಂದಾ ಕಡಮೆ

ಘಟಕ – 2 ಸೌಹಾರ್ದ

1. ಅ. ಎಲುಬಿನ ಹಂದರದೊಳಗೆ – ಮೂಡ್ನಾಕೂಡು ಚಿನ್ನಸ್ವಾಮಿ
   ಆ. ಹೊಸ ಗಾಳಿ ಬಂತಣ್ಣ – ಎಚ್.ಎಲ್. ಪುಷ್ಪ
2. ಕಾಗೆ – ಬೆಸಗರಹಳ್ಳಿ ರಾಮಣ್ಣ

ಘಟಕ – 3 ಸ್ವಾತಂತ್ಯ

1. ನಲವತ್ತೇಳರ ಸ್ವಾತಂತ್ರ್ಯ – ಸಿದ್ದಲಿಂಗಯ್ಯ
2. ಮಾಡಿ ಮಡಿದವರು (ಕಾದಂಬರಿಯ ಅಯ್ದ ಭಾಗ) – ಬಸವರಾಜ ಕಟ್ಟಿಮನಿ
3. ಗಿರಿಜವ್ವನ ರೊಟ್ಟಿ – ಅ.ನ.ಕೃ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ

1. ಅ. ಸಾರಥಿಯಾಗು ನಡೆ – ಕುಮಾರವ್ಯಾಸ
   ಆ. ಸೋಮೇಶ್ವರ ಶತಕ – ಸೋಮೇಶ್ವರ
2. ನಿಷಿದ್ಧ ಗಡಿಗಳ ದಾಟಿದ ಡಾ. ರುಕ್ಮಾಬಾಯಿ – ಡಾ.ಎಚ್.ಎಸ್. ಅನುಪಮ

ನಾಲ್ಕನೆಯ ಚತುರ್ಮಾಸ ಬಿ.ಸಿ.ಎ 2022–23ನೇ ಸಾಲಿನ ಕನ್ನಡ ಭಾಷಾ ಪಠ್ಯಕ್ರಮ

ಗಣಕ ಗಂಗೋತ್ರಿ – 4 ಎನ್.ಇ.ಪಿ ಪಠ್ಯಕ್ರಮ

ಘಟಕ – 1 ನಾಗರಿಕತೆ

1 ಅ. ಇಟ್ಟಿಗೆಯ ಪುಟ್ಟಣ್ಣ – ಚಂದ್ರಶೇಖರ ಕಂಬಾರ

ಆ. ಒಂದು ಸರೀ ಕಡ್ಡಿಗಾಗಿ – ಜಯಂತಕಾಯ್ಕಿಣಿ

2. ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಗರಿಕತೆ – ಭಾನುಮುಸ್ತಾಕ್

ಘಟಕ – 2 ಅಭಿವೃದ್ಧಿ

1. ಅ. ಮುಂಬೈ ಜಾತಕ – ಜಿ. ಎಸ್. ಶಿವರುದ್ರಪ್ಪ

ಆ. ಪರದೆ ಸರಿದಂತೆ – ಡಿ. ಬಿ. ರಜಿಯಾ

2. ಡಾಂಬರು ಬಂದುದು – ದೇವನೂರು ಮಹಾದೇವ

ಘಟಕ – 3 ಕರುಣೆ

1. ಅ. ಉಪಕಾರಿಯಾದವಂ ತನ್ನ ನೋವಂ ನೋಳ್ಪನೆ

(ಜೈಮಿನಿ ಭಾರತ ಕಾವ್ಯದ ಆಯ್ದಭಾಗ) – ಲಕ್ಷ್ಮೀಶ

ಆ. ಗೋವಿನ ಹಾಡು – ಚನ್ನಪಟ್ಟಣ ವಾಸುದೇವರಾಯ

2. ಕೊನೆಯ ಗಿರಾಕಿ – ನಿರಂಜನ

ಘಟಕ – 4 ಸಂಕೀರ್ಣ

1. ಅ. ಬಾಹುಬಲಿಯ ವೈರಾಗ್ಯಂ – ಪಂಪ

ಆ. ಎರಡು ಗಿಳಿಗಳ ಕಥೆ (ಪಂಚತಂತ್ರ) – ದುರ್ಗಸಿಂಹ

2. ಚಾಪ್ಲಿನ್ (ಆಯ್ದಭಾಗ) – ಕುಂ. ವೀರಭದ್ರಪ್ಪ

ಯುವರಾಜ ಕಾಲೇಜು

ಹೊಸ ಶಿಕ್ಷಣ ನೀತಿ (NEP-201-22)

ಕನ್ನಡ ಭಾಷಾ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ

ಕನ್ನಡ ಭಾಷಾ ಮಾದರಿ ಪ್ರಶ್ನೆಪತ್ರಿಕೆ (ಬಿ.ಎಸ್ಸಿ. 5 ವರ್ಷದ ಸಂಯೋಜಿತ ಅಣುಜೀವಶಾಸ್ತ್ರ ಬಿ.ಬಿ.ಎ ಮತ್ತು ಬಿ.ಸಿ.ಎ)

(1,2,3 ಮತ್ತು 4ನೇ ಚತುರ್ಮಾಸದ ಎಲ್ಲಾ ಪದವಿ ಕೋರ್ಸ್‌ಗಳಿಗೆ ಅನ್ವಯ)

ಅವಧಿ: 2 ಗಂಟೆ ಗರಿಷ್ಠ ಅಂಕಗಳು: 60

1) ಅ) ಒಂದು ಭಾಗದ ಭಾವವನ್ನು ಸಂದರ್ಭ ಸಹಿತ ವಿವರಿಸಿ ಎರಡು ಕವನದ ಪಂಡಿಕೆಗಳನ್ನು ಕೊಡಬೇಕು. 04

ಆ) ಆರು ಪದಗಳಿಗೆ ಅರ್ಥ ಬರೆಯಿರಿ ಹತ್ತು ಪದಗಳನ್ನು ಕೊಡಲಾಗುತ್ತದೆ. (½ x6)=3

ಇ) ಎರಡು ವಿಷಯಗಳನ್ನು ಕುರಿತು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ ಮೂರು ವಿಷಯಗಳನ್ನು ಕೊಡಲಾಗುತ್ತದೆ. (1½ x2)=3

2) ಅ) ನಾಲ್ಕು ವಾಕ್ಯಗಳ ಸಂದರ್ಭ ಸ್ವಾರಸ್ಯವನ್ನು ವಿವರಿಸಿ ಆರು ವಾಕ್ಯಗಳನ್ನು ಕೊಡಲಾಗುತ್ತದೆ. (2½ x4)=10

3) ಅ) ಒಂದು ಪ್ರಶ್ನೆಗೆ ಸಂಕ್ಷಿಪ್ತವಾಗಿ ಉತ್ತರಿಸಿ. ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ. (1 ಮತ್ತು 2ನೇ ಘಟಕದಿಂದ) 05

ಆ) ಒಂದು ಪ್ರಶ್ನೆಗೆ ಸಂಕ್ಷಿಪ್ತವಾಗಿ ಉತ್ತರಿಸಿ. ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ. (3 ಮತ್ತು 4ನೇ ಘಟಕದಿಂದ) 05

4) ಅ) ಒಂದು ವಾಕ್ಯದಲ್ಲಿ ಉತ್ತರಿಸಿ. ಐದು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೊಡಲಾಗುತ್ತದೆ. (1x5)=5

ಆ) ಬಿಟ್ಟರುವ ಸ್ಥಳಗಳನ್ನು ಭರ್ತಿಮಾಡಿ. (1x5)=5

5) ಅ) ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ. (1 ಮತ್ತು 2ನೇ ಘಟಕದ ಲೇಖನ ಮತ್ತು ಸಣ್ಣಕಥೆ ಮತ್ತು ಕಾದಂಬರಿ ಭಾಗದಿಂದ ಆಯ್ಕೆ ಮಾಡಿಕೊಳ್ಳಲಾಗುತ್ತದೆ.) 10

ಆ) ಒಂದು ಪ್ರಶ್ನೆಗೆ ಉತ್ತರಿಸಿ. ಎರಡು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳಲಾಗುತ್ತದೆ. (3 ಮತ್ತು 4ನೇ ಘಟಕದ ಲೇಖನ, ಸಣ್ಣಕಥೆ ಮತ್ತು ಕಾದಂಬರಿ ಭಾಗದಿಂದ ಆಯ್ಕೆ ಮಾಡಿಕೊಳ್ಳಲಾಗುತ್ತದೆ.) 10

DetailsofCourseofStudy:IandIISemesters

Sem.	DisciplineCore/Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	AECC:(L1–1):Sanskrit (3+0+0)	**4**	**3**	**40**	**60**
II	AECC:(L1–2):Sanskrit (3+0+0)	**4**	**3**	**40**	**60**

ISemesterSanskrit

LearningObjectives:

- ItgivesintroductiontoSanskritpoetry.
- ItinspirestoreadtheRaghuvamshamMahakavyam.
- IthelpstobuildthefoundationforSanskritvocabulary.
- ItsupportstheformationofsentencesinSanskrit.
- Itassistsincomprehensionskills.

LearningOutcomes:

- Thestudentgetsmotivatedtocompose poems.
- Thestudentimbibesthenoblequalities.
- Thestudentdevelopsconvictioninscriptures.
- ThestudentlearnsSanskritspeakingskills.
- Thestudentwillbeconfidentinlearningnewtextsof Sanskrit.

IISemesterSanskrit

LearningObjectives:

- ItgivesintroductiontoSanskrit prose.
- ItinspirestoreadthecompleteBharataSangraha.
- Ithelpstogaintheknowledgeabout variousformsofnouns.
- ItsupportstheformationofsentencesinSanskrit.

- ❖ Itassistsintranslationskills.

LearningOutcomes:

- ➢ Thestudentgetsmotivatedtomakeoutsimilarworks inSanskritliterature.
- ➢ Thestudentimbibesthenoblequalitiesdepictedin Sanskritliterature.
- ➢ Thestudentacquiresgrammaticalskills.
- ➢ ThestudentlearnsSanskritspeakingskills.
- ➢ Thestudentwillbeconfidentinlearningnewtextsof Sanskrit.

NEP Syllabi For B.Sc. III Semester, Sanskrit Language

Yuvaraja's College, Mysuru. Academic Year : 2022-23

Ability Enhancement Compulsory Course – 3 Credits

B.Sc / BBA / BCA / Molecular Biology

- Title : Sanskrit Champu Kavya and Grammar [L+T+P] [3+1+0]

Unit-1

Introduction to Classical Sanskrit Literature with special reference to Champu Kavya and it's Lakshanas, Introduction to Author and Text. 15 Marks

Unit-2

Sundarakandam from Champu Ramayana of King Bhoja. 40 Marks

Unit-3

- Grammar : Selected Alankara – Upama, Roopakam, Ananvaya, Utpreksha and Shlesha. 5 Marks

Internal Assessment [Test + Assignment, Test+Seminar] 40 Marks

Total 100 Marks

Learning Objectives –

1. It gives introduction to Sanskrit Champu Kavya.
2. It inspires to read the Champu Ramayana-Sundara Kandam.
3. It helps to build the foundation for Sanskrit vocabulary.
4. It supports the formation of sentences in Sanskrit.
5. It assists in comprehension skills.

Learning Outcomes –

1. The student gets motivated to compose poems.
2. The student imbibes the noble qualities.
3. The student develops conviction in scriptures.
4. The student learns Sanskrit speaking skills.
5. The student will be confident in learning new texts of Sanskrit.

Recommended Learning Resources [Printed Text Books] –

1. Samskrita Bhashashastra Mattu Sahitya Charitre - Dr. K. Krishnamurthy, Vidwan Ranganathasharma and Vidwan H.K. Siddagangaiah. (Page 663-704).
2. Champu Ramayana Sundara kandam – Publication Prasaranga, University of Mysore-1995.
3. Kuvalayananda of Appayya Dixith.

Digital Resources : www.archieve.org https://www.wikipedia.org/

NEP Syllabi For B.Sc. IV Semester, Sanskrit Language

Yuvaraja's College, Mysuru. Academic Year : 2022-23

Ability Enhancement Compulsory Course – 3 Credits

B.Sc / BBA / BCA / Molecular Biology

- Title : Sanskrit Drama and Dramaturgy. [L+T+P] [3+1+0]

Unit-1

Introduction to Sanskrit Drama and Dramaturgy origin and development of Sanskrit Drama – Dasha-Rupakas and their Lakshanas, Important Drushya Kavyas (Dramas) and Dramatists in Sanskrit Literature. 15 Marks

Unit-2

Introduction to Author and Text, Appropriateness of title, background of given contents. Malavikagnimitram of Kalidasa. 40 Marks

Unit-3

- Chandas : Trishtup and it's varieties. 5 Marks

Internal Assessment [Test + Assignment, Test+Seminar] 40 Marks

Total 100 Marks

Learning Objectives –

1. It gives introduction to Sanskrit Drama.
2. It inspires to read the complete Malavikagnimitram of Kalidasa.
3. It helps to gain the knowledge about various forms of nouns.
4. It supports the formation of sentences in Sanskrit.
5. It assists in comprehension skills.

Learning Outcomes –

1. The student gets motivated to make out similar works in Sanskrit Drama.
2. The student imbibes the noble qualities depicted in Sanskrit literature.
3. The student acquires grammatical skills.
4. The student learns Sanskrit speaking skills.
5. The student will be confident in learning new texts of Sanskrit.

Recommended Learning Resources [Printed Text Books] –

1. Samskrita Nataka - By A. R. Krishna Shastry, Prasaranga, University of Mysore, 1988. (page 1-58)
2. Malavikagnimitra, Prasaranga, University of Mysore, 1985.
3. Vrutta-Ratnakara, By Bhatta Kedara, Motilal Banarasidas Publication, New Delhi. 1993.
4. Dasha-Rupakam of Dhananjaya.

Digital Resources : www.archieve.org https://www.wikipedia.org/

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युवराजमहाविद्यालयः, मैसूरुनगरम् ।

(A constituent Autonomous College with Potential for Excellence)

(Re-Accredited "A" Grade with CGPA 3.34 by NAAC)

Department of Sanskrit [Year-2022-23]

संस्कृतविभागः

NEP syllabus and Question paper pattern are applied. for I and II semesters of BSc, BCA, and BBA in the Academic Year 2021-22.

NEP QUESTION PAPER PATTERN

For Ability Enhancement Compulsory Course

B.Sc. / B.B.A. / B.C.A

Qn. No	Particulars		Marks	Total
	SECTION-A			
I	Objective Type Questions (Compulsory)	10 out of 10	1	10
II	Referenceto Context	2 out of 4	5	10
	SECTION-B			
III	Short Answer Questions	4 out of 7	5	20
	SECTION-C			
IV	Essay Type Answer Questions	2 out of 4	10	20
			Total	60
	Internal Assessment			
C1	Test	1	15	15
C2	Assignment	1	15	15
C3	Seminar	1	10	10
			Total	40

DetailsofCourseofStudy:IandIISemesters

Sem.	DisciplineCore/ Paper(L+T+P)	Teaching hours/	Credits	Internal Assessment	Semester End Examination
		week		Marks(C1+ C2)	Marks(C3)
I	AECC:(L1–1):Hindi(3+0+0)	4	3	40	60
II	AECC:(L1–2):Hindi(3+0+0)	4	3	40	60

Syllabus for Ability Enhancement Compulsory Course

B.Sc. (AECC)

B.Sc. Ability Enhancement Compulsory Course

III Semester B.Sc

Title of the Subject/ Discipline: हिंदी नाटक साहित्य+ संचार माध्यम और हिंदी				
Semester	**III**	Course Code : AECC-1-HINDI (B.Sc.) Course Title/Discipline : Collection of Short Stories+ Media Writing Text - सात एकांकी- डॉ. सूर्यप्रसाद दीक्षित - अमन प्रकाशन, कानपुर	**Credits**	**3**
			Hours	**4**
Formative Assessment Marks:40		**Summative Assessment Marks:60**		**Duration of ESA:64hrs.**
LearningOutcomes	• एकांकी स्वरूप को समझने की योग्यता निर्माण होगी । • एकांकी के मंचन में रुचि निर्माण होगी। • संचार माध्यमों में हिंदी के अनुप्रयोग और महत्व को समझ पाएंगे ।			

UnitNo.	**Course Content**	Suggested Pedagogy	Hours Per week
Unit I	हिंदी आकांकी का उद्भव और विकास	• व्याख्यान • संवाद एवं बहस • सामूहिक चर्चा • समाचार पत्र में रिपोर्टिंग का अभ्यास	**16**
Unit II	प्रत्येक एकांकी का अध्ययन		**16**
Unit III	एकांकी का विश्लेषण		**16**
Unit IV	संचारमाध्यमों में हिंदी का प्रयोग एवं अनुप्रयोग		**16**

Recommended Leaning Resources

Print Resources	
Digital Resources	https://hi.wikipedia.org/wiki/{dYm

IV Semester B.Sc.

Title of the Subject / Discipline: हिंदी लघु उपन्यास + भाषा के विविध रूप (कार्यालयी भाषा, मीडिया की भाषा, वाणिज्य की भाषा, मशीनी भाषा)				
Semester	**IV**	**Course Code : AECC-1-HINDI (B.Sc.) Course Title/Discipline : Collection of Short Stories+ Media Writing** Text -मोबाईल– क्षमा शर्मा– राजकमल प्रकाशन– नई दिल्ली	**Credits**	**3**
			Hours	**4**
Formative Assessment Marks:40 Summative Assessment Marks:60			**Duration of ESA:64hrs.**	
LearningOutcomes	• उपन्यास स्वरूप को समझने की योग्यता निर्माण होगी। • उपन्यास लेखन में रुचि निर्माण होगी। भषा के विविध रूपो स परिचिय होंगे			
UnitNo.	**Course Content**		**Suggested Pedagogy**	**Hours Per week**
Unit I	हिंदी उपन्यास का उद्भव और विकास, तत्व एवं स्वरूप		• व्याख्यान • संवाद एवं बहस • सामूहिक चर्चा • समाचार पत्र में रिपोर्टिंग का अभ्यास	**16**
Unit II	मोबाईल उपन्यास का अध्ययन एवं विश्लेषण			**16**
Unit III	उपन्यास का समग्र अध्ययन			**16**
Unit IV	भाषा के विविध रूपों का परिचय			**16**

Syllabus for Ability Enhancement Compulsory Course
B.B.A. (AECC)
B.B.A. Ability Enhancement Compulsory Course

III Semester B.B.A.

Title of the Subject / Discipline : हिंदी कहानी और अनुवाद अभ्यास				
Semester	**III**	Course Code : AECC-1-HINDI (B.B.A) Course Title/Discipline : Collection of Short Stories+ Media Writing Text -प्रतिनीधि कहानियाँ- संपा. डॉ. राजेन्द्र पोवार- राजकमल प्रकाशन, नई दिल्ली	**Credits**	3
			Hours	4
Formative Assessment Marks:40		**Summative Assessment Marks:60**		**Duration of ESA:04hrs.**
Learning Outcomes	• हिंदी कहानी के स्वरूप को समझने की योग्यता निर्माण होगी। • कहानी लेखन पठन में रुचि निर्माण होगी। • अनुवाद करने में योग्यता प्राप्त होगी			
Unit No.	**Course Content**		Suggested Pedagogy	Hours Per week
Unit I	हिंदी कहानी का उद्भव और विकास		• व्याख्यान • संवाद एवं बहस • सामूहिक चर्चा • समाचार पत्र में रिपोर्टिंग का अभ्यास	16
Unit II	प्रत्यक कहानी का काव्यमत अध्ययन			16
Unit III	कहानी का विश्लेषण			16
Unit IV	अनुवाद अभ्यास, अनुवाद के प्रकार, अनुवाद की परिभाषा, अनुवाद का महत्त्व , अनुवाद की आवश्यकता ।			16
Recommended Learning Resources				
Print Resources	व्यावहारिक अनुवाद – मोलानाथ तिवारी			
Digital Resources	https://hi.wikipedia.org/wiki/कहानी			

IV semester B.B.A.

Title of the Subject/ Discipline: हिंदी नाटक साहित्य+ अंतर्जाल पर पत्रिकाएँ, चिट्ठा लेखन				
Semester	**IV**	Course Code : AECC-1-HINDI (B.B.A) Course Title/Discipline : Collection of Short Stories+ Media Writing Text -एकांकी सप्तक – डॉ चम्पा श्रीवास्तव- प्रो. राजेन्द्र कुमार- लोकभारती प्रकाशन नई दिल्ली	**Credits**	**3**
			Hours	**4**

Formative Assessment Marks:40 Summative Assessment Marks:60 Duration of ESA:04hrs.

LearningOutcomes	• नाटक स्वरूप को समझने की योग्यता निर्माण होगी। • • नाटक के मंचन में रुचि निर्माण होगी । • अंतर्जाल पर पत्रिकाएँ, चिट्ठा लेखन पर जानकारी मिलेगी ।

UnitNo.	**Course Content**	Suggested Pedagogy	Hours Per Week
Unit I	हिंदी नाटक का उद्भव और विकास, तत्व एवं स्वरूप	• व्याख्यान • संवाद एवं बहस • सामूहिक चर्चा • समाचार पत्र में रिपोर्टिंग का अभ्यास	**16**
Unit II	ताजमहल का टेंडर का अध्ययन एवं विश्लेषण		**16**
Unit III	नाटक का समग्र अध्ययन		**16**
Unit IV	अंतर्जाल पर पत्रिकाएँ, चिट्ठा लेखन		**16**

Recommended Learning Resources

Print Resources	इंटरनेट और हिंदी-डॉ. भगवानजी बारकेर
Digital Resources	https://hi.wikipedia.org/wiki/{dYm

Syllabus for Ability Enhancement Compulsory Course
B.C.A. (AECC)
B.C.A. Ability Enhancement Compulsory Course

B.C.A. III semester

TitleoftheSubject/Discipline: हिंदी कविता और कंप्युटर और हिंदी				
Semester	**III**	Course Code : AECC-1-HINDI (B.C.A) Course Title/Discipline : Collection of Short Stories+ Media Writing Text -काव्य पागासर- डॉ. भोलानाथ- जवाहर पुस्तकाल- मथुरा	**Credits**	**3**
			Hours	**4**
Formative Assessment Marks:40		**Summative Assessment Marks:60**		**Duration of ESA:64hrs.**
Learning Outcomes	• हिंदी कविता के स्वरूप को समझने की योग्यता निर्माण होगी। • कविता लेखन और पठन में रुचि निर्माण होगी। • कंप्युटर के अनुप्रयोग को समझेंग			
UnitNo.	**Course Content**		Suggested Pedagogy	Hours Per week
Unit I	हिंदी कविता का का उद्भव और विकास		• व्याख्यान • संवाद एवं बहस • सामूहिक चर्चा • समाचार एवं [illegible] रिपोर्टिंग का अभ्यास	**16**
Unit I	प्रत्येक कविता का अध्ययन			**16**
Unit III	कविता का विश्लेषण एवं काव्य सौष्ठव			**16**
Unit IV	कंप्युटर और हिंदी का प्रयोग एवं अनुप्रयोग			**16**
Recommended Learning Resources				
Print Resources				
Digital Resources	https://hi.wikipedia.org/wiki/{dYm			

MALAYALAM LANGUAGE SYLLABUS

I Semester BA/ BSc/ BSW/BPA/BSc [FcSc]

MalayalamLanguage- Paper-1 (Part -1) Syllabus and Text Books Under NEP, W.E.F 2021-22

Credits:3(2L+1T) Max.Marks:100 Contac

hours per week:4 C1+C2=40

Exam Duration: 3 hours C3=60

Sl No	Content	Hrs
1	Unit 1 - Medieval Poetry Magdalana Mariyum Vallathol Narayana Menon	16
2	Unit 2 - Prose BharathaPariadanam By KuttikrishnaMaarar Following Essays 1. Amba 2. Karnante Arangettam 3. vyasante chiri	15
3	Unit 3 - Novel Intuppooppakkoranenendarnu By Vaikkam Muhammad Basheer	15
4	Functional Malayalam 1. Padasudhi 2. Vakya sudhi 3. Asayavipulanam	10

Total Contact Hours 56

MALAYALAM LANGUAGE SYLLABUS

II Semester BA/ BSc/ BSW/BPA/BSc [FcSc]

MalayalamLanguage- Paper-1 (Part -1) Syllabus and Text Books Under NEP, W.E.F 2021-22
Credits:3(2L+1T) Max.Marks:100 Contac
hours per week:4 C1+C2=40

Exam Duration: 3 hours C3=60

Sl No	Content	Hrs
1	Unit 1 – Poetry Vailoppilli Sreedharamenon 1. Mala Thurakkal 2. AassamPanikkaar 3. Kakka	16
2	Unit 2 Autobiography - Kanneerum Kinavum V.T Bhattahirippad 1. Kanneerum kinavum 2. valarnnuvarunna orathmavu	14
3	Unit 3 – Short Stories 1. Marappavakal KaroorNeelakandaPilla 2. Kazhcha M.T Vasudevan 3. Moonamathoral Mundur Krishnan Kutty 4. Parudeesa Nashtam Subhash Chandran	16
4	Functional Malayalam 1. Report writing 2. Interview	10

Total Contact Hours 56

TAMIL LANGUAGE SYLLABUS
First Semester B.Sc/B.Sc(FAD) /B.Sc(FCSc)
Tamil Language- Paper-1
(Part -1)
Syllabus and Text Books Under NEP, W.E.F 2021-22

Credits:3(2L+1T)	Max.Marks:100
Contact hours per week:4	C1+C2=40
Exam Duration: hours	C3=60

Course Outcomes (Cos):

1. Understand about the God, we can see like as Friend, workers etc.
2. Understand the special nature of Tamil Poets and Tamil kings of Ancient
3. Gain knowledge about ethics.
4. Understand the usage of correct Tamil letters and its pronunciation.
5. Gain creative skills.

Pedagogy:

1. Lecture Method
2. Discussion method.
3. Using board
4. Using PPT and showing videos.

TAMIL LANGUAGE SYLLABUS
Second Semester BSC /BSC (FAD)/B.Sc(FCSc) Tamil Language- Paper-11
(Part -1)
Syllabus and Text Books Under NEP, W.E.F 2021-22

Credits:3(2L+1T)	Max.Marks:100
Contact hours per week:4	C1+C2=40
Exam Duration: hours	C3=60

Course Outcomes (Cos):

1. Be well versed with the modern ethics.
2. Students would realize that where the true friendship.
3. Students can understand the good culture and family relationship through Kuravanchi literature.
4. Understand proper usage of words
5. Establish that Novels are the timepiece of a society.

Pedagogy:

1.Lecture Method
2.Board using
3.Discussion method
4.PPT& Videos using

Syllabus

(III & IV Semester)

INDIA AND INDIAN CONSTITUTION

(Revised on November 23, 2022)

INDIA AND INDIAN CONSTITUTION

Ability Enhancement Compulsory Courses (AECC)	
Course Title: INDIA AND INDIAN CONSTITUTION	
Total Contact Hours: **45**	Course Credits: 3
No. of Teaching Hours/Week:3	Duration of ESA/Exam: 2 **Hours**
Formative Assessment Marks: 40	Summative Assessment Marks: **60+40=100**

Course Objective

The purpose of the course is to help students to learn and explain the journey of India as a republic. They will, through this paper learn to contextualise the depth of India as a nation with its diverse socio-political culture, its philosophical traditions, values and Ideals. It will give them knowledge to expound the breadth of freedom struggle in various parts of India, its significance in nation building and the sacrifices made both by its leaders and followers. It will help them to demonstrate their knowledge regarding the efforts made at working towards a constitution as India's conscience cherishing the values of Justice, Liberty, Equality and Fraternity. Consequently it will enable students to contextualise the powers and functions of various offices under the Constitution. It will help them determine the role and responsibilities of citizens as enshrined in the Constitution, offering insights in to the contributions of personalities like Gandhiji, Dr B.R.Ambedkar and Jawahar Lal Nehru, Bal Gangadhar Tilak, the values tolerence, equality of treatment, scientific secularism and swarajya and the processes of policymaking keeping national wellbeing in the forefront. This paper will enable students to illustrate how vibrant our Constitution is, how farsighted were its makers and how efficient are the various institutions that are functioning under it.

Learning outcomes

Upon completion of this course students will be able to—

- Explain the philosophy and the structure of the Constitution.
- Measure the powers, functions and limitations of various offices under the Constitution.
- Demonstrate the values, ideals and the role of Constitution in a democratic India.

SEC:NSS-NationalServiceScheme Syllabus

University of Mysore

National Service Scheme

Syllabus

Semester: III	
Course Code: SECNSS3.1	**Course Title: Volunteerism and National Service Scheme**
Course Credits: 01	**Hours / week : 02**
Total contact hours: 32	**Evaluation : Max Marks 25**

Course Objectives:

- To understand the concept of Volunteerism
- To motivate the students to take part in voluntary community activities.
- To understand the organizational structure of National Service Scheme at different levels

Course Outcomes: At the end of this course students will be able to :

- Appreciate the spirit and purpose of Volunteerism.
- Know the organizational structure and its functions at national to Institutional level.
- Learn the skills of critical thinking and Decision making.
- Appreciate the culture of Shramadhan and its benefits through working as a team or group.

Ability Enhancement Compulsory Course (AECC)-ENVIRONMENTAL STUDIES
ChoiceBasedCreditSystem (CBCS) WithMultipleEntriesAnd Exit Options under New Education Policy (NEP) – 2020
(2021-22BatchOnwards)
DetailsofCourseofStudy:IandIISemesters

Sem.	DisciplineCore/Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	AECC:Environmental studies(2+0+0)	**3**	**2**	**20**	**30**
II	AECC:Environmental studies(2+0+0)	**3**	**2**	**20**	**30**

ISEMESTER

Environmentalstudies

Course Objectives:

- Environmental Studies (AECC) is made compulsory core module syllabus framed by UGC for all the Indian Universities as per the directions given by thehonor able Supreme court, which believed that, conservation of environment should be anational way of life and to be inculcated into the education process. The committee proposesastaggeredimplementationforthiscourse.Thisfacilitates the distribution of the teaching workload of aninstitution.
- To ensure the interdisciplinary spirit of the proposed curriculum, teaching must be carried out bythe facultywho are trained at post- graduate(M.Sc.) and Ph.D. in the 'Environmental Science subject only. A candidate who is qualified with UGC- NET/K-SET in the area of Environmental Science will be well- equippedtoteach thiscurriculum.

SkillEnhancementCourse(SEC)-DIGITALFLUENCY

ChoiceBasedCreditSystem (CBCS) WithMultipleEntriesAnd Exit Options under New Education Policy (NEP) – 2020(2021-22 Batch Onwards)

DetailsofCourse ofStudy:IandIISemesters

Sem.	SkillEnhancementCourse (SkillBased) Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	SEC-1(SkillBased): DigitalFluency (1+0+1)	**1+2**	**2**	**20**	**30**
II	SEC-1(SkillBased): DigitalFluency (1+0+1)	**1+2**	**2**	**20**	**30**

IandIISEMESTERS

SEC-1(SKILLBASED):DIGITALFLUENCY(THEORY/PRACTICAL):

2 Credits **15 +30Hrs.**

CourseOutcomes: Attheendofthecoursethestudent should beableto: Course outcomes are statements of observable student actions thatserve as evidenceof knowledge, skills and values acquired in this course. Have an intelligent conversation on the key concepts and applications of ArtificialIntelligence (AI), BigDataAnalytics(BDA),InternetofThings (IoT), Cloud Computing, and Cyber security.

- Developholisticallybylearningessentialskillssuchaseffective communication, problem-solving, design thinking, and team work.
- Build his/her personal brand as an agile and expansive learner – one who is interested in horizontal and vertical growth.

OpenElectivePapersAcrosstheFacultyforB.Sc.(Basic/Hons.),BCA(Basic/Hons.),BBA(Basic/Hons.),andB.Sc.(Basic/Hons.)/IntegratedM.Sc.(Five Years)Degree in MolecularBiologyProgrammes

Choice Based Credit System (CBCS) With Multiple EntriesAndExitOptions under New Education Policy (NEP) – 2020

(2021-22BatchOnwards)

DetailsofCourseofStudy:I,II,III,IV,V and VISemesters

Sem.	Open Elective Papers (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	OE-1:HumanRights (PoliticalScience)(3+0+0)	3	3	40	60
	OE-2:HumanResources Management (PublicAdministration)(3+0+0)	3	3	40	60
	OE-3: Public Personnel Administration (PublicAdministration)(3+0+0)	3	3	40	60
II	OE-1:IndianPolity:Issues and Concerns (Political Science)(3+0+0)	3	3	40	60
	OE-2: International Relations(PoliticalScience) (3+0+0)	3	3	40	60
	OE-3: Management of NGO's (Public Administration)(3+0+0)	3	3	40	60
	OE-4:StateAdministration (Public Administration)(3+0+0)	3	3	40	60

ISEMESTER

OE-1:HUMANRIGHTS (THEORY): 3 Credits 45Hrs.

CourseOutcome: This course aims to introduce the students to basic concepts and practicesofHumanRightsintheglobalandlocaldomain.Thiscoursealsoexposesthem to certain recent issues confronting the Human Rights debates.

LearningOutcome: Aftercompletingthiscoursestudentwillbeableto;

- Explainthebasicconcept ofHumanRightsanditsvariousformulations.
- Have necessary knowledge and skills for analyzing, interpreting, andapplyingtheHumanRightsstandardsand sensitize them to theissues.
- DevelopabilitytocriticallyanalyseHumanRightssituationsaroundthem.

OE-2:HUMANRESOURCESMANAGEMENT(THEORY):3Credits 45Hrs.

Objective: To help students understand, appreciate and analyze work force at the managerial and non-managerial levels. The course also facilitates learning of various concepts, new trends and skills required for Planning, managing and development of human resources for organizational effectiveness.

LearningOutcome: Attheend ofthecoursethestudentsshall;

- UnderstandthescopeandimportanceofHumanResource Management.
- DevelopabilitytotakeappropriatedecisionsinHumanResource Management.
- UnderstandtheprocessinvolvedintheRecruitment,Training, ManagingDiscipline and Grievance.

OE-3:PUBLICPERSONNELADMINISTRATION(THEORY): 3 Credits 45 Hrs.

Objective: Thiscoursewillaimat creatingawarenessabouttheevolutionandgrowthof the discipline. To make students learn about basic principles of Public Personnel Administration. and to give clarity of basic concepts.

LearningOutcome: Attheend ofthecoursethestudentsshall;

- ToexplainthebasicconceptsofPublicPersonnelAdministration.
- To knowthe methodsofrecruitmentofPublicServants.
- UnderstandtheRightsandDutiesofEmployee.

IISEMESTER

OE-1:INDIANPOLITY:ISSUESANDCONCERNS(THEORY): 3 Credits 45 Hrs.

Course Outcome: To make the students aware on different issues that exists in Indian polity.Throughthispaperstudentneedtounderstandtheemergingissuesandtheir

causesto theIndianDemocracy.

LearningOutcome: Aftercompletingthiscoursestudentwillbeableto;

- Understandthereasonsbehindthecausesoftheseissuesandalsothe constitutional provisions that existed.
- Familiarizewiththedebatesthatemerged.
- Beabletosuggestthemeasurestocontrolsuch issues.

OE-2:INTERNATIONALRELATIONS(THEORY): 3 Credits 45Hrs.

Course Outcome: This course aims to introduce the students to basic concepts, Institutions and Issues of Global Politics. This course also exposes them to the Understanding OF Power Politics of Regional and Global level.

LearningOutcome: Aftercompletingthiscoursestudentwillbeableto;

- Understand and reflect on basic concepts, Institutions and IssuesofInternational Relations Global Politics.
- DevelopanddeepenthesenseofCosmopolitanism
- ToacquireGeneralknowledgeforCompetitiveexam.

OE-3:MANAGEMENTOFNGO'S(THEORY): 3Credits45 Hrs.

CourseObjectives: ToacquirespecificknowledgeonNGOmanagement. To understandthe basic concepts and principles involved in managing NGOs. To understand the

Project Management Dimensions, Planning and its implementation.To enhance skills and techniques for Resource Mobilization.

LearningOutcome: Aftercompletingthiscoursestudentwillbeableto;

- LearnthefunctionsofNGOmanagementalongwithitslegalstructure.
- Understand about Project management Dimensions, Planning and itsimplementation.
- AcquiretheSkillsand techniquesofproject evaluation/Resource Mobilization.

OE-4:STATEADMINISTRATION(THEORY): 3Credits45 Hrs.

Course Objectives: This course will aim at creating awareness about the evolutionandgrowthofthediscipline.Tomakestudentslearnaboutbasic ideas of State Administration. And to give clarity of basic concepts.

LearningOutcome: Aftercompletingthiscoursestudentwillbeableto;

- Toexplainthebasicconceptsofstateadministration.
- To knowtheworkingofstateadministration.
- Toknowtheroleplayed bydifferentauthoritiesinstateadministration.

Open Elective Papers of Physical Education for B.Sc.(Basic/Hons.),BCA(Basic/Hons.),BBA(Basic/Hons.),andB.Sc.(Basic/Hons.)/Integrated M.Sc.(Five Years)Degree in Molecular Biology Programmes ChoiceBased Credit System(CBCS)With Multiple EntriesAndExit Options under New Education Policy (NEP) – 2020 (2021-22BatchOnwards) DetailsofCourseofStudy:IandIISemesters

Sem.	Open Elective Papers (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)	Semester End Examination Marks (C3)
I	OE-1:SelfDefence(1+0+2)	1+4	3	40	60
	OE-2: Sports Event Management(2+0+2)	2+2	3	40	60
	OE-3:Yogaand Fitness (1+0+2)	1+4	3	40	60
II	OE-4:Adventurous Sports(3+0+0)	1+4	3	40	60
	OE-5:Physical Fitness For	1+4	3	40	60
	Careers(3+0+0)				
	OE-6:Sportsand Recreation(3+0+0)	1+4	3	40	60

SkillEnhancementCourse(SEC)-
PHYSICALEDUCATION,YOGA,SPORTSChoiceBasedCreditSystem(CBCS)WithMultiple EntriesAndExitOptions under New Education Policy (NEP) – 2020(2021-22 Batch Onwards)
DetailsofCourse ofStudy:IandIISemesters

Sem.	Skill Enhancement Course(ValueBased) Paper (L+T+P)	Teaching hours/ week	Credits	Internal Assessment Marks(C1+ C2)
I	SEC-1:PhysicalEducation andYoga(0+0+2)	2	1	25
	SEC-2: Health and Wellness(1+0+1)	1+1	1	25
II	SEC-3:PhysicalEducation andSports(0+0+2)	2	1	25

Outcome:
Alltheabovecourseshelp inoveralldevelopmentofstudents.
Both mentaland physical health statusofstudentswill be improved; thiswill help in theover all development.

Post GraduateProgramsofferedinYuvaraja'sCollege(Autonomous):

1. 5YearIntegratedMasterofScience(M.Sc.)with **one**Programspecificdiscipline: Molecular Biology.
2. Master of Science (M.Sc.) with **six** Program specific disciplines viz., Chemistry, Physics,Botany,FoodandNutrition andMathematics.
3. MasterofBusiness Administration(MBA)whichisapprovedbyAllIndiaCouncilfor Technical Education (AICTE).

TheobjectivesandoutcomesoftheaboveProgramshave beenset sincetheCBCSsyllabusis introduced in our college.

Sl. No.	Program	Program Code	Program Specific Discipline	Program Specific Code/OpenElectiveCode	Outcome page no
1	5 Year Integrated M.Sc.	MSCCBCSINTYCM	1.Molecular Biology	MSCCBCSINTMBYCM	05
2	M.Sc.	MSCCBCSYCM	1.Botany	MSCCBCSBOTYCM	20
			2.Chemistry	MSCCBCSCHEMYCM	27
			3.Foodand Nutrition	MSCCBCSFSNYCM	43
			4.Mathematics	MSCCBCSMATYCM	56
			5.Physics	MSCCBCSPHYYCM	66
			OpenElectives: a. Sericulture Technology b. Waste Management c. Statistics		79
3	M.B.A.	MBACBSCSYCM	Management Science	MBACBSCSMANYCM	83

1. Program: 5YearIntegratedMasterofScience(M.Sc.)
Program Code: MSCCBCSINTYCM

Programobjectives(PO):

1. Toimpart wholisticinterdisciplinaryeducation.
2. Toinculcatethespiritofcompetitiveness.
3. Totraincriticalthinking,effectivecommunication,socialinteractionandeffectivecitizenship.
4. To developgoodworkculture.
5. Tohaveenvironmentalconcerns.
6. Tomotivatethemforself-directedand lifelonglearningprocess.
7. Todevelopbelongingnesstoourlocalityandnation.

Program outcome (PO):

Studentsget/develop/learn

1. Goodunderstandingofthe studyareas due tointerdisciplinarynatureoftheprogram.
2. Required knowledge for clearing competitive examinations and getting selected interviews in

higher percentages.

3. Critical thinking to take actions and decisions at intellectual, organizational andpersonal perspectives and become citizens of character.
4. Knowledge to effectively speak, read, writes and listens clearly in person and through electronic media in English to develop novel ideas, connect with people, books, media and technology.
5. Capability of healthy social interaction on how to elicit views of others, mediate disagreements and reach conclusions in group settings.
6. To know about effective citizenship where theyare able to demonstrate equitycentered national development, and participate in civic life through volunteering.
7. passionforthechosenfieldandlovetoworkwhichincreasestheirefficiency
8. Torecognizedifferentvaluesystems,understandthemoraldimensionsofdecisions with a responsibility to accept them and practice in life.
9. Issuesrelatedenvironment andtheneedto practicetheminanecofriendlywayfor sustainable development.
10. Theabilitytoengageinindependentandlife-longlearninginthecontextofsocio- technological changes which gives them self-directed and lifelong learning capabilities.
11. The importance of locally available resources and knowledge with pride and this helps them to think locally and act globally and have belongingness to our nation.

2. Program:MasterofScience(M.Sc.)
Program Code: MSCCBCSYCM

Programobjectives(PO):

1. Toimpartwholisticeducation.
2. Toinculcatethespiritofcompetitiveness.
3. Totraincriticalthinking,effectivecommunication,socialinteractionandeffectivecitizenship.
4. To developgoodworkculture.
5. Tohaveenvironmentalconcerns.
6. Tomotivatethemforself-directedand lifelonglearningprocess.
7. Todevelopbelongingnesstoourlocalityandnation.

Programoutcome(PO):

Studentsget/develop/learn

1. Good understandingofthe studyareas.
2. Required knowledge for clearing competitive examinations and getting selected interviews in higher percentages.
3. Critical thinking to take actions and decisions at intellectual, organizational andpersonal perspectives and become citizens of character.
4. knowledge to effectively speak, read, write and listen clearly in person and through electronic media in English to develop novel ideas, connect with people, books, media and technology.
5. Capability of healthy social interaction on how to elicit views of others, mediate disagreements and reach conclusions in group settings.
6. To know about effective citizenship where they are able to demonstrate equity centred national development, and participate in civic life through volunteering.

7. Passionforthechosenfieldandlovetoworkwhichincreasestheirefficiency
8. Torecognizedifferentvaluesystems,understandthemoraldimensionsofdecisions with a responsibility to accept them and practice in life.
9. Issuesrelatedenvironmentandtheneedtopracticetheminanecofriendlywayfor sustainable development.
10. Theabilitytoengageinindependentandlife-longlearninginthecontextofsocio- technological changes which gives them self-directed and lifelong learning capabilities.
11. Willdevelopbelongingness toourNation.

3. Program: MasterofBusinessAdministration(MBA)
Program Code: MBACBCSYCM

ProgramObjectives:

1. MBA graduates shall acquire analytical skills, data management and diagnostic problem solving skills in order to support management decision making. Students will make data- driven decisions demonstrating the ability to identify alternatives.

2. **BusinessManagement& Leadership Skills**:Demonstrate an ability to apply a significant amount of business administration knowledge in Leadership & Management, Accounting &Finance, Health Care Management, Human Resource Management, IT Management, and Project Management.

3. **Strategic Planning & Problem-Solving Skills:** To demonstrate ability to identify problems, defineobjectivescollect andanalyze information, evaluaterisksandalternatives, and leverage technology to solve organizational problems using a strategic planning approach.
4. **Communication and Team Management Skills:** To demonstrate ability to communicate effectively with all stakeholders and mobilize team for a common purpose with a clear understanding of organizational behavior and change.

5. **Social Responsibility & Ethical Decision-Making Skills**: To demonstrate the ability to understandandanalyzecorporatesocialresponsibilitiesandapplyethicaldecision- making principles during day-to-day operations.

MBAProgramOutcomes(PO):Uponcompletion oftheMBAprogram,students will:

1. Gainknowledge ofthe keyfunctionsofbusinessenterprises
2. Acquireadvancedskillstounderstandandanalyzesignificantbusinessopportunities, which can be complex, uncertain and dynamic.
3. Usecriticalandanalyticalthinkingto identifyviableoptionsthat cancreateshort-term and long-term value for organizations and their stakeholders.
4. Applybestpracticestosolvemanagerial issues.
5. Integratetheoriesandpracticetoperformstrategicanalysis
6. Demonstrateeffectivewrittenformsofcommunicationand oralbusinesspresentations
7. Implementleadershipskillstoworkeffectivelywithindiverseteams
8. Identifyand analyzeethicalresponsibilitiesofbusinesses.
9. Apply decision-making techniques, both quantitative and qualitative analysis, to management issues.
10. Motivate and work with colleagues, partners, and other stakeholders to achieve organizational purposes.
11. Help build and sustain high-performing teams by infusing teams with a variety of perspectives, talents, and skills and aligning individual success with team success and with overall organizational success.

12. Fostercollaboration,communicationandadaptabilityinhelping.

Programspecific and courseoutcomesoftheabove-mentionedprogramsofourcollege

Sl No.	Program	ProgramCode	ProgramSpecific discipline	ProgramSpecificCode
1	5Year Integrated	MSCCBCSINTYCM	1.Molecular Biology	MSCCBCSINTMBYCM

ProgramspecificTitle:FiveYearIntegratedM.Sc.MolecularBiology Program specific

Code: MSCCBCSINTMBYCM

Programspecificobjectives:(PSO)

- Toimpartadvancedandin-depthknowledgeintheareaofBiologicalscience.
- Totrainthestudentstobeinquisitiveandthinkinaninnovativeway.
- To impart basic and translational research skills with technical excellence and make them research and industry ready.

Programspecificoutcome(PSO)

- In depth knowledge gained during the course offive years helps the studentsto quickly acclimatizetotheworkenvironment whentheyjoinastraineesorJRFpositions inmost of the research institutes/industries.
- Helps the students to answer the questions with confidence in competitive examination and also in PhD interviews.
- Gain enough knowledge to propose research ideas with guidance from the concerned subject teacher.
- Develop practical skills along with their theory components, which helps in their Final year Project work and in research programmes when selected for various positions in both academic institutions and R & D programmes of industries.
- Develop entrepreneurial skills with the help of skill-based courses and alumni interaction.
- Effective communication and interactive skills developed for teaching the subject at graduate and postgraduate levels.
- OverallgoalisreachedtowardsProfessionalCompetence.

	VIISEMESTER				
MBG110	Immunology	3	1	0	04
MBG120	Molecular Mechanism of Signal Transduction	2	1	0	03
MBG130	Molecular Mechanism of Gene Expression – I	3	1	0	04
MBG140	Genetic Engineering- I & Bioinformatics	4	1	0	05
MBG150	MolecularBiologyLab-1	0	0	4	04
MBG160	Elective–3	2	0	0	02
	Total				**22**
	VIIISEMESTER				
MBH110	MolecularPathology	3	1	0	04
MBH120	Biostatistics and Research Methodology	2	1	1	04
MBH130	GenomicsandPhylogenetics	2	1	1	04

MBH140	MolecularBasisof Developmentand Differentiation	3	1	0	04
MBH150	MolecularBiologyLab-2	0	0	4	04
MBH160	Elective–4/minorprojectwork	2	0	0	02
	Total				**22**
	IX SEMESTER				
MBI110	GeneticEngineering-II	3	1	0	04
MBI120	ProteomicsandDrugdesigning	2	1	1	04
MBI130	Cancerbiology	2	0	0	02
MBI140	Molecular mechanism of Gene Expression-II	3	1	0	04
MBI50	MolecularBiologyLab-3	0	0	6	06
MBI60	Elective-5	2	0	0	2
	Total				**22**
	XSEMESTER				
MBJ110	Elective-6(selfstudy)	02			02
MBJ120	ProjectWork		01	07	08
	Total				**10**
	GrandTotal-Credits				**200**

Courseobjectivesandoutcomesof5YearIntegratedM.Sc.Molecularbiology

SEMESTERVII

MBG110- IMMUNOLOGY– THEORY-3CREDITS 48hrs
Tutorials-1Credit (32 hours)

Course objectives:

- Togainknowledgeofthedevelopmentofthevariouscellsandtissuesofthe human immune system.
- To model the physiological and pathological functions of the immune system at a molecular level
- To demonstrate some of the major modern techniques influenced by immunology and to understand types of immune responses seen in the body in normal and pathological conditions.
- To acquire knowledge about research and development of novel vaccines and immunotherapeutics.

Course outcome:

- Students will have knowledge of different types of immunity, protection barriers, different cells which are participating in the immune responses. Applications of monoclonal antibodies. Immunology of cancer and other disorder.
- Students will understand the importance of ongoing research like production of vaccines for emerging pathogens, also in immunotherapy, autoimmune diseases.
- This will helps the students in advancing understanding of basic immunologywhich is essential for clinical and commercial application and will facilitate the discovery of new diagnostics and treatments to manage a wide array of diseases.
- Students will understand the role of immune responses in numerous disciplines of medicine, particularly in the field of organ transplantation, oncology etc.

MBG120-MOLECULAR MECHANISM OF SIGNAL TRANSDUCTION2 Credits32hrs UNITIandUNITII

Course objectives:

- To understand the basic concepts of signal transduction and its impact on physiology and pathology.
- To understand the role of secondary messengers and their mechanism of action in up regulations and down regulations of various signalling pathways.

Course outcome:

- It willhelpto understandthe basicprinciplesofsignaltransductionmechanisms, in particular the concepts ofsensorytransduction pathways, signal amplitude and signal integration.
- Studentswillunderstandtheroleofhormonesinsignaltransduction.
- Students will acquire the knowledge of signal transduction in bacteria, yeast, plant and animal models.Also to study the signalling processes in healthy and diseased conditions.

MBG130MOLECULARMECHANISMOFGENEEXPRESSION-I,

3Credits48hrs
Tutorials-1 Credit(32 hours)

Course objectives:

- TolearningthemolecularеventsintheDNAreplication,transcriptionand translationand to understandthe role ofdifferent enzymes during these processes.
- To understand the molecular events of translation leading to protein synthesis and post translational modification.
- ToacquireknowledgeaboutthemechanismofDNArepair atmolecularlevel.

Course outcome:

- It helpsthestudentsto get deeper understanding ofkeyeventsofmolecular biology comprising of mechanism of DNA replication, transcription and translation in prokaryotes and eukaryotes.
- Students will have adequate knowledge about post transcriptional modifications and processing of eukaryotic RNA.
- TodevelopcomprehensiveunderstandingregardingDNARepairMechanisms.
- This builds the basic foundation to the students to understand further deeper molecular events and mechanism occurring in various life processes.

MBG140-GENETICENGINEERING-I&BIO-INFORMATICS,
Theory 4 CREDITS, 64Hrs

Tutorials-1Credit(32 hours)

Course objectives:

- To understand the different tools of genetic engineering such as enzymes, vectors, labelling methods and PCR.
- Toimpartknowledgeontheuseofdifferenttools ingenetic engineering.

Course outcome:

- Studentswill becomefamiliarwiththetoolsandtechniquesofgeneticengineering.
- Students will be able to perform basic genetic engineering experiments at the endof course.
- Students will acquire knowledge of advances in biotechnology through recombinant DNA technology.
- StudentswillbeabletodescribetheimportanceofDNAandproteinsequence alignments, methods of alignment.
- Studentswill learnvariousbiologicaldatabasesandtoolsinbioinformatics.

MBG150-MOLECULARBIOLOGYLAB-1,4CREDITS

32x4=128hrs

Course objectives:

- Todevelopkeypracticalskillsinimmunology,molecularmechanismofsignal transduction, molecular mechanism of gene expression and genetic engineering.
- Toprovidestudentswithexperimentalknowledgeofmolecular biologyand genetic engineering.
- Todevelopanunderstandingaboutpracticalaspectsofcomponentsofimmune system as well as theirfunction. Basic as well as advanced methods will be taught

todetectdifferentantigenandantibodyinteractions,isolationofdifferentlymphocyte cells etc. and how they can be used in respective research work.

- Studentswill learntheisolationofPlasmid,DNA and RNAfromdifferentsource.

Course outcome:

- Studentswillgainpracticalskillsrequiredtoeffectivelydoscientific research.
- Students will develop the sequential and conceptual thinking and paradigms of cellular and molecular basis of immune system and their applications.
- Students will understand the usefulness of immunologyindifferent pharmaceutical companies; identify the proper research lab working in the area of their own interests and they can apply their knowledge and design molecular diagnostic kits for detection of diseases.
- This course paper will make students to learn about the structural features of the componentsofthe immunesystemaswellastheir function. The major emphasis of this course will be on the development of the immune system and mechanisms by which our body elicit the immune response. It also provides the conceptual framework for the development of immuno- and molecular diagnostics and their applications in agricultural, biomedical and veterinary sciences.
- Students will be able to conduct independent work in a laboratory to conduct molecular and cell-based experiments.
- Studentswillunderstandtheprinciplesand havepracticalexperienceofawide range of basic and advance molecular and biochemical techniques.

SEMESTERVIII

MBH110-MOLECULARPATHOLOGY– THEORY -3 CREDITS

Tutorials-1Credit(32hours)

Course objectives:

- Studyofetiology,symptoms,predisposingfactorsandrecurrenceofplant~~and~~ animal and human infectious and other diseases.
- To understand molecular mechanism of infectious human diseases and predisposing genetic factors in common diseases.

Course outcome:

- Study of this course enables the students to know how pathogens cause disease, includinganalysisofthe molecular signalingamong plant,pathogensand genes. The scope and responsibilities is to prevent and control plant diseases of economic importance and thereby maximize crop yield.
- Understanding genetics of resistance, host pathogen interaction and key proteins which are involved in plant defense.
- Understandingthemolecularandgeneticbasisofcommonhumandisorders.

- Studentswillknowchallengesfacedbyhumansduringapandemic,especially emerging viral diseases.

MBH120-BIOSTATISTICSANDRESEARCHMETHODOLOGYTHEORY2 CREDITS 32HOURS

Course objectives:

- Tointroducestudentstothevariousresearchmethodologiesinasystematic approach for data analysis.
- Toencourgethestudentstotakeupresearchchallengeinproperdirectionand validation of research data.
- Totrainthestudentstoreviewagivenresearchpaper,prepareresearchproject proposal to funding agencies.

Course outcome:

- Biostatistics helps the students to understand numerous modern biologicaltheories. Geneticstudies and to understand observed experimental results.
- Students will unmderstand the statistical advances with the development of methods and tools for many genetic data analysis like NGS.
- Overall biostatistics provides tools and techniques for collecting data and then summarizing, analyzing, and interpreting biologicaldata accurately in the field of life science research to the students of molecular biology.
- Research methodology helps the students to follow certain methods, prediction and accuracy of observations.
- It helps to produce new knowledge and deepens understanding of a research task through proper research design.

MBH130-GENOMICS ANDPHYLOGENETICS– THEORY+Tutorials 3CREDITS 48hrs –PRACTICAL32hrs

Course objective:

- Toteachgenomics,usingmodelorganismsrepresentingplantsandanimals.
- Togiveunderstandingofthediversityandcomplexityofgenomes.
- Togiveinsightstotherecentdevelopmentsinthegenomicsfieldandtogive exposure on different tools used for biological data and its annotations.
- Toequipthestudentstodevelopskillsinpreliminarydataanalysisandexperimental design.

Course outcome:

- Studentswillunderstand the basicsofgeneticanalysisofthegene,genome.
- Enablesthem tounderstandthebasicorganization of prokaryoticandeukaryotic genomes.
- Thiscourse introducesthestudentsto conceptualizetheprinciplesofdifferent tools in bioinformatics.
- The student will be able to apply basic principles ofbiology, computer science and mathematics to address complex biological problems

- Thiscourseprovidestheknowledgeand practicalskillsoffunctionalgenomics.
- Thecoursealsoteachesthetechniquesusedinfunctionalgenomicssuchas microarrays, NGS, mRNA expression and miRNA expression.

MBH140MOLECULARBASIS OF DEVELOPMENTANDDIFFERENTIATION-
3CREDITS-48Hrs

Course objective:

- To understand the molecular basis and genes involved in the development and regulation of various model organismsand ,plantsand differentiation of neurons, muscles, bone, heart,pancreas .
- Tostudydevelopmentinplantsfromembryogenesistoseed development.

Course outcome:

- Studentswilllearnbrieflyabout gametogenesisandfertilizationtobetter understand the development and differentiation that happens later.
- To aid deeper understanding ofMolecular basisofdevelopment and differentiation in various model organisms like *C. elegans*, Drosophila, Mammals and plants.
- Students will learn the later developmental process like myogenesis, osteogenesis, and angiogenesis.
- Theywillstudyabout reproductive biotechnologyandparthenogenesiswhichhelps in understanding the industrial commercial importance.
- Development in plants from embryogenesis, vegetative development to flowering and seed are extensively discussed to help students to understand its importance in agriculture especially in floriculture.

MBH 150 Molecular Biology Lab-2 - 4 Credits 16x8= 128 hrs

(MolecularPathology,MolecularBasisofDevelopmentandDifferentiation)

Course objectives:

- Studentswillunderstandthe fundamentalknowledge inanimalandplant molecular biology experiments and their applications.
- Studentswilllearntoisolatepathogens fromdiseasedplants.
- Students will understand the principles and have practical experience of a wide
- range of basic and advance molecular and biochemical techniques related to developmental biology.
- Students will get to know the different types of mutants on different modelsystems.

Course outcome:

- Students will be able to evaluate usefulness of immunology in different pharmaceutical companies; identify proper research lab working in area of their own interests and apply their knowledge and design immunological experiments.
- Students will have strong practical knowledge in molecular biology & genetic engineering.

So students can get placement in the relevant pharmaceutical and biotech industries.

- Students will understand the effect of Homeotic genes and its role during the development.

Elective-4 /Minor Research Project-Theory 2 Credits 32hours

Course objective:

- Toenablethestudentstodefinearesearchproblem.
- Toenablethestudentstoundertakeresearchpaperreviewpublishedinpeerreviewed journals.
- Totrainthe studentsto write areportona givenresearchproblemfollowing allthe basic requirements.

Course outcome:

- Studentswillbeabletoselectaresearchproblemoftheirinterest.
- Theywillacquireindepthknowledge ona particularresearchproblem.
- Theywillbetrained tosearchdifferentsourcesofresearchmaterials.
- They will be able to write a good review on a given research problem which includes writing introductions, categorising the contents summerizing the research review and listing references following a standard style.

SEMESTERIX

MBI110-GENETICENGINEERINGII – THEORY– 3CREDITS-48 hrs
Tutorials1Credit 32hours

Course objective:

- Tounderstandtheprokaryoticandeukaryoticexpressionsystems.
- Toimpartknowledgeonplantandanimalcellculture.
- To give deeper knowledge on the mechanism of RNA interference and antisenseRNA.
- To introducefundamentalaspectsofintellectualpropertyrightsto studentswho are going to playa major role indevelopment and management ofinnovative projects in industries.

Course outcome:

- Students will be able to get knowledge on selection of suitable expression system for a specific metabolic product.
- Studentswill learntheapplicationofplantand animalcellculture.
- It enables the students to acquire knowledge onbiomarkers and their application in molecular biology during molecular breeding.

- Students will become aware of genetic engineering and its applications in various fields like medicine, vaccine production, disease diagnosis, agriculture and environment.
- Students will acquire knowledge on bio safety, handling, testing & evaluation of GMO's, and animal ethical issues.
- Students will learn the disposal methodologies and safety concerns related to GMO's by understanding the role of different committees such as IBSC, RCGM, GEAC.
- The students once they complete this course shall get an adequate knowledge on patent and copyright for their innovative research works during their research career.
- Knowledge gained after completing this course, will make the students to get jobs in R&D. They can also become entrepreneurs.

MBI120-PROTEOMICSANDDRUGDESIGNING–THEORY–2CREDITS32hrs

Tutorials2 credits(32 hours)

Course objectives:

- Toprovidethestudentswithanintroductiontocurrent methodologiesandtrends in the field of proteomics.
- Togive anoverview andawarenessoftypicalproteomicsapplications.
- Togiveknowledgeonproteincharacterizationmethodology,protein-drugand protein protein interaction.
- Toprovidethefundamentalsandapplicationsinvolvedinproteincharacterization.

Course outcome:

- Studentswilllearnaboutthedatabasesusedinbioinformatics.
- Students will be trained to use databases for structure determination of different proteins.
- This course introduces the students with molecular dynamics, simulation, and modeling for drug discovery.
- This paper introduces to the basic biology of proteins and the new advancedscience
- The techniques involved at large in major contribution in transition from protein chemistry to proteomics are learnt.
- This course will enable the students to describe and apply the methods for the analysis of proteomes, of genomics and of functional proteomics.
- The student will learn about the understanding of the diversity and complexity of proteomes and potential applications of proteomics data in different biological problems.
- The outcome of the course is to train the students in use of computer aided technology to fasten the drug discovery through simulation and modelling.

MBI130 - Cancer biology – 2 Credits 32hrs

Course objectives:

- Tounderstand basicaspectsofcancerpathology.
- To understand the genetic alterations,genomicinstability,apoptosis and proteins which enable the transformation of a normal cell to a cancer cell.
- Tounderstandthecurrentconceptsincancer therapy.

Course outcome:

- Studentswillbeabletounderstandtheconceptsofoncogenesandsignal transduction.
- Studentswillbeabletogainknowledgeonvariousfactorsresponsibleforthe stages of oncogenesis.
- Itwillmake thestudentsawareofongoing cancertreatmentstrategies.

MBI140-MOLECULARMECHANISMOFGENEEXPRESSION-II - THEORY-3CREDITS -48Hrs

Tutorials1 Credit– 32hours

Course objectives:

- Learningstructuralandfunctionallevelsofnucleicacidsthroughoperonmodels.
- Togivetheoverviewof DNApackaging;synthesisandprocessingof RNAand proteins; regulation of gene expression.
- Toprovideanunderstandingoftheregulationoftranscriptionandtranslationinboth prokaryotic and eukaryotic organisms.

Course outcome:

- Students will be able to understand the regulation of gene expression inprokaryotes and Eukaryotes.
- It helps the students to understand how transcriptional control is achieved through alterations in chromatin structure.
- StudentswilllearnthemechanismofRNAprocessingandexport.

MBI150–MOLECULARBIOLOGYLAB–3-6Credits16x12=192hrs

Course objectives:

- To impart hands on training to the students on recent advances in genomics and techniques/tools in molecular breeding, gene expression profiling and bioinformatics.
- Studentswillstudythedifferentmodelorganismslike*Arabidopsisthaliana*and *Drosophila*andtheirmutants
- Studentswillunderstandtheprinciplesandhavepracticalexperienceofawide range of basic and advance molecular and biochemical techniques.

Course outcome:

- Students will acquire knowledge on various techniques of plant tissue culture and plant genetic transformation and their application.
- Students will be able to gain hands-on experience in gene cloning, protein expressionandpurification. Thisexperiencewouldenablethemtobeginacareer in industry that engages in genetic engineering as well as in research laboratories conducting fundamental research.
- Students will have strong practical knowledge in molecular biology & genetic engineering. So students can get placement in the relevant pharmaceutical and biotech industries.
- It can create job opportunities in pharmaceutical companies or they can have their own start-ups. They can also become entrepreneurs.

SEMESTERX

MBJ110Elective 6(Selfstudy)02Credits

MBJ120 Project work08 credits

TotalCreditsfor10semestersis200 Syllabus for

Elective Papers

ELECTIVEPAPERS(Onepaperpersemesterfrom5thSemesteronwards)-2credits (32 hours of teaching)

INDUSTRIALBIOTECHNOLOGY-I

BiotechnologyofFermentation,BiotransformationandBioprocessEngineering

Course objectives:

- To teach students the basic principles of processing of bioproducts from biological resources in the areas industrial biotechnology.
- Toequipstudentswithskillsonrecentmethodologiesandpracticeinindustrial biotechnology.
- Toexposestudentstorelevantandrecentadvancesinindustrialbiotechnology.
- Todevelopknowledgeofavarietyoffermentationstrategiestoobtainvarious products.

Course outcome:

- It helps the students to understand the principles underlying design of fermenters, fermentation process and downstream processing and its applications.
- Ithelpsthestudentstoacquire,integratethescientificandtechnologicalknowledge on the use of bioprocesses for industrial products.
- Thiswillhelpthestudentstoapplythepracticalskillsforentrepreneurial development.

INDUSTRIALBIOTECHNOLOGY-II

Course objectives:

- To introduce students to the ongoing recent developments and advancement made in the field of microbial technology.
- Tounderstandthetechniquesandapplicationsofmatricesandmethodsof immobilization of enzymes and cells.

Course outcome:

- Studentswillcometoknowthebiotechnologicaladvancesinproductionsof different primary and secondary metabolites of biological importance.
- Students will develop deeper understanding of the industrial biotechnology and its applications.
- Students will get good knowledge on production of enzymes, antibiotics, alcohols and alcoholic beverages.
- Students will have the deeper knowledge on recent advances in biotransformation products.
- Thiscoursewill helpthestudentstoestablishindustrialstart ups.

CELLANDTISSUECULTURE TECHNOLOGY

Course objectives:

- Todevelopbasicasepticskills forcellcultureandtheirapplications.
- Tounderstandmediaconstituentsandmediaformulationstrategiesforcelland tissue culture.
- To provide complete exposure as how plant and animal cells are isolated, cultured and genetically manipulated in laboratory.

Course outcome:

- Students will get knowledge of cell and tissue culture which is required for biological science research.
- Based on the knowledge gained after studying this course, students will able to conduct *in-vitro* experiments using different cell lines and tissues during their research work.
- It can create job opportunities in pharmaceutical companies or they can have their own startups.

HUMANNUTRITION

Course objectives:

- Tounderstandtheroleofnutritionin health.
- Tounderstand aboutthephysiologicalandbiochemicalaspectsofthenutrition.
- Toplanthetherapeuticdietandmonitortheevaluationofnutritiontherapy according to the disease conditions.

Course outcome:

- Students will learn about the fundamentals of nutrition from the angle of clinical perspective.
- Theywillunderstand the concepts like glycemic index, balanced diet, micronutrient deficiencies and their remedies, nutraceuticals and their importance, junk foods and their hazards in the holistic manner.
- The course will assist the students to gain employability in diagnostic and research institutes.

EVOLUTIONANDBEHAVIOUR

Course objectives:

- To provide a course on evolutionary biology that introduces students to the major principles of evolutionary theory.

- Toshowhownatural selection ultimately underpinsallbiological processesand how evolution has generated biological diversity.
- Tounderstandthemolecular aspectsofevolutionandanimalbehavior.

Course outcome:

- Students will have a greatly enhanced knowledge and appreciation of evolutionary biology and behaviour.
- Student willappreciatethecontributionsofevolutionarybiologist andtheirthought processes. This will help the students to think better.
- Studentswillacquire knowledgeonevolutionarytime scale.
- Studentwillgetacompleteperspectiveonanimalbehaviour.
- Thestudyonbiologicalclockwillenablethestudentstoconnectthisto behavioural pattern of organisms.

ETHOLOGY

Course objectives:

- Tounderstandthedifferentpatternsofanimalbehaviorandsocialorganization from biological perspective.
- Toimpartknowledgeonbiochemicalbasisofinstinctivebehavior.
- Tocomprehendthereflexandcomplexbehaviorsofthe animals.
- Tounderstandthecausesofbehavioralchangesduringdevelopmentandsexual imprinting in birds and mammals.

Course outcome:

- Ithelpsthestudentstounderstandthedeeperaspectsofmemory,foragingand biological communications.
- Studentswillunderstandthebiologicalpatternsoflearning.
- Studentswillacquireknowledgeonsexualbehaviourandsocial organizationof primates and honey bees.
- Attheendofthecourse,student willhavetheknowledgeofrelationshipamongthe animals including the evolutionary process and the environmental adaptations.

CLINICALBIOCHEMISTRYUNITIand II

Course objectives:

- Tounderstandtheconceptofhealth&diseases,communicable,non-communicable diseases. Metabolic diseases & deficiency.
- Togiveknowledgeonvariousbio-moleculesandtheiruseindiagnosisand treatment of diseases.
- Tocreateawarenessofdifferentlifestylediseasesincludingitsmanagement.
- Togiveinsightstotherecentdevelopmentsinclinicaldiagnosis.

Course outcome:

- Itillustratesthemechanismofmetabolicdisordersatmolecularlevel.

- Studentswilllearnaboutthenormalconstituentsofurine,bloodandtheir significance in maintaininggoodhealth.
- Students will get the knowledge of marker enzymes useful in diagnosis of various diseases.
- Itisdirectedtowardstheemployabilityindiagnostic centers.

Sl.No	Program	Programcode	Programspecificdiscipline	
2	M.Sc.	MSCCBCSYCM	1.Botany	MSCCBCSBOTYCM

M.Sc.BotanyChoice-BasedCreditSystem(CBCS)Syllabusandcontinuous assessment grading pattern (CGPA) for post graduate degree programmes.
CORESUBJECT:BOTANY–[PostGraduatecourse]
DEGREE: M.Sc. Botany 2020-2021.
(CBCS-CGPA-Modified(2020-21)

FirstSemester		**Titleofthe course/paper**	**Hrs/Week**	**Credits:22**
No.	**Course/Paper/Code**		**L:T:P**	
1	HardCore 1.1	**Virology,Bacteriology, MycologyandPlant Pathology**	**2:2:2**	4
2	HardCore 1.2	**Phycology,Bryophytes, Pteridophytes and Gymnosperms**	**2:2:2**	4
3	HardCore 1.3*	**SystematicofAngiosperms**	**2:2:2**	4+2=06
4	SoftCore1.1**	**FungalBiology and Biotechnology**	**2:2:2**	4
5	SoftCore1.2**	**AlgalBiologyand Biotechnology**	**2:2:2**	4
6	SoftCore1.3**	**LichenologyandMycorrhizal Technology**	**2:2:2**	4
7	SoftCore1.4**	**Phytopathology**	**2:2:2**	4
*FieldStudy/Tour:Thestudent shallundertakeafieldtrip fora minimumof2-3days and shall submit the herbaria and tour report for evaluation of 2 credits. **Anytwosoftcorepapersshallbe studied.				

Second Semester		**Titleofthe course/paper**	**Hrs/Week**	**Credits:18**
No.	**Course /Paper /Code**		**L:T:P**	
1	HardCore 2.1	**ReproductiveBiologyof Angiosperms and Plant Morphogenesis**	**2:2:2**	4
2	HardCore 2.2	**CellBiologyandGenetics**	**2:2:2**	4
3	HardCore 2.3	**PlantBreedingand EvolutionaryBiology**	**2:2:2**	4
4	SoftCore2.1*	**PlantAnatomyand Histochemistry**	**2:0:2**	3
5	SoftCore2.2*	**Ethno-BotanyandIntellectual PropertyRights (IPR)**	**2:0:2**	3
6	**Soft Core 2.3***	**Economic Botany**	**2:0:2**	3
7	**Openelective2.1**	**MedicinalPlants**	**2:2:2**	4

*Anytwosoftcor epapersshallbe studied.

ThirdSemester		Titleofthe course/paper	Hrs/Week	Credits:16
No.	Course/Paper/Code		L:T:P	
1	HardCore 3.1	**BiochemistryandPlant Physiology**	**2:2:2**	4
2	HardCore 3.2	**MolecularBiology**	**2:2:2**	4
3	HardCore 3.3	**PlantBiotechnology**	**2:2:2**	4
4	SoftCore3.1*	**MolecularGeneticsof Plants**	**2:2:2**	4
5	SoftCore3.2*	**MolecularPlant Pathology**	**2:2:2**	4
6	SoftCore3.3*	**PlantPropagationandPlant Breeding**	**2:2:2**	4
7	SoftCore3.4*	**Phyto-chemistryandHerbal Technology**	**2:2:2**	4
8	**Openelective3.1**	**PlantPropagationTechniques**	**2:2:2**	4
*AnyonesoftcorecoursesandOneopenelectiveshallbestudied				

FourthSemester		Titleofthe course/paper	Hrs/Week	Credits:16
No.	Course /Paper /Code		L:T:P	
1	HardCore 4.1	Ecology,ConservationBiologyand Phytogeography	**2:2:2**	4
2	HardCore 4.2	ProjectWork**	**4:4:4**	8
3	SoftCore4.1*	Seed Technology	**2:2:2**	4
4	SoftCore4.2*	Seed Pathology	**2:2:2**	4
5	SoftCore4.3*	Bio-AnalyticalTechniques	**2:2:2**	4
6	**Open elective 4.1**	PlantDiversityandHumanWelfare	**2:2:2**	4
****Project Work:** The student shall undertake a Project Work in the Department or in any otherUniversityor Institute under the guidance of a Research Supervisor and shall submit aProjectReportdulysignedbyStudentandResearchSupervisorforEvaluation *Anyone softcorecourses/papers				

Semester–WisecreditPattern

Semester	HardCore	SoftCore	Total
I	**14**	**08**	**22**
II	**12**	**06**	**18**
III	**12**	**04**	**16**
IV	**12**	**04**	**16**
Total	**50**	**22**	**72**

TotalHardcorecreditstobeearnedbytheStudents:50 TotalSoft corecredits to be earned bythe Students: 22
Studentshasto earnminimumof4creditsfromopenelectives:04
Totalnumberofcreditsrequiredfor qualifying M.Sc.,BotanyCourse: 76

SEMESTER-I: **Credits:22**

No	Hard core/ Soft core/ Open elective	Title of the course paper	Hrs/wk L:T:P	Credits
1.	**HARDCORE 1.1**	Virology,Bacteriology,Mycologyand Plant Pathology -Theory & Practical	2:2:2	4
2	**HARDCORE 1.2**	Phycology,Bryophytes,Pteridophytes andGymnosperms-Theory&Practical	2:2:2	4
3	**HARDCORE 1.3**	SystematicsofAngiosperms– Theory&Practical *FieldStudy/Tour	2:2:2	4 2
4	**SOFTCORE1.1****	FungalBiology&Biotechnology	2:2:2	4
5	**SOFTCORE1.2****	AlgalBiology&Biotechnology	2:2:2	4
6	**SOFTCORE1.3****	Lichenology&Mycorrhizaltechnology	2:2:2	4
7	**SOFTCORE1.4****	Phytopathology	2:2:2	4

*FieldStudy/Tour:Thestudent shallundertakeafieldtripofminimumof2-3daysand shall submit the herbaria and tour report for evaluation- 2 credits **

SEMESTER-II: **Credits:20**

No	Paper Code	Titleofthecoursepaper	Hrs/wk L/T:P	Credits
1.	**HARDCORE 2.1**	Reproductive Biology of Angiospermsand Plant Morphogenesis-Theory&Practical	2:2:2	4
2	**HARDCORE 2.2**	CellBiology&Genetics-Theory& Practical	2:2:2	4
3	HARDCORE 2.3	PlantBreeding&Evolutionary Biology	2:2:2	4
4	**SOFTCORE2.1**	PlantAnatomy&Histochemistry	2:2:2	4
5	**SOFTCORE2.2**	Ethnobotany&IntellectualProperty Rights(IPR)	2:2:2	4
6	**SOFTCORE2.3**	EconomicBotany	2:2:2	4
7	**OpenElective2.1**	MedicinalPlants	2:2:0	3

**Any2Softcorepapersshallbestudied

M.Sc.Botany: IIYear/M.Sc.Degree
SEMESTER-III **Credits:16**

No	Paper Code	Titleofthecoursepaper	Hrs/wk L/T:P	Credits
1.	**HARDCORE 3.1**	Biochemistry&PlantPhysiology	2:2:2	4
2	**HARDCORE 3.2**	MolecularBiology	2:2:2	4
3	**HARDCORE 3.3**	Plant Biotechnology	2:2:2	4
4	**SOFTCORE3.1**	MolecularGeneticsofPlants	2:2:2	4
5	**SOFTCORE3.2**	MolecularPlant Pathology	2:2:2	4
6	**SOFTCORE3.3**	PlantPropagation&PlantBreeding	2:2:2	4
7	**SOFTCORE3.4**	Phytochemistry&Herbarium Technology	2:2:2	4
8	**OpenElective3.1**	PlantPropagationTechniques	2:2:0	3

***AnyoneSoftcorecourses/ Papersshallbestudied**

SEMESTER-IV

No	Paper Code	Titleofthecoursepaper	Hrs/wk L/T:P	Credits:16
1.	**HARDCORE 4.1**	Ecology,ConservationBiologyand Phytogeography	2:2:2	4
2	**HARDCORE 4.2**	*ProjectWork		8
3	**SOFTCORE4.1**	Seed Technology	2:2:2	4
4	**SOFTCORE4.2**	Seed Pathology	2:2:2	4
5	**SOFTCORE4.3**	Bioanalyticaltechniques	2:2:2	4
6	**OpenElective4.1**	PlantDiversity&Humanwelfare	2:2:0	3

*Project Work: The student shall undertake a project work in the department or in any other universityor institute under the guidance ofa research supervisor andshall submit a Project report dulysigned by student & Research Superwiser for evaluation.

SemesterwiseCreditPattern
ISemester=22(HC-14+SC-08)
II Semester=20(HC-12+SC-08)
III Semester=16(HC-12+SC-04) II
Semester= 16 (HC-12+ SC-04)
TotalHardcoreCreditstobeearnedbythestudents=50 Total
Softcore credits to be earned by the student = 24
Studenthastoearn minimumof4CreditsfromOpen Electives=04
TotalnumberofCreditsrequired forqualifying M.Sc.BotanyCourse=78

ISEMCOURSESTRUCTURE

Sl. No	Sem	Module	Practical/ Theory	Code	Paper	Hrs/ Week	Credits	Max marks
1	I	H.C.1.1	Theory	62101	Virology,Bacteriology,Mycology andPlantpathology	2+2	2+1	70+30
	I	H.C.1.1	Practical	62101	„	2	1	70+30
2	I	H.C.1.2	Theory	62102	Phycology,Bryophytes, Pteridophytesand Gymnosperms	2+2	2+1	70+30
	I	H.C.1.2	Practical	62102	„	2	1	70+30
3	I	H.C.1.3	Theory	62103	SystematicsofAngiosperms	2+2	2+1	70+30
	I	H.C.1.3	Practical	62103	„	2	1	70+30
4	I	S.C.1.1	Theory	62105	Phytopathology	2+2	2+1	70+30
	I	S.C.1.1	Practical	62105	„	2	1	70+30
5	I	S.C.1.2	Theory	62104	AlgalBiologyandBiotechnology	2+2	2+1	70+30
	I	S.C.1.2	Practical	62104	„	2	1	70+30
6	I	H.C.1.4			FieldStudy			

Course outcome

1. **Virology,Bacteriology,MycologyandPlantpathology**
   i. TounderstandtheGeneralcharactersClassificationandEconomicimportanceof Mollicutes, Viruses, Bacteria, Cyanobacteria.
   ii. ToLearntheStructureandReproductionofvariousformsincludedinthe syllabus

iii. To acquire thebasic knowledge of various plantdiseasesmentionedin thesyllabus and their management

2. Phycology,Bryophytes,PteridophytesandGymnosperms

i. TostudytheSalientfeatures,ClassificationandEconomicimportanceofAlgae, BryophytesPteridophytesand Gymnosperms
ii. TostudytheMorphology,AnatomyandReproductionofPteridophytesandGymnosperms included in the syllabus
iii. ToacquiretheknowledgeofGeologicaltimescale,FossilsandFossilization

3. SystematicsofAngiosperms

i. Tostudythetypesofclassification-Artificial,Natural,PhylogeneticandRecent trends in Taxonomy
ii. ToacquiretheknowledgeaboutBotanicalSurvey ofIndia(BSI),Herbarium,
iii. Briefstudyofthe Economic productsofAngiospermsandEthnobotany

4. Phytopathology

i. Tostudydifferenttypesofplantdiseases, theirdiseasecycle.
ii. Toacquirethebasicknowledgeofvariousplant diseasesmentioned inthesyllabus and their management.

5. AlgalBiology and Biotechnology

i. TostudytheSalientfeatures, ClassificationandEconomicimportanceofAlgae.
ii. ToLearntheStructureandReproductionofvariousformsincludedinthe syllabus

6. Field Study

i. Fieldvisit fordifferent placesofwesternghat regionstocollect plant speciesandto study different family characteristics. To know vegetation.

IISEMCOURSE STRUCTURE

Sl. No	Sem	Module	Practical/ Theory	Code	Paper	Hrs/ Week	Credits	Max marks
1	II	H.C.2.1	Theory		Reproductive Biology of Angiosperms and Plant Morphogenesis	2+2	2+1	70+30
	II	H.C.2.1	Practical		”	2	1	70+30
2	II	H.C.2.2	Theory		CellBiologyand Genetics	2+2	2+1	70+30
	II	H.C.2.2	Practical		”	2	1	70+30
3	II	H.C.2.3	Theory		PlantBreedingandEvolutionary Biology	2+2	2+1	70+30
	II	H.C.2.3	Practical			2	1	70+30
4	II	S.C.2.1	Theory		Plant Anatomy and Histochemistry	2+2	2+1	70+30

	II	S.C.2.1	Practical		”	2	1	70+30
5	II	S.C.2.2	Theory		EconomicBotany	2+2	2+1	70+30
	II	S.C.2.2	Practical		”	2	1	70+30

Course outcome

1. ReproductiveBiologyofAngiospermsandPlantMorphogenesis

i. TostudythedevelopmentandstructureofmaleandfemaleGametophyte,Embryo, EndospermsinAngiosperms

ii. ToacquiretheknowledgeofExperimentalEmbryologyand plantmorphogenesis

2. CellBiologyandGenetics

i. Tostudytheultrastructureofcellorganelles

ii. Toacquiretheknowledgeofunderlying principlesofdifferentmicroscopes

iii. Tolearnchromosomalaberrationsandtheir significance

i. TounderstandMendel’sprinciples,deviationsfromMendelism,Mutationandits significance

3. PlantBreedingandEvolutionaryBiology

i. Tolearntheprinciples,techniquesandapplicationsofPlantBreeding

ii. TounderstandtheconceptofEvolution,theoriesand evidences

4. PlantAnatomyandHistochemistry

i. Tostudythe structureandfunctionoftissuesinthe growthanddevelopment ofplants

5. EconomicBotany

i. Briefstudyofthe Economic productsofAngiospermsandEthnobotany

IIISEMCOURSE STRUCTURE

Sl. No	Sem	Module	Practical/ Theory	Code	Paper	Hrs/ Week	Credits	Max marks
1	III	H.C.3.1	Theory	BOC110	PlantPhysiologyand Biochemistry	2+2	2+1	70+30
		H.C.3.1	Practical	BOC113	”	3	1	70+30
2	III	H.C.3.2	Theory	BOC120	MolecularBiology	2+2	2+1	70+30
		H.C.3.2	Practical	BOC123	”	3	1	70+30
3	III	S.C.3.1	Theory	BOC130	Plant PropagationandPlant Breeding	2+2	2+1	70+30
		S.C.3.1	Practical	BOC133	”	3	1	70+30
4	III	S.C.3.2	Theory	BOC140	Plant Biotechnology	2+2	2+1	70+30
		S.C.3.2	Practical	BOC143	“	3	1	70+30

Course outcome

1. PlantPhysiologyand Biochemistry

i. Tounderstandtheunderlyingprinciplesofvariousphysiologicalprocessesand metabolism in plants

ii. Tostudytherolesofmineralsinplantmetabolism

iii. Tostudyplantgrowthand development.

iv. To studytheultrastructureofcellorganelles anditsbiochemistry
v. Toacquiretheknowledgeofunderlying principlesofdifferentmicroscopes
vi. Tolearnchromosomalaberrationsandtheir significance

2. MolecularBiology

i. ToacquiretheknowledgeofprinciplesandapplicationsofPlant Biotechnology
ii. TounderstandmethodsofgenetransferinRecombinantDNAtechnology
iii. Toacquiretheknowledgeonchemistry,structure,typesofgeneticmaterialand protein synthesis
iv. Tolearntheconceptsofgeneandmechanismofgeneregulation

3. PlantpropagationandPlant Breeding

i. Tolearntheprinciples,techniquesandapplicationsofPlantpropagation
ii. Tolearntheprinciples,techniquesandapplicationsofPlantBreeding

4. PlantBiotechnology

i. ToacquiretheknowledgeonprinciplesandapplicationsofPlant Biotechnology
ii. TounderstandmethodsofgenetransferinRecombinantDNAtechnology
iii. ApplicationsofBiotechnologyinHumanwelfare,IPR,Biosafetyand Bioethics
iv. Tounderstand theprinciples,toolsand techniquesofGeneticEngineering

IVSEMCOURSESTRUCTURE

Sl. No	Sem	Module	Practical/ Theory	Code	Paper	Hrs/ Week	Credits	Max marks
1	IV	H.C.4.1	Theory	BOD110	Ecology,Conservation BiologyandPhytogeography	2+2	2+1	70+30
		H.C.4.1	Practical	BOD113	”	3	1	70+30
2	IV	S.C.4.1	Theory	BOD150	Biodiversityand ConservationBiology	2+2	2+1	70+30
		S.C.4.1	Practical	BOD153	”	3	1	70+30

Course outcome

1. Ecology,ConservationBiologyand Phytogeography

i. ToacquiretheknowledgeofBiodiversity,conservationandbiolegislations
ii. Tostudythegeographicaldistributionofplants
iii. ToacquirethebasicknowledgeofPlantcommunityandtheir adaptations
iv. TostudytheenvironmentalfactorsandtheirimpactonPlantcommunity
v. To acquirethe knowledgeofvariousEcosystemand energy flow
vi. Tolearntheprinciples,techniquesandapplicationsofPlantBreeding

2. BiodiversityandConservationBiology

i. ToacquiretheknowledgeofBiodiversity, conservationandbiolegislations
ii. Tostudythegeographicaldistributionofplants

M.Sc.Chemistry

Sl. No	Program	ProgramCode	ProgramSpecific discipline	ProgramSpecificcode
2	M.Sc.	MSCCBCSYCM	2.Chemistry	MSCCBCSCHEMYCM

SCHEMEOFSTUDYANDEXAMINATION

ConceptsandModelsofInorganicChemistry

Theory:

OBJECTIVES:

1. TOlearntheStructuresandenergeticsofioniccrystalsandinorganicmolecules.
2. TolearntheModernconceptofacidsandbases,nonaqueoussolvents.
3. Tolearnthepropertiesofionicliquidandsupercriticalfluids.
4. Tolearnthechemicalpropertiesoff-blockelements.

OUTCOMES:

1. Students able to understand the structure of Ionic crystal like sodium chloride, cesium chloride and zinc sulphide.
2. StudentsabletounderstandtheVSEPRmodelforexplainingstructureofmolecules.
3. Students able to understand the classification,properties and reactions of non aqueous solvents and hard acids/bases and soft acids/bases.
4. Studentsabletounderstandtheexamplesandapplicationsofionicliquidsandsupercritical fluids in science field.
5. Studentsabletounderstandtheextractionoff-blockmetalsfromitsoreandtheirappliacations.

Practical:

OBJECTIVES:

1. Tolearnthedeterminationofmetalconcentrationbygravimetrically,volumetricallyand spectrophootometrically.
2. Tolearnthedeterminationofmetalconcentrationpresentinthedifferentoreslike haematite, dolomite and pyrolusite.
3. Tolearnthedeterminationofmetalsconcentrationpresentinthedifferentalloyslike copper/nickel alloy and solder alloy.
4. Tolearnthespectrophotometricdeterminationofmetalconcentrationpresentinthedifferent solutions.

OUTCOMES:

1. Students able to understand the conditions and applications of different analyses like gravimetric, volumetric and spectrophootometry.
2. Students able to understand about separation and estimation of metals from it's ore, like, Iron from haematite, Calcium and Magnesium from Dolomite and Manganese from Pyrolusite.
3. Students able to understand about separation and estimation of metals from it's alloys like, copper and nickel in alloy and lead and tin in solder alloy.
4. Students able to understand about determination of concentrations of metals like Iron, Titanium and Nickel by spectrophotometric method.

StereochemistryandReactionMechanism

Theory:

OBJECTIVES

1 Togainknowledgeaboutreactionintermediatesinorganicchemistry.
2 Toacquireknowledgeinaliphaticnucleophilicsubstitutionreactions.
3 Tosuggestsyntheticrouteforsimpleorganiccompoundswithstereochemistry.
4 To make the students understand and appreciate the concept of stereochemistry.conformationalanalysisoforganiccompounds.
5 Toacquireathoroughknowledgeonthe conceptofadditionreactionon carbon carbonmultiple bonds and their reaction mechanism.
6 Tounderstandthemechanismofa chemicalreaction,thepathandthefeasibilityofa reaction

OUTCOMES:

Thestudent

1 Canhaveunderstandingaboutthenatureandreactivityofreactiveintermediates.
2 Candeterminethemechanismofchemicalreactions.
3 Will have thorough knowledge about the mechanism of substitution involving enolates, asymmetric alkylation and addition reactions, and hence will be able to optimize theyieldofareactionandcontroltheregiochemicalaswellastereochemic aloutcome of chemical reactions.
4 Canfindoutwhetherthecompoundischiralornot
5 Candeterminetheconfigurationandconformationoforganic compounds, an essential skill in drug development.

Practicals

OBJECTIVES

Todevelopanalyticalskillin

1 Organicpreparationsinvolvingtwostages.
2 Tounderstandthetechniquesinvolvedinestimationsoforganiccompounds.
3 Todeveloptheskillininterpretationofspectraldata ofvariousorganiccompounds

OUTCOMES

Thestudent

1 Acquiresknowledgeinpreparingorganiccompounds.
2 Acquirestheskillinestimationoforganiccompounds.
3 Possesstheabilitytointerpretanyspectraldatawhichhelpherin

BasicPhysicalChemistry

Theory:

OBJECTIVES

1. Tounderstandtheconceptofthermochemistry.
2. *Tounderstandtheconceptofdifferentlawsofthermodynamics.*
3. *TounderstandtheDebyeHuckelTheoryof ion-ioninteractions.*
4. *Tounderstandtheeffectoftemperatureonreaction rates.*
5. *Tounderstandthedifferenttheoriesofchemicalkinetics*
6. *TounderstandtheEnergeticofcellreaction*

OUTCOMES

Thestudent

1. Getknowledgeonthebasicfundamentalconceptsof physicalchemistryi.e,Thermodynamics, Chemical kinetics and Electrochemistry.
2. Explore the topics such as second law of thermodynamics, partial molar properties, fugacity, statisticalthermodynamics,kineticsoffastreaction,someoftheimportanttheories ofkinetics, istopic effects, batteries construction and working, liquid junction potential, etc.
3. Applythereactionrateforsimple, complexreactionandalsofast reactions.
4. Understandprimaryandsecondarybatteries. KnowledgeonEnergeticofcellreaction.

Practicals

OBJECTIVES

1. TounderstandthehandlingofinstrumentslikeUV-VisibleSpectrophotometer, Potentiometer, pH meter, etc.
2. Tounderstandthekineticmethods.
3. Tounderstandthedifferentbetweenphysicalproperties ofsubstancesorcompounds.

4. To understand the different thermodynamic parameters.

OUTCOMES

1. An idea about handling of instruments like UV-Visible Spectrophotometer, Potentiometer, pH meter, etc.
2. Determine the concentration of the species in given solutions using kinetic methods.
3. Distinguish between different physical properties of substances or compounds.
4. Acquire knowledge of different thermodynamic parameters.

Analytical data assessment and Titrimetric analysis

Theory:

OBJECTIVES

1. To study how to handle analytical data
2. To learn about how error, occur and how to minimize them
3. To learn sampling techniques and how to handle the sample
4. To learn the how acid base reaction, neutralization titrations and applications of these titrations
5. To study theory behind and applications of complexmetric and precipitation titration

OUTCOMES

1. Students able to identify and rectify the errors in practical and in measurement techniques.
2. Students learn how we can collect the sample from air, soil, etc.
3. Students able to apply simple titration techniques in estimation of several organic and inorganic compounds .

Practicals

OBJECTIVES

1. To study visual methods for estimation of alkalinity, acidity of water and purity of vinegar, wine etc.
2. To study complexometric methods for estimation of calcium, magnesium and iron in different substance like milk powder, antacid tablet and blade.
3. To study the amount of vitamin c in orange juice, copper in copper wire by iodometric titration and iron in iron tablet by ceremetric titration.
4. To study estimation of alkalinity, acidity and purity of iron tablet, creatinine in urine and pKa of weak acid and indicator by different instrumental method like conductometric, potentiometric and spectrometric methods.

OUTCOMES

1. Students learn how simple the methods are applied to study the various estimations by titrations.
2. Studentsarewell-versedinvisualizingendpointandcalculatingtheequation.
3. Studentsarewelltrainedinhandlingandperformingvariousexperimentbyinstruments.
4. Studentsarewelltrainedforclinical,andindustrialsectorforperformingtheexperiments.

SECOND SEMESTER

HARDCORETHEORY

Courses	Title	Contact Hours/ week	Credit	Max. Marks	Internal Assessment Marks		Semester End Exams (C_3)	
					C_1	C_2	Duration (Hrs)	Marks
CHIHCT:2.1	CoordinationChemistry	3	3	100	15	15	03	70
CHOHCT:2.2	SyntheticOrganic Chemistry	3	3	100	15	15	03	70
CHPHCT:2.3	PrinciplesofPhysical Chemistry	3	3	100	15	15	03	70
CHGHCT:2.4	MolecularSymmetry and Spectroscopy	3	3	100	15	15	03	70

NOTE:

SoftCoreTheory: AllCoursesaresameasthatdescribedinI Semester

Practicals: Same as that of I Semester. Students who have studied Analytical and Inorganic orOrganic andPhysicalPracticals inthe I Semesterwillget interchanged during II Semester.

CoordinationChemistry

Theory:

OBJECTIVES:

1. Tolearnthepreparationandstabilityofcoordinationcompounds.
2. TolearntheconceptofCrystalfieldtheoryandMolecularOrbital Theory.
3. Tolearntheelectronicspectraandmagneticpropertiesofcoordinationcompounds.
4. Tolearnthereactionsandphotochemistryofcoordinationcompounds.

OUTCOMES:

1. Studentsabletounderstandthedifferentmethodsforthepreparationofcoordination compounds and determination of stability constants of coordination compounds.
2. Studentsable to understand the crystal fieldtheory ofoctahedral, tetrahedral andsquare planar complexes.
3. Studentsabletounderstandtheelectronicspectraofoctahedralandtetrahedralcomplexes.
4. Studentsabletounderstandthereactionmechanisminreactionsofcoordinationcompounds.

Practical:

OBJECTIVES:

1. To learn the estimation of TWO anions and TWO cations present in the salt mixture qualitatively.

OUTCOMES:

1. Students able to understand the separation and qualitative estimation of anions like chloride, bromide, carbonate, nitrate, sulphate, acetate etc., and cations like lead, cadmium, bismuth, aluminum, manganese, zinc, barium, strontium, calcium and magnesium etc.,
2. Students able to understand the separation and qualitative estimation of lesscommon cations like tungsten, molybdenum, cerium, titanium, zirconium, vanadium and lithium.

Syntheticorganicchemistry

Theory:

OBJECTIVES:

1. Tounderstandthemechanismoforganicchemicalreactions.
2. Toappreciatetheconceptof substitution,eliminationandrearrangementreactionsandtheir reaction mechanisms.
3. Toacquireasoundknowledgeinthereagentsemployedforoxidationand reduction reactions.
4. Togainknowledgeaboutretrosynthesisoforganiccompound.

OUTCOMES:

Thestudent

1 Will have thorough knowledge about the mechanism of electrophilic substitution reactions involving mechanism and elimination reactions and hence will be able to optimize the yield of a reaction and control the region chemical as well as the stereo chemical outcome of chemicalreactions.

2 Cansuggestwaystotransformfunctionalgroupsthroughrearrangementsandbyemploying reagentsfor oxidation andreduction.

3 Togainknowledgeaboutvariousreagentforsynthesisoforganiccompound.

Practicals:

OBJECTIVES:

Todevelopanalyticalskillin

1. Separationandidentificationoforganicmixture.
2. Bulkseparationandidentificationofgroups.

Thestudent

1 Acquiresknowledgeinseparateanyorganicmixtureandidentifyit.

2 Acquiresknowledgeinbulkseparationandgroupsidentificationof

PrinciplesofPhysicalChemistry

Theory:

OBJECTIVES:

1. Tounderstandtheconceptofquantummechanics
2. Tounderstandtheconcept of microwave, vibration, Raman, UV-Visible, NQR and47 Mossbauer spectroscopic techniques.
3. Tounderstandtheconceptofelectromagneticradiationwith matter.
4. Tounderstandknowledgeabout thefundamentalconcepts likeblackbodyradiation, photoelectric effect, Schrodinger wave equation and applications, etc.

OUTCOMES

Thestudent

1. Learnthe principlesofmicrowave,vibration,Raman,UV-Visible,NQRand47Mossbauer spectroscopic techniques.
2. Knowtheinteractionofelectromagneticradiationwithmatter.
3. Gainknowledgeaboutthefundamentalconceptslikeblackbodyradiation,photoelectric effect, Schrodinger wave equation and applications, etc.
4. Acquireknowledgeoncalculationofionizationenergyandbindingenergybysimple expressions.

MolecularSymmetryandSpectroscopy

OBJECTIVES

Bystudyingthisunitwecomeacrossmanyofthethingswhichyouarenotaware of:

1. Thesignificanceofgrouptheoryforchemistry isthatmoleculescanbecategorizedon thebasisoftheirsymmetryproperties,which allowthepredictionof manymolecular properties.

2. Theprocessofplacingamoleculeintoasymmetrycategoryinvolvesidentifyingallof the lines, points,andplanes ofsymmetry that it possesses;the symmetry categories the molecules may be assigned to are known as point groups.

3. It allowsyoutodeterminethat Whichvibrationaltransitionsare allowedorforbidden on the basis of symmetry.

4. HowEMRinteracttoshowdifferentphenomenonlikepolarization,Dispersion, Refraction etc.

5. Whatis Transition&transitionprobability.

OUTCOMES

Helpstounderstand

1. molecularstructure,somechemicalproperties,andcharacteristicsofphysical properties
2. (spectroscopy)–usedwithgrouptheorytopredictvibrationalspectra forthe identification of molecular shape.
3. andasatoolforunderstandingelectronicstructureand bonding.

AdvancedInorganicChemistry

Theory:

OBJECTIVES:

1. TolearntthePreparation,bonding,structuresand **Fundamentalconcepts**of organometallic compounds.
2. Tolearnthe**Homogeneousandheterogeneouscatalysisof**organometallic compounds and their biological applications.
3. Tolearnthe**Chemistryofmaingroupelementsandpropertiesofsilicates.**

OUTCOMES:

1. Students able to understand the Preparation, bonding, structures of **Ferrocene**, metal carbenes, **Complexes containing alkene, alkyne, arene and allyl ligands**
2. Students abletounderstand the **IndustrialApplications**of coordination compounds like Wacker's process, Monsanto acetic acid process and L-DOPA synthesis etc., and **Biological and Medicinal Applications of** Organomercury, organoboron, organosilicon and organoarsenic compounds.
3. Students able to understand the preparation, properties, structure and bonding of diborane, and Structure, classification of silicones.

Practicals:

OBJECTIVES:

1. To learn the electrogravimetric estimation of copper and nickel and Spectrophotometric determination of the *p*Ka value of methyl red.
2. TolearntthePreparationandcharacterizationofcoordinationcompounds.
3. TolearntheDeterminationofthecompositionofiron-phenanthrolinecomplexby, Job's method, mole-ratio method and Slope-ratio method.

OUTCOMES:

1. Students able to understand the gravimetric estimation of copper in copper sulphate and nickel in nickel sulphate solution by gravimetric method.
2. StudentsabletounderstandthePreparationandcharacterizationofcoordination compounds like Chloropentammine cobalt(III) chloride.
3. Studentsabletounderstandthecompositionofiron-phenanthrolinecomplexby, Job's method, mole-ratio method and Slope-ratio method.

OrganometallicandPhotochemistry

Theory:

OBJECTIVES

1 Tounderstandthebasicprincipleinphotochemicalreactions.

2 Tounderstandtheconceptbehindpericyclicreactions

3 Tohaveathoroughknowledgeinidentifyingthearomaticityconcepts inorganic compounds.

4 Toidentifythereactionsinvolvingspecificreagentsandtheirmechanism.

5 Toacquireknowledgeinretrosyntheticanalysis.

OUTCOMES:

1 Cansuggestmethodologiestosynthesizecompoundswithhigh stereochemicaland regiochemical selectivity by employing light/ heat energy/modernreagents.

2 Candeterminewhetheracompoundisaromatic/nonaromatic/antiaromatic.

3 Cananalysethetargetmaterialanddesignitssynthesisthroughretrosynthesis.

Practicals:

OBJECTIVES

Todevelopanalyticalskillin

1 Organiccompoundpurification

2 Tounderstandthetechniquesinvolvedinestimationsoforganiccompounds.

3 Todeveloptheskillininterpretationofspectraldata ofvariousorganiccompounds

OUTCOMES:

Thestudent

1 Canseparateanyorganicmixtureandidentifyit.

2 Acquiresknowledgeinestimationoforganiccompounds.

3 Acquirestheskillinestimationoforganiccompounds.

AdvancedPhysicalChemistry

Theory:

OBJECTIVES

1. Tostudykineticsofreactioninsolutionandinfluenceofpressure, ionicstrength, solventon reaction rates.

2. Tolearnaboutkineticsofcatalyticreactionsi.e. acid-basecatalysis, heterogeneouscatalysisand enzyme catalysis.

3. ToevaluateMichaelis'sconstantfor enzyme-substratebindingbyLineweaver-Burkplot.

4. Tostudyconceptofelectrochemicalcells, batteriesandcorrosion.

4.Learn X-ray crystallography, etc. CO2: Learn the fundamentals of semiconductors, superconductors,nanomaterialsandthemethodsbywhichnanoparticleissynthesized.

OUTCOMES

Thestudent

1To.learnkineticsofreactioninsolutionandinfluenceofpressure, ionicstrength, solventon reaction rates.

2. Tolearnaboutkineticsof catalyticreactionsi.e.acid-basecatalysis, heterogeneouscatalysisand enzyme catalysis.

3. TolearntoevaluateMichaelis'sconstantforenzyme-substratebindingbyLineweaver-Burkplot.

4. learnconceptofelectrochemicalcells,batteriesandcorrosion.

4. Learn X-ray crystallography, etc. CO2: Learn the fundamentals of semiconductors, superconductors,nanomaterialsandthemethodsbywhichnanoparticleissynthesized.

Practicals:

OBJECTIVES

1. TounderstandthehandlingofinstrumentslikeUV-VisibleSpectrophotometer, Potentiometer, pH meter,etc.

2. Tounderstandthekineticmethods.

3. Tounderstandthedifferentbetweenphysicalproperties ofsubstancesorcompounds.

4. Tounderstandthedifferentthermodynamicparameters.

OUTCOMES:

1. An idea about handling of instruments like UV-Visible Spectrophotometer, Potentiometer, pH meter, etc.

2:Determinetheconcentrationofthe speciesingivensolutionsusingkineticmethods. 3:

Distinguish between different physical properties of substances or compounds.

4:Acquireknowledgeofdifferentthermodynamicparameters.

MolecularSpectroscopy

Theory

OBJECTIVES

1. Explainwhat itmeanstousespectroscopicmethodsforqualitativeandquantitative analysis.

2. IdentifythetermsinanddescribedeviationstoBeer'sLaw.

3. Describetheeffectofchangingtheslitwidthandtheimpactitwillhaveonqualitative and quantitative analyses.

4. Qualitativelydeterminetherelativeerrorinabsorbancemeasurementsanddetermine the optimal range for measurement purposes.

5. Describethedesirablefeaturesofaradiationsource.

6. Explaintheadvantagesofadualversussingle-beamspectrophotometer.

7. Explainthedifference betweena3-and4-levellaserandwhy itisnotpossibletohave a 2-level laser

.8.Comparetheoutputofandadvantagesofprismsandgratingsasdispersingelements

.9.Explainhowa photomultipliertubeworks.

10. Explainhowanarray detectorworksanddescribetheadvantagesofusinganarray detector.

OUTCOME

Studentswillbeableto

1. Explainthebehaviourofmolecularsystemsinexternalelectromagneticfield.
2. Understandtheprinciplesandtheoriesofrotational, vibrational,UU-Vis, Fluorescence, Mass and NMR spectroscopy methods.
3. Interpretthemolecularspectraandfindmolecularpropertiesfrommolecular spectra.

BioinorganicChemistry

Theory:

OBJECTIVES:

1. TolearntheStructuraland molecularbiologyofmetals,Sodiumandpotassium-channels and pump and role of Vitamin B12 and Coenzymes.
2. TolearntheOxygentransportand oxygenuptakeproteins,Electrontransportproteins and redox enzymes and Structure and reactivity of Non-redox metalloenzymes.
3. TolearntheMedicinalInorganicChemistry,Diseaseduetometaldeficiencyand treatment and Treatment of toxicity due to inorganics.

OUTCOMES:

1. Students able to understand the General features of DNA, structural building blocks of proteins and nuclic acids.
2. Students able to understand the role of ATP in metabolism, Biological roles of calcium and Special characteristics of B12 co-enzyme.
3. Students able to understand the oxygen transport mechanism in Haemoglobin (Hb) and Myoglobin (Mb), electron transport mechanism in Iron – sulfur proteins and Carboxypeptidase-A.
4. Students able to understand the Disease due to metal deficiency like Iron, zinc, copper,sodium, potassium, magnesium, calcium and selenium.

HeterocyclicandBioorganicChemistry

Theory:

OBJECTIVES

1 To understand the techniques involved in the extraction and methods of determinationof structure of natural products.

2 Toenablethestudenttounderstandandappreciate theimportanceofbiomolecules.

3 Toapplytheknowledgeofprotectinggroupsinorganicsynthesis.

4 Tocomprehendtheimportanceofheterocycliccompounds.

OUTCOMES

Thestudent

1 Cansuggestmethodologiesforstereoselectivesynthesisoforganiccompoundsby

employingchiralsubstrates/reagents/catalysts.

2 Cansuggestmethodsforthesynthesisandtransformationofnaturalproducts, biomolecules and heterocyclic compounds.

3 Hasfamiliaritywithgreenmethodsforthesynthesis.

Nuclear,RadiationandPhotochemistry

Theory:

OBJECTIVES

1. ToexplainthecoceptofphotochemistryandstudyBeer-Lambertlaw.
2. TodescribeandexplainphotochemicalandphotophysicalprocessesusingJablonskidiagramand their quantum yield expressions.
3. Tostudytheselectionrulesfor electronictransitions anddevelopquantummechanical formulation ofFranck-Condonprinciple.
4. TostudyaboutthephotodegradationpropertiesofZnOphotocatalyst.
5. Tostudyabouttheradiationandnuclearchemistry.

OUTCOMES

Thestudent

1. Studentswillgettheknowledgephotochemistry,radiationchemistryandnuclear chemistry.
2. ExplainJablonskidiagramwhichinclude,fluorescence,phosphorescenceetc.
3. Explainphotodegradationof dyes,pesticidesandindustrialeffluentsbyusingphotocatalyst.

Optical,thermalandkineticmethodsofanalysis

Theory:

OBJECTIVES

1. Studyofproperties of asubstanceormedium,suchasitschemicalcomposition orthe sizeofparticlessuspended init,throughobservationofeffectsontransmittedlight,s uch as scattering, absorption, refraction, and polarization.
2. To understand the response and performance of a structure. Based on the modeling needs, chained or coupledanalysiscan be performed by engineers to study temperaturevariations and effects on structural behavior, both in terms of the stress response and failure.
3. Find the degree of conversion for given temperature conditions,if the chemical mechanism of reactionisunknownandnotreallyimportant,...Determineanddescribe thekineticmechanism if the chemical mechanism of reaction is unknown or partially unknown.

OUTCOMES

1. Can be used to evaluate the applicability of enzymes for the hydrolysis of substrates and lays a theoretical foundation for improving the enzymatic reaction efficiency.

Toexplorevariouspropertiesofananomaterialagainsttime andtemperature,**********

Sl No.	Program	Programcode	ProgramSpecific Discipline	ProgramSpecific code
2	M.Sc.	MSCCBCSYCM	3.FoodScienceand Nutrition	MSCCBCSFSNYCM

ProgramspecificTitle:M.Sc.FoodScienceandNutrition(Twoyears,foursemesters) Program specific objectives (PSO)

- To impartadvanced andin-depth knowledgein the area of Food science andNutrition
- Totrainthestudentstobeinquisitiveandthinkinaninnovativeway
- To impart basic and translational research skills with technical excellence and make them research and industry ready

Programspecificoutcome(PSO)

- Indepthknowledge gained during the courseoftwo years, helpsthe studentsto quickly acclimatize to the work environment when they join as trainees in the research institutes/industries and gain eligibility for JRF/GATE/NET/KSET/ASRB examinations
- Gainenoughknowledgetoproposeresearchideas andimplementation
- Developpracticalskills alongwiththeirtheorycomponents, whichhelp intheir research programs in both academic institutions and R & D programs of industries.
- develop entrepreneurial skills with the help of skill-based courses and alumni interactions
- Effective communication and interactive skills for teaching at graduate and postgraduate levels
- TodevelopProfessionalCompetence

ChoiceBased CreditSystem(CBCS)SyllabusforMSc.inFoodScience&Nutrition

No.	Paper Code	Titleofcourse- HardCore Subjects	No.ofcredits			
			L	T	P	Total
ISemester(16Credits)						
1	FSA110	FoodScienceandFoodProcessing-I	2	1	2	**5**
2	FSA120	NutritionalBiochemistry	2	1	2	**5**
3	FSA130	Bodycompositionandmacronutrients	2	1	-	**3**
4	FSA140	Communitynutrition	2	1	-	**3**
IISemester(16Credits)						
1	FSB110	FoodScienceandFoodProcessing-II	2	1	2	**5**
2	FSB120	Micronutrients-I-Minerals	1	1	2	**4**
3	FSB130	Foodlawsandfoodsafety	1	1	-	**2**
4	FSB140	Micronutrients-II –Vitamins	1	1	-	**2**
5	FSB150	Researchmethodsandstatisticalanalysis	2	1	-	**3**
IIISemester(16Credits)						
1	FSC110	Productdevelopmentandsensoryevaluation	2	2	1	**5**
2	FSC120	FoodPreservation	2	1	2	**5**
3	FSC130	Principlesofclinicalnutrition	2	2	-	**4**
4	FSC140	Termpaper**	-	2	-	**2**

No.	Paper Code	Titleofcourse-SoftCore Subjects	No.ofcredits			
			L	T	P	Total
ISemester(tochoose 4credits)						
1	FSA150	Foodfortification	-	2	-	**2**
2	FSA160	FoodHygieneandSanitation	2	-	-	**2**
3	FSA170	FoodMicrobiology	2	-	-	**2**
4	FSA180	AssessmentofNutritionalstatus	2	-	-	**2**
IISemester(tochoose 4credits)						
1	FSB160	Foodpackaging technology	2	-	-	**2**
2	FSB170	Enzymesinfoodprocessing(self-study)	-	2	-	**2**
3	FSB180	Functionalpropertiesoffoods	2	2	-	**4**
IIISemester(tochoose4credits)						
1	FSC150	Biostatistics&computerapplications	1	1	-	**2**
2	FSC160	EntrepreneurshipandMarketing	2	-	-	**2**
3	FSC170	Qualitycontrolinfoodindustries	2	-	-	**2**
4	FSC180	FoodAdditives	2	-	-	**2**
5	FSC190	Advancesinnutritionresearch	1	1	-	**2**
IVSemester(tochoose8credits)						
1	FSD110	Dissertationwork***	-	8	-	**8**
2	FSD120	Diet indiseases	3	2	-	**5**
3	FSD130	Storageandhandlingoffreshproduce(self-study)	-	3	-	**3**
4	FSD140	FoodBiotechnology(self-study)	-	3	-	**3**
5	FSD150	Nutraceuticalsand healthfoods	2	-	-	**2**
Titleofcourse-OpenElectiveSubjects						
IISemester						
1	FSB190	Nutritionfor Health	2	2	-	**4**
IIISemester						
1	FSC200	CulinaryScience-Principles&Techniques	2	2	-	**4**
Remedialcoursesubjects						
I Semester						
1	FSA190	BasicsofFoodSciences	2	-	-	**2**
2	FSA200	Basicsofnutritionalsciences	2	-	-	**2**

I SEMESTER
HARDCORESUBJECTS

Titleof Paper:FoodScienceandFoodProcessing-I

Theory Code: FSA110 **PracticalCode:FSA113**

Objectives

- To understand the structures, compositions, processing methods,preparations and quality characteristics of Cereals, Legumes and oil seeds
- Tounderstandthecompositions,processingmethods,preparationsandquality characteristics of fruits and vegetables

LearningOutcomes–studentswillacquireknowledgeon

- nutritional composition, preparations, and quality parameters ofCereals, Legumes, oil seeds, Fruit and vegetables

Different processingtechniquesandtheireffectsonnutritionalcomposition

TitleofPaper:NutritionalBiochemistry

Theory Code: FSA120 **PracticalCode:FSA123**

Objectives

- Tounderstandthechemicalcharacteristicsofdifferentclassesofnutrientswith

reference to their physical properties, and to relate it to their functions
- Toexplaintheprocessesofdigestion,absorptionandmetabolismofthe macronutrients and energy flux

PRACTICALS

Objectives

- To understand basicbiochemicaltechniquesanditsusesinanalysisof foods

1. DeterminationofPH:inacids, alkalisandbuffers usingPHmeterandindicators
2. Colorimeters: use of colorimeter in UV and visual range, Flame Photometer, flourimeter (principle to be explained & demonstrated withone example for each).
3. Separation techniques: Chromatography- paper and column. Centrifugation, Electrophoresis and Dialysis. (One example for each may be demonstrated).
4. Enzyme Assays - Amylase, protease, lipase or alkaline phosphatase using suitable substrates, Effect ofpH, temperature & substrate concentration on anyone enzyme activity may be included

LearningOutcomes–studentswillacquireknowledgeon

- functionsofbiologicalmolecules
- Biochemicalpathwaysrelevanttonutrientmetabolism
- biologicalmechanisms,suchastheprocessesandcontrolofbioenergeticsand metabolism, as chemical reactions

TitleofthePaper:BodyCompositionandMacronutrients Theory Code: FSA130

Objectives

- Tounderstandthebasisforcomputingnutrientrequirementsandthelatestconcepts in dietary recommendations.
- Toacquaint studentswiththeconcepts,physiologicalfunctions, influencing factors and the disorders related to metabolism of macronutrients.
- Tounderstandthevariousmethodsofassessingbodycompositiontheir applications and changes during the life cycle.

LearningOutcomes–Studentswillacquireknowledgeon
{

- nutritionalsignificanceofmacronutrientsandbodycomposition
- Recentandcommonlyusedmethodsforthedeterminationofhumanbody composition with relevance for nutritional assessment.
- Integrationofmetaboliceventstonutritionaldisordersanditseffectonbody composition.

TitleofthePaper:CommunityNutrition

PaperCode:FSA140

Objectives

- Toattainknowledgeonnutritionalneedsanddemandsofdifferentagegroups.
- Tounderstandvariousdeficiencydisordersandtheimportanceofintervention programs at community level.

LearningOutcomes–studentswillacquireknowledgeon

- nutritiontoworkinnutritionsectoroncommunitylevelandNGO's Identifying

and preventing nutrition disorders

SOFTCORESUBJECTS I
SEMESTER
TitleofthePaper:FoodFortification

PaperCode:FSA150

Objectives:

- To understand rationale behind fortification and technology involved in fortifying various products.
- To understand the current national food fortification programs which are involved in fortifying common staple foods

LearningOutcomes–studentswillacquireknowledgeon

- Theimportanceoffortificationandconsumptionoffortifiedfoodsamongthe people.

Thenationalprogramswhichareinvolvedin fortification.

TitleofthePaper:FoodHygieneandSanitation Paper

code: FSA160

Objectives

- Tostudythe generalprinciplesoffoodhygiene andsanitation.
- Tolearntomaintainthesafetyoffood.
- Togetaknowledge aboutthesanitaryaspectofwaterandwaste disposal.
- Tostudythedesignofafood plant.

LearningOutcomes–studentswillacquireknowledgeon

- Foodsafetyandhygieneaspecthelpsinmaintainingthefoodfrom contamination and also food bone illness.

Thedevelopmentandmaintenanceofafood plant.

TitleofthePaper:FoodMicrobiology

Papercode:FSA170.

Objectives

- Toprovideknowledgeofmicroorganismsassociatedwithfoods.
- ToattainKnowledgeofthefactorsthatdeterminesthepresence,growthandsurvival of microorganisms in food.

LearningOutcomes–thestudentswillacquireknowledgeon

- Microbiologicalfoodcontrolthroughappropriateandtargetedapplicationsof physical chemical and biological treatments.
- Varioussafetyparametersandmicrobialcontrolin foodandits products.

TitleofthePaper:AssessmentofNutritionalStatus Paper

code: FSA180

Objectives

- Tostudyonassessingindividual'snutritionstatusthroughdifferent physical and chemical methods.
- Toacquireknowledgeonfoodandnutritionsecurity

LearningOutcomes–studentswillacquireknowledgeon

- Assessingone'snutritionalstatusofanindividual.
- Planningamenuanddietplanusingnutritionalstatus.
- Foodandnutritionsecuritywhichhelpinworkingtowardstheir improvement

IISEMESTER

HardCore Papers

Titleof Paper:FoodScienceandFoodProcessing-II

TheoryCode: FSB11 **PracticalCode:FSB113**

Objectives

- To understand the compositions, processing methods, preparations and quality characteristics– Fats and oils, Milk and milk products, Eggs, Meat

and Flesh foods, Sugars and jaggery, Beverages.

- To study the effect of processing on various nutrient content of different food groups.

LearningOutcomes–studentswillacquireknowledgeon

- Different food groups, nutritional composition, preparations, and quality parameters.
-
- Differentprocessingtechniquesand itseffectonnutritionalcomposition.

TitleofPaper:Micronutrient-I:Minerals

Theory Code: FSB120 **PracticalCode:FSB123**

Objectives

- Toimparttheknowledgeonnutritionalimportanceoftheminerals inhumanhealth
- TomakestudentUnderstandthemetabolismofmicronutrients

LearningOutcomes: Studentswillacquireknowledgeon

- Significanceofminerals,their optimalamountandthesourcesofit.
- knowledgeofmineralstheir toxicityanddeficiency

PRACTICAL- FOODANALYSIS

Objectives

- Acquirescientificinformationanddevelop laboratoryskillsinfoodanalysis
- Developanunderstandingofthedifferentanalyticalinstruments
- To provide an integrated picture of the field of food analysis with emphasis on its Importance in food industry, governmental agencies and universities

LearningoutcomesStudentswillacquireskillson

- Different analytical methods used for measuring the chemical composition of food and the principles behind analytical techniques associated with food analysis

TitleofthePaper:FoodLawsandFoodSafety Paper Code:

FSB130

Objectives:

- Tounderstandthefoodquality,safety,adulteration,naturaltoxins,lawsandregulations.
- Tounderstandaboutthesafety aspectsof food contaminants,pesticideresidues, processing techniques and food additives.

LearningOutcomes–studentswillacquireknowledgeon

- Safetyand regulatoryaspectsinvolvedin foodhandling.
- Healthandsafetyofconsumersbyreducingfood-relatedrisks

TitleofthePaper:Micronutrients-II:Vitamins Paper

Code: FSB140

Objectives

- Tounderstandtheimportanceofvitaminsandtheirrequirementinthebody
- Toprovideknowledgeonvitamindeficiencyand toxicity

Note: All the vitamins will be dealt withDigestion, absorption, transport and excretion, functions, interaction with other nutrients (if any), RDA, Deficiency and toxicity, major sources, Assessment of nutriture and analysis in food material

LearningOutcomes–studentwillacquireknowledgeon

- Significanceofvitamin,theiroptimalamountandthesourcesofit.
- Deficiencydisorderandthecorrective measureforit.

TitleofthePaper:ResearchMethodsandStatisticalAnalysis Paper Code: FSB150

Objectives

- ToDevelop theabilityto applythemethodsofstatisticsonaresearchprojectwork
- ToChoosetheappropriateresearchdesignanddevelopappropriateresearchhypothesis fora research project
- ToDescribe the appropriate statistical methods required for a particular researchdesign

LearningOutcomes: Studentswillacquireknowledgeonthe

- Applicationofstatisticstoexperimentaland applied research.
- Applicationofdifferentformsofqualitativeanalysis,includingtheanalysisof themes and discourse analysis
- methodologicaldesignsandselectappropriateanalyticalstrategiesforresearch projects
- Understand the interpretation and appropriate reporting requirements for statistical and qualitative data.

IISEMESTER

SoftCorePapers

TitleofthePaper:FoodPackagingTechnology Paper

Code: FSB160

Objectives

- Toacquaint studentswiththeprinciples, packagingmethodsand materialsused for safe packaging of foods.
- To provide an understanding ofdifferent packaging materials and their use in food industry and learn about the packaging requirements of different foods.
- Todevelopanunderstandingandmethodologiesof differenttechniquesusedin food packaging and to know the advances in modern packaging technology.

LearningOutcomes–Studentswillacquireknowledgeon

- The importanceofpackaging, different typesofpackaging materials, methodsused for packaging foods,the manufacturing processes for different packaging materials and their applications in food industry.
- Thedesign&testing ofpackagematerialsandpackageperformance.
- Thenovelpackagingusedinfoodindustry.

TitleofthePaper:EnzymesinFoodProcessing Paper

Code: FSB170.

Objectives

- To educate the students about fundamental principles of enzymes and their applications in food processing for quality enhancement of various foods.
- To acquaint students with the knowledge related to the use ofenzymes in the basic processes of food industry and provide students with the need for enzyme usage, impact, characteristics of enzymes and mechanism of their actions in processing.

LearningOutcomes–Studentswillacquireknowledgeon

- The mechanism of action of enzymes used in specific processes and co-relate enzymes used in various branches of food industry.
- Appropriate process conditions (temperature, pH, time), depending on the type of enzyme in the process and control the enzymatic reactions that influence the food processing with emphasis on their applications to enhance product properties.

TitleofthePaper:FunctionalPropertiesofFoods Paper

Code: FSB180

Objectives

- To know the functional aspects of food components & their role in foodprocessing.
- To understand the Physico-chemical properties of food and to familiarize the students with changes occurring in various foodstuffs as a result of processing.
- Discuss major chemical reactions that occur during food preparation and storage and to identify and apply food principles to food and nutrition systems in end use quality.

LearningOutcomes–Studentswillacquireknowledgeon

- The characteristics & behavior of food constituents, changes during food processing. Processing conditions that are likely to change the reactivity of food components and determine approaches that may be used to control the reactivity of those food components that are likely to impact the overall quality of finished products.

Suggested Reading

1. FunctionalFoods:Biochemical&ProcessingAspects,GiuseppeMazza;CRCPress.
2. Vaclavik,VickieA.,ElizabethW.Christian,Essentialsoffoodscience.Vol.42
3. Campbell-Platt, Geoffrey,ed.Foodscience&technology.JohnWiley&Sons, 2017.
4. Anklam,Elke.H.D.Belitz, W.Grosch,P.Schieberle:'FoodChemistry'(2005):10-11.
5. AVI. FennemaOR.1996. FoodChemistry.

IIISEMESTER

HardCore Papers

Title of the Paper: Product Development and Sensory Evaluation Theory

Code: FSC110 **PracticalCode:FSC113**

Objectives

- Toattainknowledgeondifferentaspectsofproductdevelopment
- Tounderstandthesignificanceof sensory evaluation,processingtechnology and consumer behavior.
- Togainknowledgeondifferentsensorytechniquesandresponsesutilizedfor prepared food products.
- To understand Stepwise development of a new food product, standardizationand acceptability studies

LearningOutcomes:studentwillacquireknowledgeon

1. Differentmethodsused insensoryevaluationandprocessingtechnology
2. Workingoutlineofproductdevelopmentinindustries

TitleofthePaper:FoodPreservation

TheoryCode:FSC120 **PracticalCode: FSC123**

Objectives

- To knowthe importanceand needoffoodpreservation
- To familiarize with various type of food preservation techniques, principle behind those techniques and its practical application
- Tolearnaboutadvancedmethodswhicharebeingusedinfoodprocessing sector

PRACTICALSESSIONS

Objectives

- To familiarize students with various physicaland chemicalpreservationtechniques by its practical application
- To make students understand the need of different food preservation techniques in product formulation
- Toanalyzethepreservedfood foritschemicalandsensoryqualityduring storage
- Toanalyzepreservedproductsforits microbialquality

Foodpreservationtechniques(useofdifferenttechniquesinproductformulationand analysis of product for quality standards)

1. Sundryinganddehydration:Cereals,legumes,vegetable based
2. Preservationwithsugar:Jams,jelly, preserves
3. Preservationwithsalt,oil,vinegar: Pickling
4. Preservationoffoodsusingchemicals:Tomatoketchup, squash

Learningoutcome-studentswillgainknowledgeon

- Variousphysicalandchemicalpreservationmethods
- Analysisofnutritivevalueandchemicalpreservativesused
- Evaluationofmicrobialsafety
- Theprinciplebehindeachtechniqueandthefactorsaffectingthe efficiency.
- Variousequipmentandchemicalsusedfor preservation.

TitleofthePaper:PrinciplesofClinicalNutrition Theory

Code: FSC130

Objectives

- Tounderstandthefunctioningofdietarydepartmentandalltheaspectsoffood service management.
- To gain knowledge to practice evidence based dietetics and acquisition of skills in tube feeding and therapeutic diets management.

LearningOutcomes–Studentswillacquireknowledgeon

- Nutritional management (Nutrition Care Process, Screening, Diagnosis, Intervention and Follow-up) of various diseases as well as documentation
- Nutritioncounseling-techniques,dietaryrecommendation,foodselectionand preparation of nutrition guidelines for patients

TitleofthePaper:TermPaper

TheoryCode:FSC140

Objectives:

- Tolearnliteraturereview&technicalwriting
- Toprovidestudentsan opportunity todevelopin-depth expertiseinan aspectof interest.
- Toguidestudentsthroughtheprocessofplanningandexecutingasubstantial project.

LearningOutcomes–studentswillacquireknowledgeon

- Writingandplanningworkfor futureprojects.
- Formulating hypothesiswhichcouldbeusedinfuturepieceofresearch.

IIISEMESTER

SoftCore

TitleofthePaper:Biostatistics&ComputerApplications Theory Code: FSC150

Objectives

- Tounderstandtherolebiostatisticsserves inthedisciplineofpublichealth.
- To understand the basic concepts of probability, random variation and commonly used statistical probability distributions.
- To understand basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.

Learning Outcomes

- Recognizetheimportanceofdatacollection,scopeofinference.
- Chooseandapplyappropriatestatisticalmethodsforanalyzingoneortwo variables.
- Usetechnologytoperformdescriptive&inferentialdataanalysisfor1or2 variables

- Interpretstatisticalresultscorrectly,effectively,andincontext.

TitleofthePaper:EntrepreneurshipandMarketing Theory

Code: FSC160

Objectives

- To understand basicconceptsofentrepreneurship,
- To understand the role and importance of entrepreneurship for economic development,developing personal creativity and entrepreneurial initiative, adopting of the key steps in the elaboration of business idea,
- To understand the stages of the entrepreneurial process and the resources needed for the successful development of entrepreneurial ventures

LearningOutcomes:studentswillacquireknowledgeon

- Fundamentalconceptsofentrepreneurshipandmanagementskillsforstartup.
- Apply knowledge of entrepreneurship to various sectors in food, nutrition and Dietetics.

QualityControlinFoodIndustriesandInstitutions Theory

Code: FSC170

Objectives

- Tounderstand themeaning offoodqualityandconceptsofqualitymanagement.
- Toexposetodifferentqualitystandardsandregulationswithrespecttofoodindustries and institutions.
- Toprovideknowledgeaboutthestandardprotocolofqualitycontrolinfoodinstitutions.
- To make familiar with different subjective and objective methods of food qualityevaluation.

Learningoutcome- Studentswillgainknowledgeon

- Importanceofqualitycontrol,continuousmonitoringinmaintainingfoodstandard.
- Designingqualityassessingprotocolfordifferentfoodindustries.
- Different foodregulatoryagenciesatnationalandinternationallevel.

TitleofthePaper:FoodAdditives

TheoryCode:FSC180

Objectives

- Tounderstandthechemical,technologicalandtoxicologicalaspectsoffood additives.
- Toknowthepermissiblelimitsoffoodadditivestobeaddedindifferent processing methods and product development

Learning Outcomes

- Togainknowledgeondifferentaspectsoffoodadditives.
- Togainknowledgeadditivesandamounttobeaddedindifferentproducts

TitleofthePaper:AdvancesinNutritionResearch Theory

Code: FSC190

Objectives

- Tofamiliarizewithvariousresearch methodsused inclinicalnutrition.
- Toprovideknowledgeontheroleofnutrition inphysicalandmentaldevelopment.
- Tohaveknowledgeaboutrecentconceptanddevelopmentinthefieldofnutrition.
- Toplanandpreparedietforvariousphysiologicalconditions.

- **Learningoutcome**–Studentswillacquireknowledge
- Designingdiet planfordifferent physiologicalrequirement.
- Usingdifferentsurveymethodsinclinicalresearch.
- Interpretation ofthe nutritional statusofan individualbased on various assessment methods.

IV SEMESTER

TitleofthePaper:Dissertationwork* Practical**

Code: FSD110

Objectives

- The aimofdissertation isto develop skills inconducting a researchstudy/ working in a project and learn the process of writing a dissertation/ project report
- Dissertationinachosenareacongruenttotheirdiscipline/fieldofstudy
- To create scientific evidences in the fields of community nutrition, new food product development and stability studies, clinical nutrition, Food Analysis, Food Science, Nutrition Science, Food Technology, Supplementary trails on developed products
- To develop the skills on statistical methods and to understand data analysis for writing up a dissertation/thesis/research article

An independent research project work undertaken by student under the guidance of an advisor, caneither be a surveyor Laboratoryorientedresearch. The researchshould be submitted at the end of semester in the form of a thesis/ dissertation. The project work can be undertaken at University departments, affiliated research institutions, quality control laboratories, food industries or other institutions with prior approval. Students have to work full time at any research centers/ laboratory/ departments for the periodof minimum 3 - 4 months and conduct experiments. At the end of the semester they have to prepare thesis/dissertation that shall be submitted for the evaluated. The topic will be selected by the student under the guidance of an advisor, can either be an independent study based on research [experimental, clinical, survey, case study, etc].

LearningOutcomes-Studentswillacquireknowledgeon

- thepracticalaspectsofcollectingdata/ projectwork
- toevaluate,selectanduseappropriatestrategiesforreduction,analysisand presentation of data collected during research process/ project work
- tosuitablyillustratedata/insightsusingvariousgraphicalandothermethods.
- to prepare a dissertation document/ project report based on research process/project work done.
- the importance ofresearchworkand have some contributiontowardsscience inthe fields ofcommunitynutrition, clinicalnutrition, food science, nutritionscience and supplementary trials for products developed.

TitleofthePaper: Diet inDiseases

TheoryCode:FSD120

Objectives

- Togainknowledgeonvariousdiseaseconditionsandtheirmedicalnutritiontherapy
- Tounderstandtheimportanceoftherapeutic diets.

LearningOutcomes–thestudentswillacquireknowledgeon

- Theworkofdietitiansandnutritionistinhospitalandcommunitysetup.
- Thedevelopment,implementationandevaluationofnutritioninterventionprograms.

TitleofthePaper:StorageandHandlingofFreshProduce Theory Code: FSD130

Objectives

- Toprovideknowledgeonvarioussourcesoffoodcontaminationandits effect.
- To obtain knowledgeon theroleof food packagingandpreservationmethodsin preventing food spoilage and extension of shelf-life.

Learningoutcome–studentswillgainknowledgeon

- The needoffoodstorage.
- Usageofvariousfoodstoragetechniques.

TitleofthePaper: FoodBiotechnology

TheoryCode:FSD140

Objectives

- Toprovideknowledgeonvariousbiotechnologicalmethodsusedforfood processing.
- Tolearnmechanismofdifferentprocessingtechniquesusedandtheir advantages.
- Toknowaboutmoderntechniquesandnewinventionswithrespecttofood handling.
- Tounderstandtheneed,challenges,benefitsandsafetyofgeneticallymodified foods.

Learningoutcome– Studentswillgain knowledgeon

- Useofvariousbiotechnological methodsforfoodprocessing.
- Benefitsoffermentationmethods intheformulationofnew products.

TitleofthePaper:NutraceuticalsandHealthFoods Theory Code: FSD150

Objectives

- Toprovideoverviewoffunctionalfoods,nutraceuticalsandnaturalhealth products.
- Tounderstandthefunctionalfoodconceptasrelatedtoingredientefficacyand safety.
- To familiarize bioactiveingredient-disease relationships & importance of clinical study support

LearningOutcomes:studentswillacquireknowledgeon

- componentsofnutraceuticalandfunctionalfoods
- Identifyfunctionalfoodsandpharmaceuticalfoods
- Applytheconceptsofnutraceuticalsindietarysupplements
- Translatingknowledgeoffunctionalfoodsintomanagementofhealthand diseases

OPENELECTIVESUBJECTS II

SEMESTER

TitleofthePaper: NutritionforHealth

PaperCode:FSB190.

Objectives

- Togainthe knowledgeonvariousaspectsofdiseasesanddeficiency
- Tounderstand theimportanceofnutrition,nutrientsonhealth

Learning Outcomes

- Itenablesthestudentstounderstandthe conceptsofnutrientsandhealth
- Ithelpstoassessnutritionalstatusofthecommunity

IIISEMESTER

TitleofthePaper:CulinaryScience-PrinciplesandTechniques Paper Code: FSC200

Objectives

- To attain knowledge on different aspects of culinary techniques and food science, processing, safety in handling foods
- Itunderstandscuisineofarts offoodpreparationofcookingandpresentationof foods

Learning Outcomes

- To gainPracticalknowledgeondifferentfoodgroups
- Toapplyprinciplesfromthevariousculinarytechniques,equipment,nutrient enhancement and ingredient substitution

REMEDIALCOURSES (ForNon-cognatestudents).

I Semester

TitleofthePaper:BasicsofFood Science

PaperCode:FSA190

Objectives

- Its scope is to help andgain knowledge on applied agriculture science,nutrition,food safety and food processing and development of products
- Todeveloptheknowledgeonsensoryattributesoffoodsandtostudythefood groups

Learning Outcomes

- Ithelpstoknowabouttheuseoftechnology,evidence-basedpractice,and improvement on the quality
- Tolearn theprinciplesof preservation,cleaningandsanitation andutilisation of waste and storage

TitleofthePaper:BasicsofNutritionScience

PaperCode:FSA200

Objectives

- Togaintheinformationoncommunitynutrition
- Applyknowledgeontheroleofdifferentnutrients,causesand prevention

Learning Outcomes

- Toacquireskillsinnutritionalmanagementindeficiencyanddiseases
- Todevelopexpertiseinnutritionmanagementandskills.

Sl No.	Program	ProgramCode	ProgramSpecific discipline	ProgramSpecificcode
2	M.Sc.	MSCCBCSYCM	4.Mathematics	MSCCBCSMATYCM

- ProgramSpecific objectives

The M.Sc. course in Mathematics aims at developing mathematical ability in students with acute and abstract reasoning.

- Learningoutcome:

ThecoursewillenablestudentstocultivateaMathematician'shabit ofthought and reasoning and willenlightenstudents withMathematical ideas relevant foroneselfand for the course itself.

Semester	**Courses**	**CourseCode**
ISemester	Algebra–I	MAA110
	RealAnalysis – I	MAA120
	RealAnalysis – II	MAA130
	ComplexAnalysis–I	MAA140
	LinearAlgebra	MAA150
IISemester	AlgebraII	MAB110
	RealAnalysisIII	MAB120
	ComplexAnalysisII	MAB130
	GraphTheory	MAB150
	Ordinaryand PartialDifferentialEquations	MAB140
IIISemester	ElementsofFunctionalAnalysis	MAC110
	Topology I	MAC120
	CommutativeAlgebra	MAC130
	TheoryofNumbers	MAC140
IV Semester	Measureand Integration	MAD110

	TopologyII	MAD120
	AdvancedGraphTheory	MAD130
	TheoryofPartitions	MAD140

ISEMESTER

ALGEBRA–I COURSECODE: MAA110

OBJECTIVES:

- Student will learn to identify patterns represent real world situations using expressionsandequationsandsimplifyexpressionusingtheorderofoperations.
- Studentwillsolve varioustypesofinequalitiesand graphtheirresultonanumber line.
- Studentwilluselawsofexponentsto simplifyexpressions.

LEARNING OUTCOMES:

- Studentcanabletousenumericorvariablesubstitutionwhileworkingwith expressions.
- Studentsolveequationsinvolvinglinearpolynomial,radical,rational,exponential or logarithmic expressions.
- Studentareabletousefunctioncompositiontoshowtwofunctionsareinverses.

REAL ANALYSIS COURSECODE:MAA120

OBJECTIVES:

- Studentareabletodemonstrateunderstanding ofthetheoryofsequenceand series ,continuity,differentiationandintegration.
- Studentwillableto definetherealnumbers, least upperboundandlowerbound and triangular inequality.
- Studentareabledemonstrateskillsinconstructingrigorousmathematical argument.

Learningoutcomes:

- Studentareabletodescribethe fundamentalpropertiesoftherealnumberthat underpin the formal development of real analysis.
- Studentareabletodescribethebasicdifferencebetweentherationalandthereal number.
- Studentareableto develop inarigorousandselfcontained mannertheelementsof real variable function.

REAL ANALYSIS II COURSECODE:MAA130

OBJECTIVES:

- Studentareabletolearnaboutrealnumber andtheaxiomsofcompleteness.
- Studentareableto learnabout sequence,compact,perfect connect setsandlimit of sequence.
- Studentareableto explainwhat adefinitionortheoremsays. Learning

outcomes:

- Studentareableto answerthequestionconcerning numericalconvergenceof concrete numerical sequences and series.
- Studentareableto givethedefinitionofconcept relatedtometricspacessuchas continuity compactness, completeness and connectedness.
- Student are able to give the essence ofthe proofofstone weirstrass theoremthe constructionoftheoremaswellastheexistenceoftheconvergent subsequences using equi continuity.

COMPLEX ANALYSIS I COURSECODE:MAA140

OBJECTIVES:

- Studentareabletoidentifycurvesandregions inthecomplexplanedefineby simple expressions.
- Studentareableto describe basicpropertiesofcomplexintegrationandhavingthe ability to compute such integrals.
- Studentareableto decide whenandwhereagivenfunctionisanalyticand beable to find it series development.

Learningoutcomes:

- Studentareabletodefinetheconcept ofderivationofanalyticalfunctions.

- Studentsareabletodefinetheconceptofsequence andseriesofthe complex functions.
- Studentareableto expresstheconceptsofconvergent sequenceandseriesofthe complexfunctions.

LINEAR ALGEBRA COURSECODE:MAA150

OBJECTIVES:

- Studentareableto provestatementofanalgebraic natureconceringlinear transformation.
- Studentareabletocalculateeigenvaluesandtheircorrespondingeigenspaces.
- Studentareableto determineifit isdiagonalize it.

LEARNING OUTCOMES:

- Studentareableto expresssomeofthealgebraicoperationsbetweenlinear transformationsand explain matrixrepresentationoflinear transformation.
- Studentareableto usecomputationaltechniquesandalgebraicskillsessentialfor the study of system of linear equations , matrix algebraic , vector space , eigen values and eigen vectors.
- Studentareableto usevisualization,spatialreasoningaswellasgeometric properties and strategies to model, solve problems and view solutions.

IISemester

COURSETITLE:ALGEBRA-II

CourseObjectives:

1. Studentsacquirebasicknowledgeofalgebraneededtounderstandalgebra
2. Understandingbasicconceptsofalgebra.

Course Outcomes:

• Onsatisfyingtherequirementsofthiscourse, studentswillhavetheknowledgeandskills to:
• Explainthe fundamentalconceptsofadvancedalgebraandtheirrole inmodern mathematics and applied contexts.
• ExplainDemonstrateaccurateandefficientuseofadvancedalgebraic techniques.
• Demonstrate capacityformathematicalreasoningthroughanalyzing, Provingand explaining concepts from advanced algebra.
• Apply problem-solvingusingadvancedalgebraictechniquesappliedto diversesituations in physics, engineering and other mathematical

COURSETITLE:REALANALYSIS-II

CourseObjectives:

1. Thiscourse isdesignedto providethestudent withanintense foundationin fundamental concepts of real analysis
2. After completing the course the student should be able to work basic problems (proofs, construction of examples, counter-examples) and become familiar with convergent, divergent, bounded.

CourseOutcomes:

After completionofthiscourse,studentswillbeableto

• Readanalyzesandwritelogicalargumentstoprovemathematicalconcepts

• Communicate mathematical ideaswithclarityandcoherencebothwrittenandverbally

• Fundamentalobjects,techniquesandtheoremsinthe mathematicalsciencesincludingthe fields of analysis

• Master the object material in the four required core coursethat formthe academic pillars of the program

• Demonstrateacompetenceinformulating,analysingandsolvingproblemsinseveral core areas of mathematics at a detailed level, including analysis

COURSETITLE:COMPLEXANALYSIS-II

CourseObjectives:

1. Tounderstand andapplythefundamentalconceptsincomplexanalysis.
2. Toapplycomplexanalysisbasedtoolsinsolvingpracticalproblems Course

Outcomes:

Uponsuccessfulcompletionofthiscourse,thestudentwillbeableto:

• Justifytheneed foraComplexNumberSystemandexplainhow isrelatedtoother existing number systems
• Definea functionofcomplexvariableandcarryoutbasic mathematicaloperationswith complex numbers.
• knowthecondition(s)foracomplexvariablefunctiontobeanalyticand/orharmonic
• State andprovetheCauchyRiemannEquationanduse it toshowthat afunctionis analytic.
• define singularitiesofa function, knowthedifferenttypesofsingularities, and beableto determine the points of singularities of a function
• Explain theconceptoftransformationinacomplexspace(linearand non-linear)and sketch associated diagrams.
• Understandtheconceptofsequencesandserieswithrespecttothecomplexnumbers systemand establishwhether a givenseries/ sequences is convergent/ divergent at a specified point or interval.

COURSETITLE:ORDINARY&PARTIALDIFFERENTIALEQUATION

CourseObjectives:

- Understandthebasicprinciplesconnectedtobothordinary&partialdifferential equations
- Demonstrate different methods and solve problems

Aftercompletionofthiscourse,studentswillbeableto:

- The study of Differential focuses on the existence and uniqueness of solutions and also emphasizes the rigorous justification of methods for approximating solutions in pure and applied mathematics.
- It plays an important role in modelling virtually everyphysically technical or biological process from celestial motion to bridge design to interactions between neurons.
- Theoryofdifferentialequations iswidelyused in formulating manyfundamentallawsof physics and chemistry.
- Theoryof differentialequation is used in economics and biologyto model the behaviour of complex systems.

- Differential equations have a remarkable ability to predicts the world around us. They can describe exponential growth and decay population growth of species or change in investment return over time.

COURSETITLE:GRAPHTHEORY-I

CourseObjectives:

1. Tounderstand and applythefundamentalconceptsingraphtheory
2. Toapplygraphtheorybased toolsinsolving practicalproblems.

CourseOutcomes:

Uponsuccessfulcompletionofthiscourse,thestudentwill be able to:

- ExplainthefundamentalconceptsofGraphTheoryandtheirroleinmodern mathematics and applied contexts
- DemonstrateaccurateandefficientuseofGraphTheoriticaltechniques.
- Demonstratecapacityformathematicalreasoningthroughanalysingprovingandexplaining concepts from Graph Theory.
- Applyproblem-solvingusingGraphTheorytechniqueappliedto diverse situations in physics, engineering and other mathematical context

IIISemester

COURSE TITLE:Elements of Functional Analysis

CourseObjectives:

1. StudentsacquirebasicknowledgeofFunctionalAnalysisneededto understandMetric theorem and applications.
2. Understanding basicconceptslikeOpenMappingandClosedGraphTheoremsand Hilbert spaces.

CourseOutcomes:

Uponsuccessfulcompletionofthiscourse,thestudentwillbeableto:

• Explainthefundamentalconceptsoffunctionalanalysisandtheirroleinmodern mathematics and applied contexts

• Demonstrateaccurateandefficientuseoffunctionalanalysistechniques.

• Demonstratecapacityformathematicalreasoningthroughanalysingproving and explaining concepts from functional analysis.

• Apply problem-solving using functional analysis technique applied to diverse situations in physics, engineering and other mathematical context.

COURSETITLE:TOPOLOGY-I

CourseObjectives:

1. Thiscourse isdesignedto providethestudent withanintense foundationin fundamental concepts of topology.
2. After completing the course the student should be able to work basic problems (proofs, construction of examples, counter-examples) and become familiar with separability, completeness, connectedness, and compactness.

CourseOutcomes:

After completionofthiscourse,studentswillbeableto:

- Topologyusestoanalyzecomplex networks

Ex:Socialnetworks,Biologicalnetworks,Internetetc.

- It applies Differential Topology to probability to identity multivariate interactions. This was used in neuro science recently to deduce how neurons are interacting.
- Thispaperdiscussesusing cellphonesto actuallymap outthetopologyofindoorspaces.
- Another coolapplication is in the world ofchemistrywhere one can discuss the shape of molecules by an analysis of the topology of a related graph.
- Thereisalsoanapplicationformedicalimagingsoftwareandtechnology. COURSE

TITLE: Commutative Algebra

CourseObjectives:

1. To understand andapplythefundamentalconceptsin
2. ToapplyCommutativeAlgebrabasedtoolsinsolvingpracticalproblems

CourseOutcomes:
• Onsatisfyingtherequirementsofthiscourse, studentswillhavetheknowledge andskills to:

• Explainthefundamentalconceptsofcommutativealgebraandtheirroleinmodern mathematics and applied contexts.

• ExplainDemonstrateaccurateandefficientuseofcommutativealgebraictechniques.

• Demonstratecapacityformathematicalreasoningthroughanalyzing,Provingand explaining concepts from commutative algebra.

• Applyproblem-solvingusingcommutativealgebraictechniquesappliedtodiversesituations in physics, engineering and other mathematical.

COURSETITLE:TheoryofNumbers Course

Objectives:

ElementaryNumberTheoryisthestudyofthe basicstructureandpropertiesofintegers. Learning Number Theory helps improving one's ability of mathematical thinking.
Successfulcompletionofthis course willenableyouto:

CourseOutcomes:
Uponsuccessfulcompletionofthiscourse,thestudentwillbeableto:

• Proveresultsinvolvingdivisibilityandgreatestcommondivisors;

• Solvesystemsoflinear congruences;

• Findintegralsolutionstospecified linearDiophantineEquations;

• ApplyEuler-Fermat'sTheoremtoproverelations involvingprimenumbers;

• ApplytheWilson'stheorem.

CourseOutcomes:
COURSETITLE:MEASUREANDINTEGRATION

CourseObjectives:

1. Studentsacquirebasicknowledgeofmeasuretheoryneededto understandprobability theory, statistics and functional analysis.
2. Understandingbasicconceptsofmeasureandintegrationtheory. Course

Outcomes:

Uponsuccessfulcompletionofthiscourse,thestudentwillbeableto:

- Students will understand the fundamentals of measure theory and be acquainted with the proofs of the fundamental theorems underlying the theory of integration.
- Theywillalso haveanunderstandingofhowtheseunderpintheuseof mathematical concepts such as volume, area, and integration .
- They will developaperspectiveon thebroaderimpactof measure theory in ergodic theory and have the ability to pursue further studies in this and related area.
- The students will learn about measure theory random variables,

- independence,expectations and conditional expectations, product measures and discrete parameter matingalus.

Explaintheconceptoflength,area,volumeusinglebesgue'stheory.

Applythegeneralprinciplesofmeasuretheoryandintegrationinsuchconcretesubjects as the theory of probability or financial mathematics.

COURSETITLE:TOPOLOGYPAPER-II

CourseObjectives:

1. Thiscourseisdesignedtoprovidethestudent withanintensefoundationinfundamental concepts oftopology.
2. Aftercompletingthecoursethestudentshouldbeableto workbasicproblems(proofs, construction of examples, counter-examples) andbecome familiar with separability, completeness, connectedness, compactness.

CourseOutcomes:

Aftercompletionofthiscourse,studentswillbeableto: Topology
□ □uses to analyze complex networks
Ex:Socialnetworks,Biologicalnetworks,Internetetc.
□ □It appliesDifferentialTopologyto probabilityto identitymultivariate interactions.This was used in neuro science recently to deduce how neurons are interacting.
□ □Thispaperdiscussesusingcellphonestoactuallymapoutthetopologyofindoor spaces.
□ □Another cool application is in the world of chemistry where one can discuss the shape of molecules by an analysis of the topology of a related graph.
□ □Thereisalso anapplicationformedicalimagingsoftwareandtechnology.

COURSETITLE:ADVANCEDGRAPHTHEORY

CourseObjectives:
1. Tounderstand and applythefundamentalconceptsingraphtheory
2. Toapplygraphtheorybasedtoolsinsolvingpracticalproblems Course

Outcomes:

Uponsuccessfulcompletionofthiscourse,thestudentwillbeableto:
□ □ExplainthefundamentalconceptsofGraphTheoryandtheirroleinmodern mathematics and applied contexts
□ □DemonstrateaccurateandefficientuseofGraphTheoriticaltechniques.
□ □Demonstratecapacityformathematicalreasoningthroughanalysingprovingandexplaining concepts from Graph Theory.
□ □Applyproblem-solvingusingGraphTheorytechniqueappliedto diverse situations in physics, engineering and other mathematical context.

COURSETITLE:THEORYOFPARTITIONS

CourseObjectives:
1. Thiscourseisdesignedto providethestudent withanintensefoundationinfundamental concepts ofTheory of partitions.
2. Tounderstandandapplythe fundamentalconceptsintheoryofpartitions Upon successful completion of this course, the student will be able to:
□ □Understandthebasicprinciplesconnectedtopartitionsofnumbersandgenerating functions
□ □Apply Jacobi's Triple product Identity to determine solutions
□ □DemonstratedifferentEuler'smethodsandproofstosolveproblems
□ □Write model problems in Theory of partitions using Roger's-Ramanujan's identities
□ □DemonstratetheabilitytowriteandevaluateEuler's,Gauss,Heine's,Jacobi'sIdentities.

M.Sc.Physics

Sl. No	Program	Program code	Programspecific Discipline	Programspecific code
2	**M.Sc.**	**MSCCBCSYCM**	**5.Physics**	**MSCCBCSPHYYCM**

CreditPatternfor M.Sc(Physics)

SemesterI

Hardcore	Paper	Credits(L+T+P)
YPH101	ClassicalMechanics	3+0+0=3
YPH102	LinearVectorSpaceandSpecialFunctions	3+0+0=3
YPH103	GroupTheoryandFourier Transforms	3+0+0=3
YPH104	ClassicalandRelativisticelectrodynamics, Optics	3+0+0=3
YPH105	ComputerLabCL-A	0+0+2=2
Soft-core		
YPH106	ElectronicsLab	0+0+4=4

Semester2

Hardcore	Paper	Credits(L+T+P)
YPH201	ContinuumMechanicsandRelativity	3+0+0=3
YPH202	Thermodynamics,ClassicalandQuantumStatistical Mechanics	3+0+0=3
YPH203	QuantumMechanicsI	3+0+0=3
YPH204	SpectroscopyandFourier Optics	3+0+0=3
YPH205	ComputerLabCL-B	0+0+2=2
Soft-core		
YPH206	OpticsLab	0+0+4=4
Open Elective		
YPH207	Modern Physics	3+1+0=4

Semester3

Hardcore	Paper	Credits(L+T+P)
YPH301	QuantumMechanics2	3+0+0=3
YPH302	CondensedMatter Physics	3+0+0=3
YPH306	CondensedMatterPhysicsLab	0+0+4=4
Soft-core		
YPH303	SolidStatePhysics1	3+0+0=3
YPH307	SolidStatePhysicsLab1	0+0+2=2
YPH304	NuclearPhysics1	3+0+0=3
YPH308	NuclearPhysicsLab1	0+0+2=2
YPH305	TheoreticalPhysics1	3+0+0=3
YPH309	TheoreticalPhysicsLab1	0+0+2=2

Semester4

PY210	NuclearandparticlePhysics	3+0+0=3
	NuclearphysicsLab	0+0+2=2
PY220	SolidStatePhysics2	3+0+0=3
PY230	SolidStatePhysics3	3+0+0=3
	SolidStatePhysicsLab	0+0+2=2
PYD240	Electronics	3+0+0=3
	ElectronicsLab	0+0+2=2

Sl No	Year (M.Scin Physics)	Semester	CourseTitle	Course code
1.	2015-2016	I	ClassicalMechanics	YPH101
			LinearVectorSpaceandSpecialFunctions	YPH102
			GroupTheoryandFourier Transforms	YPH103
			ClassicalandRelativisticelectrodynamics, Optics	YPH104
			ComputerLabCL-A	YPH105
			ElectronicsLab	YPH106
		II	ContinuumMechanicsandRelativity	YPH201
			Thermodynamics,ClassicalandQuantum StatisticalMechanics	YPH202
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
			OpticsLab	YPH206
		III	QuantumMechanics 2	YPH301
			CondensedMatter Physics	YPH302
			CondensedMatterPhysicsLab	YPH306
			SolidStatePhysics1	YPH303
			SolidStatePhysicsLab1	YPH307
			NuclearPhysics1	YPH304
			NuclearPhysicsLab1	YPH308
			TheoreticalPhysics1	YPH305
			TheoreticalPhysicsLab1	YPH309
			NumericalMethods	PYC250
			AcceleratorPhysics	PYC140
		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	
			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysics Lab	
			Electronics	PYD240
			ElectronicsLab	

Sl No	Year (M.Sc in Physics)	Semester	Course Title	Course code

Sl No	Year (M.Scin Physics)	Semester	CourseTitle	Course code
1.	2016-2017	I	Classical Mechanics	YPH 101
			Linear Vector Space and Special Functions	YPH102
			Group Theory and Fourier Transforms	YPH103
			Classical and Relativistic electrodynamics, Optics	YPH104
			Computer Lab CL-A	YPH105
			Electronics Lab	YPH106
		II	Continuum Mechanics and Relativity	YPH 201
			Thermodynamics, Classical and Quantum	YPH202
			StatisticalMechanics	
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
			OpticsLab	YPH206
		III	QuantumMechanics2	YPH301
			CondensedMatter Physics	YPH302
			CondensedMatterPhysicsLab	YPH306
			SolidStatePhysics1	YPH303
			SolidStatePhysicsLab1	YPH307
			NuclearPhysics1	YPH304
			NuclearPhysicsLab1	YPH308
			TheoreticalPhysics1	YPH305
			TheoreticalPhysicsLab1	YPH309
			NumericalMethods	PYC250
			AcceleratorPhysics	PYC140
		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	
			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysicsLab	
			Electronics	PYD240
			ElectronicsLab	

1.	2017-2018	I	ClassicalMechanics	YPH101
			LinearVectorSpaceandSpecialFunctions	YPH102
			GroupTheoryandFourier Transforms	YPH103
			ClassicalandRelativisticelectrodynamics, Optics	YPH104
			ComputerLabCL-A	YPH105
			ElectronicsLab	YPH106
		II	ContinuumMechanicsandRelativity	YPH201
			Thermodynamics,ClassicalandQuantum Statistical Mechanics	YPH202
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
			OpticsLab	YPH206
		III	QuantumMechanics2	YPH301
			CondensedMatter Physics	YPH302
			CondensedMatterPhysicsLab	YPH306
			SolidStatePhysics1	YPH303
			SolidStatePhysicsLab1	YPH307
			NuclearPhysics1	YPH304
			NuclearPhysicsLab1	YPH308
			TheoreticalPhysics1	YPH305
			TheoreticalPhysicsLab1	YPH309
			NumericalMethods	PYC250
			AcceleratorPhysics	PYC140
		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	

			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysicsLab	
			Electronics	PYD240
			ElectronicsLab	

Sl No	Year (M.Scin Physics)	Semester	CourseTitle	Course code
1.	2018-2019	I	ClassicalMechanics	YPH101
			LinearVectorSpaceandSpecialFunctions	YPH102
			GroupTheoryandFourier Transforms	YPH103
			ClassicalandRelativisticelectrodynamics, Optics	YPH104
			ComputerLabCL-A	YPH105
			ElectronicsLab	YPH106
		II	ContinuumMechanicsandRelativity	YPH201
			Thermodynamics,ClassicalandQuantum StatisticalMechanics	YPH202
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
			OpticsLab	YPH206
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			CondensedMatter Physics	YPH302
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			NuclearPhysics1	YPH304
			NuclearPhysicsLab1	YPH308
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			AcceleratorPhysics	PYC140
		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	
			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysicsLab	
			Electronics	PYD240
			ElectronicsLab	

Sl No	Year (M.Sc in Physics)	Semester	Course Title	Course code
1.	2019-2020	I	Classical Mechanics	YPH 101
			LinearVectorSpaceandSpecialFunctions	YPH102
			GroupTheoryandFourier Transforms	YPH103
			ClassicalandRelativisticelectrodynamics, Optics	YPH104
			ComputerLabCL-A	YPH105
			ElectronicsLab	YPH106
		II	ContinuumMechanicsandRelativity	YPH201
			Thermodynamics,ClassicalandQuantum StatisticalMechanics	YPH202
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
			OpticsLab	YPH206
		III	QuantumMechanics2	YPH301
			CondensedMatter Physics	YPH302
			CondensedMatterPhysicsLab	YPH306
			SolidStatePhysics1	YPH303
			SolidStatePhysicsLab1	YPH307
			NuclearPhysics1	YPH304
			NuclearPhysics Lab1	YPH308
			TheoreticalPhysics1	YPH305
			TheoreticalPhysicsLab1	YPH309
			NumericalMethods	PYC250
			AcceleratorPhysics	PYC140
		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	
			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysicsLab	
			Electronics	PYD240
			ElectronicsLab	

Sl No	Year (M.Scin Physics)	Semester	CourseTitle	Course code
1.	2019-2020	I	ClassicalMechanics	YPH101
			Linear VectorSpaceandSpecialFunctions	YPH102
			GroupTheoryandFourier Transforms	YPH103
			ClassicalandRelativisticelectrodynamics, Optics	YPH104
			ComputerLabCL-A	YPH105
			ElectronicsLab	YPH106
		II	ContinuumMechanicsandRelativity	YPH201
			Thermodynamics,ClassicalandQuantum StatisticalMechanics	YPH202
			QuantumMechanicsI	YPH203
			SpectroscopyandFourier Optics	YPH204
			ComputerLabCL-B	YPH205
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			CondensedMatter Physics	YPH302
			CondensedMatterPhysicsLab	YPH306
			SolidStatePhysics1	YPH303

			SolidStatePhysicsLab1	YPH307
			NuclearPhysics1	YPH304
			NuclearPhysicsLab1	YPH308
			TheoreticalPhysics1	YPH305
			TheoreticalPhysicsLab1	YPH309
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		IV	NuclearandparticlePhysics	PYD210
			NuclearphysicsLab	
			SolidStatePhysics2	PYD220
			SolidStatePhysics3	PYD230
			SolidStatePhysicsLab	
			Electronics	PYD240
			ElectronicsLab	

Semester

1Classicalmechanics

CourseObjectives:

ToapprisethestudentsoflagrangianandHamiltonianformulationsandtheirapplications

CourseOutcomes:

Necessity of lagrangian and Hamiltonian formulations. Essential features of a problem (like motion under central force, rigid body dynamics, periodic motions), use them to set up and solve the appropriate mathematical equations, and make quick and easy cheeks on the answer to catch simple mistakes. Theory of small oscillations which is important in several areas of physics e.g., molecular spectra, acoustics, vibrations of atoms in solids, coupled mechanical oscillators and electrical circuits.

Semester1

LinearVectorSpaceandSpecial Functions

CourseObjectives:

To understand the underlying Physics in respective specialization and able to teach and guide successfully. To introduce advanced ideas and techniques that is applicable in respective fields. To develop human resources with a solid foundation in theoretical and experimental aspects of respective specialization as a preparation for career in academic and industry.

CourseOutcomes:

Students will have understanding of Fundamentals and advancements in nuclear physics and their applications in the area of nuclear reactors, accelerates and medicine. Fundamentals and advancements in electronics, microprocessors and their applications in electronicdevicesandmicrowaveandopticalfibercommunications.Fundamentalsand

electromagneticpropertiesofmaterialstheircharacterizationtechniquesaswellas advancements in the area of nano materials.

Semester1

GrouptheorynFouriertransforms

CourseObjective:

This Course Enables the Student to Understand the linear equations, vector spaces, matrices, linear transformations, determinants, eigen value, eigenvectors, etc Learn to use Laplace transformmethods to solve differentialequations. Introducethe Fourier series and its application to the solution of partial differential equations

CourseOutcomes:

Upon successful completion of this course, it is intended that a student will be able to: Students will demonstrate competence with the basic ideas of linear algebra including conceptsoflinear systems, independence, theoryofmatrices, linear transformations, bases anddimension,eigenvalues,eigenvectorsandDiagonalization.Usethe methodofLaplace transforms to solve initial-value problems for linear differential equations with constant coefficients. Solve a Cauchyproblemfor the waveordiffusionequationsusing the Fourier Transform.

Semester1

Classicalandrelativisticelectrodynamics,optics

CourseObjectives:

The objective of the course is to appraise the students about the process which help In communication. About the various devices which are optoelectronic. Circuit analysis of operational amplifier and IC. Knowledge about digital electronics and digital technique.

CourseOutcomes

After the completion of the course, Students will be able to Students shall learn about the significance of communication process which are very useful in daily life. Significance of various devices which are which are beneficial to understand how they will operate and use. Due to circuit analysis of Ic and opamp, it will help in performing the mathematical operation. The modern world is digital world. It is very useful in this time.

Semester2

Continuummechanicsandrelativity

CourseObjectives:

This Course Enables the Student to distinguish between ‘inertia frame of reference’ and ‘non-inertial frame of reference’ To know how to impose constraints on a system in order to simplify the methods to be used in solving physics problems to know what central, conservative and central-conservative forces mathematically understand the conservative theorems of energy,linear momentum and angular Momentum. To know the importance

of concepts such as generalized coordinates and constrained motion to establish that Kepler's laws are just consequences Newton's laws of gravitation and that of moment.

CourseOutcomes

Upon successful completion of this course, it is intended that a student will be able to: Students learn about Lagrangian and Hamiltonian formulation of Classical Mechanics. State the conservation principles involving momentum, angular momentum and energyand understand that they follow from the fundamental equations of motion. Have a deep understanding of Newton's laws, Students learn about motion of a particle under central force field.

Semester2

Thermodynamics,classicalandquantumStatisticalMechanics

CourseObjectives:

The objective of this course is to learn the properties of macroscopic systems using the knowledge of the properties of individual particles.

CourseOutcomes:

Students will have understanding of connection between statistics and thermodynamics, different ensemble theories to explain the behavior of the systems. Difference between theories to explain the behavioro the systems. Difference between classical statistics and quantum statistics. Statistical behavior of ideal Bose and fermi systems.

Semester

2QuantummechanicsI

CourseObjectives:

To give exposure about the various tools employed to analyze the quantum mechanical problems.

Courseoutcomes:

Students will have understandings of importance of quantum mechanics compared to classical mechanics at microscopic level. Various tools to calculate eigen values and total angular momentum of particles. Application of approximation methods and scattering theories.

Semester2

SpectroscopyandFourieroptics

Courseobjectives:

Toimpartknowledgeaboutvariousmathematicaltoolsemployedtostudyphysics problems.

Courseoutcomes:

Studentswillhaveunderstandingofvarioustechniquestosolvedifferentialequations. How to use special functions in various physics problems.

Semester

2Modernphysics

CourseObjectives:

This Course Enables the Student to study and develop the Bohr theory of the hydrogen atom. Observe the fine structure lines of HCl molecule and the Zeeman splitting of one or moreofthese linesasa functionofmagnetic field. Outlinetheselectionrules forrotational and vibrational spectra and rationalize the role of the molecular dipole moment in the selection rules. Distinguish between the energy levels of a rigid and a non-rigid rotor.

CourseOutcomes

Upon successful completion of this course, it is intended that a student will be able to: They should be able to calculate the Zeeman effect and the Lande g-factor Theyshould be able to calculate the effects of an electric field on the energy levels of the hydrogen atom (the Stark effect). Theyshould be able to discuss the rotationalspectraof molecules. They should be able to apply the Simple Harmonic Oscillator to determine the vibrational spectrum of diatomic molecules.

CourseObjectives:

To give exposure about the various tools employed to analyze the quantum mechanical problems.

Courseoutcomes:

Students will have understandings of importance of quantum mechanics compared to classical mechanics at microscopic level. Various tools to calculate eigen values and total angular momentum of particles. Application of approximation methods and scattering theories.

Semester

3Condensedmatterphysics-1

CourseObjectives:

To study some of the basic properties of the condensed phase of materials especiallysolids.

Courseoutcomes:

Students will have understandings of structures in solids and their determination using XRD. Behavior of electrons in solids including the concept of energy bands and effect of the same on material properties. Electrical, thermal, magnetic and dielectric properties of solids.

Semester3

Solidstatephysics-1

CourseObjectives:

To study some of the basic properties of the condensed phase of materials especiallysolids.

Courseoutcomes:

Students will have understandings of structures in solids and their determination using XRD. Behavior of electrons in solids including the concept of energy bands and effect of the same on material properties. Electrical, thermal, magnetic and dielectric properties of solids.

Semester3

Nuclearandparticlephysics-1

CourseObjective.

The objective of the course is to appraise the students about the particles. To learn about the decay phenomenon and the process how they will occur. Knowledge of various model compare to nucleus.Knowledge of scattering process.

CourseOutcomes

After the completion of the course, Students will be able to Students shall learn about the

Semester

3Theoreticalphysics-1

Courseobjective:

To give exposure about the various tools employed to analyze the quantum mechanical problems

Courseoutcome:

After studying this course, students can calculate the ground state and excited state energies of various real-life systems by using Principle, WKB method and perturbation methods. Students will be knowing about the Einstein's coefficients and relating them to lasers. They know about scattering in two different frames and can easily calculate scattering amplitude and scattering cross section. Students canwrite totalenergyand wave function as slater determinant for system of identical fermions.

Semester4

Nuclearandparticlephysics-

CourseObjective.

The objective of the course is to appraise the students about the particles. To learn about the decay phenomenon and the process how they will occur. Knowledge of various model compare to nucleus.Knowledge of scattering process.

CourseOutcomes

After the completion of the course, Students will be able to Students shall learn about the knowledge of particles. Significance of various decays tells the students about the nuclear process. It will teach the students about the spin parity concept &magic no. Related to shell. About the scattering process how it will occur.

Semester4

Solidstatephysics-2

CourseObjectives:

To study some of the basic properties of the condensed phase of materials especiallysolids.

Courseoutcomes:

Students will have understandings of structures in solids and their determination using XRD. Behavior of electrons in solids including the concept of energy bands and effect of the same on material properties. Electrical, thermal, magnetic and dielectric properties of solids.

To study some of the basic properties of the condensed phase of materials especiallysolids.

Courseoutcomes:

Students will have understandings of structures in solids and their determination using XRD. Behavior of electrons in solids including the concept of energy bands and effect of the same on material properties. Electrical, thermal, magnetic and dielectric properties of solids.

CourseObjective

Semester4Electronics

The objective of the course is to appraise the students about the process which help in communication.About the various devices which are optoelectronic. Circuit analysis of operational amplifier and IC.Knowledge about digital electronics and digital technique.

CourseOutcomes

After the completion of the course, Students will be able to 1. Students shall learn aboutthe significance of communication process which are very useful in daily life. 2. Significance ofvariousdeviceswhichare whichare beneficialto understand how theywill operate and use. 3. Due to circuit analysis of Ic and opamp, it will help in performing the mathematicaloperation. 4.The modernworld isdigitalworld. It is veryuseful inthistime.

M.Sc.OpenElectives

Sl No.	Program	ProgramCode	OpenElectivePaper	CourseCode(Open Elective)
2	M.Sc.	MSCCBCSYCM	a.Sericulture Technology	MSCCBCSSSBYCM
			(bySericulturedepartment)	

AsM.Sc.Studentsapplicantsarenot sufficient innumber,onlyopenelective isofferedby the department

OPENELECTIVEPAPERFORMASTER'SDEGREECOURSES (MSC.)

ProgramSpecificTitle: SericultureasanOpenElectivesubjectfor MSc students

Programspecificobjectives(PSOs):

- Toimpartadvancedandin-depthknowledgeintheareaofagricultureingeneraland sericulture in particular.
- Togainknowledgeonvariousactivitiesoftheindustrytobecomeself-employedor entrepreneurs.
- Todevelopthespiritofcompetitiveness,developgoodworkcultureandtohavean environmental concern.
- Tomotivatethemforself-directedandlifelonglearningprocessandtodevelop belongingness to our locality and nation
- Totrainthestudentsto becomeprogressiveandinnovative.
- Toreadythestudents'industryreadywithbasicandtranslationalresearchskillswith technical excellence.

Programspecificoutcome(PSOc):

- Students willgain required knowledge to become self-employed or entrepreneurs as it is a job-oriented subject. They develop entrepreneurial skills, with effective communication and interactive skills.
- It imparts a know how about various aspects of sericulture industry as an interdisciplinary subject.
- Sericulture deals with every individuals social, economic and traditional values of the country.
- Quality followed by Quantity is the outcome of the subject in terms of economy, social wellbeing, building unity among those involved, understand the moral dimensions of decisions with a responsibility to accept them and practice in life.
- Sericulture is an ecofriendly organization, teaches the values of environment and its protection.
- Gender sensitization comes naturally among students of Sericulture as 40% of the workforce is women in sericulture, teaches the importance of gender equality among those study the subject and practice it.
- Since the subject involves continues development in terms of methodology, technology and practices that gives the ability to engage in life-long learning.

COURSE:SERICULTURETECHNOLOGY

COURSEOBJECTIVES:

- Toimpartadvancedandin-depthknowledgeintheareaofagricultureingeneraland sericulture in particular.
- Togainknowledgeonvariousactivitiesoftheindustrytobecomeself-employedor entrepreneurs.
- Totrainthestudentstobecomeprogressiveandinnovative.
- Toreadythestudents'industryreadywithbasicandtranslationalresearchskillswith technical excellence.

COURSEOUTCOME:

- Students willgain required knowledge to become self-employed or entrepreneurs as it is a job-oriented subject. They develop entrepreneurial skills, with effective communication and interactive skills.
- Since it is an agro-based cottage industry, it teaches the importance of locally available resources and knowledge of how effectively can be used in day today life. That willhelp and protect the interests of the local artisans' traditions and culture that's the backbone of our country.
- Gainenoughknowledgetoproposeresearchideas intheirhigher studies.
- Develop practical skills along with their theory components, which helps in various positions selected in both academic institutions and R & D programs of industries.

M.Sc.–OpenElectives

Sl No.	Program	ProgramCode	OpenElectivePaper	CourseCode(Open Elective)
2	M.Sc.	MSCCBCSYCM	b. WasteManagement (byEnvironmentalScience department)	MSCCBCSSSBYCM

Open Electives for PG Students

Solid and Hazardous waste management

Course Objectives:

CO1: State solid waste characteristics and its sources.

CO2: Identify and analyze different methods of treatment of solid waste.

CO3: Illustrate Industrial/ Municipal/ E- Waste/ Hospital practices in solid waste management.

CO4: Discuss the significance of recycling reuse and reclamation of solid wastes.

CO5: Assess the relationships between environmental guidelines, human activities and quality of impacted soil, water and air

Course Outcomes:

On successful completion of the Open elective course, the student should be able to

- ❖ Evaluate the subject from the technical, legal and economical points by learning of all terms related to general hazardous waste management.
- ✓ Examine the technical points that are required to set up a hazardous waste management system.
- ✓ Apply the legal legislation related to hazardous waste management.
- ✓ Make an economical analysis of the hazardous waste management system
- ✓ Define the principles of hazardous waste management.
- ✓ Apply the pollution prevention techniques with regard to hazardous wastes.
- ✓ Set up hazardous waste recycling systems.
- ✓ Design the appropriate treatment and disposal systems for hazardous wastes.

Program:MasterofBusinessAdministration

ProgramspecificTitle: MBAinManagementScience

Sl No.	Program	ProgramCode	ProgramSpecific discipline	ProgramSpecificCode
4.	**M.B.A.**	**MBACBSCSYCM**	**Management Science**	**MBACBSCSMANYCM**

PROGRAMOBJECTIVESANDOUTCOME P.G

MASTEROFBUSINESSADMINISTRATION (MBA)

MBAPROGRAMOBJECTIVES:

MBA graduates shall acquire analytical skills, data management and diagnostic problem solving skills in order to support management decision making.Students will make data- driven decisions demonstrating the ability to identify alternatives.

Business Management& Leadership Skills:Demonstrate anabilityto applya significant amount of business administration knowledge in Leadership & Management, Accounting & Finance, Health Care Management, Human Resource Management, IT Management, and Project Management

Strategic Planning & Problem-Solving Skills: To demonstrate ability to identify problems, define objectives collect and analyze information, evaluate risks andalternatives, and leverage technology to solve organizational problems using a strategic planning approach.

Communication and TeamManagement Skills: To demonstrate abilityto communicate effectively with all stakeholders and mobilize team for a common purpose with a clear understanding of organizational behaviour and change

Social Responsibility, Ethical Decision-Making SkillsandEthical leadership: To demonstrate the ability to understand and analyze corporate social responsibilities and apply ethical decision-making principles during day-to-day operations. Studentswill demonstrateknowledgeofethicalframeworksformanagementdecision-makingand

leadership. They will demonstrate capability to follow legal principles, ethical guidelines and social responsibility.

Analytical and critical thinking: Studentswill develop the ability to analyze complex management situations by managing information, applying qualitative and quantitative solutions,and integrating informationtechnologyto improvedecisionmakingand increase competitive advantage in an environment of rapid change.

Knowledge of Integrating Functional Areas: Studentswill successfully apply and integrate the functional areas of business to improve strategic decision making. Students will be able to take strategic, comprehensive, and innovative approaches in making business decisions to create value in a challenging environment. Students will be able to integrate knowledge of the core business functions to solve complex, ambiguous and unfamiliar management problems.

Globalawareness: Studentswilldemonstrate anappreciation for conducting business ina global environment. Students will be able to identify factors affecting the global economy and international business, and develop a comprehensive understanding of the factors. Studentswillbe able to applyknowledge ofthe globaleconomyand internationalbusiness to make informed business decisions.

MBAPROGRAM OUTCOMES:
Uponcompletionofthe MBAprogram,studentswill:

- Gainknowledge ofthe keyfunctionsofbusinessenterprises
- Acquireadvancedskillstounderstandandanalyzesignificant businessopportunities, which can be complex, uncertain and dynamic.
- Demonstrateabilitytothinkcriticallyandcommunicateeffectivelythat cancreateshort- term and long-term value for organizations and their stakeholders
- Applybestpracticestosolvemanagerialissues
- Integratetheoriesandpracticetoperformstrategicanalysis
- Demonstrate effectivewrittenformsofcommunicationand oralbusinesspresentations
- Implementleadershipskillstoworkeffectivelywithindiverse teams
- Haveanunderstandingofglobalperspectiveofbusiness.
- Demonstrateabilitytoreorientthingsinthelight ofconstantchange

- Identifyandanalyzeethicalresponsibilitiesof businesses
- Applydecision-makingtechniques,bothquantitativeandqualitativeanalysis,tomanagement issues
- Foster collaboration, communication and adaptability in helping organizations excel in a changing business scenario.
- Exhibithighmoral andethicalvaluesandemotionalintelligenceneededforcorporate leadership.
- Demonstratehigh leveloftransparencyin corporate governance.
- Abilitytolearnand achieve standards.
- Demonstratehigh levelofEmployeeEmpowermentand Engagement.
- ExhibitOrganizationalCitizenshipBehaviour Elective

Areas:

1. MarketingManagement(MM)
2. FinancialManagement(FM)
3. HumanResourceManagement(HRM)

ELECTIVE:MARKETINGMANAGEMENT

MarketingManagement: ProgramSpecificObjectives:

- To enable the students to understand consumer behavior from personal, socio-cultural and environmental perspectives. Analyze the buying decisions of consumers. Understand tools of market research design. Study market research for sales, pricing and distribution.
- Helps to understand the sales management and personal selling process. Handling and evaluating the performance of sales teams. Understand various aspects of sales force management. Gain knowledge about key areas of logistics, material handling and manage warehousing.
- To help the students understand determinants of promotion mix and sales promotion. Helps students plan and design creative approaches for advertisements and advertisement campaigns. Builds ability to plan andevaluate advertising budgets
- To impart knowledge about the product, product mix and marketing strategies; help understand new product development and product launching strategies; provide insights about marketing and pricing strategies; develops ability in brand management and design programs to build brand equity.
- To enable students to understand difference between business and consumermarketing,understandconsumerbuyingbehavior,enhanceknowledgeabout,how to

plan for marketing from economic and industry perspective, gain knowledge about supply chain and logistics management, and learn different marketing channels.

- Learn about the emerging trends in services marketing; understand customer expectations; design service development strategies; Identify the gap between customers expectations and service delivery; Understanding the integrated gap models to improve the service quality.
- Understand emergence of and basics of international marketing. Study international marketing environment from various perspectives and understand marketing mix strategy. Recognize the various facilities and provisions for exports by government of India and other institutions. Enable the students to understand global level platformsfor international economics and trade.

MarketingManagement:ProgramSpecificOutcome:

- At the end ofthis programthe students will be able to appraise the consumer behavior and buying decision. Study various marketing research designs and techniques. Apply variousstatisticaltoolsandtechniques formarket researchdataanalysis;Abletoarrive at pricing of product.
- The student will be able to sell a product in the open market and carefully handle the sales personnel. Get an insight into the emerging trends in retailing and wholesaling. Design and manage distribution channels. Awareness about software packages to enhance the quality of logistics.
- The students will be able to evaluate the sales promotion mix; design and draft advertisement layout for effective communication; ability to choose optimal advertisement media through proper agency; develop ability to ensuring ethics and standards of advertising.
- The students will be able to assess potential for product development and growth. Demonstrate ability of developing and launching a new product. Formulate marketing plan and ensure effective brand management will demonstrate potential to design and implement branding strategies.

- The students will be able to assess and evaluate organizational consumer buying behavior; formulate industrial product strategy and assess product life cycle; Ensure effective logisticsand supplychain management;designand planadvertising and sales promotion; demonstrate ability in bidding and leasing.
- The students will be able to analyze and evaluate consumer behaviour in the services sector; ensuring customer service delivery through various channels; and able to promote services across various service sectors.
- The students will be able to appreciate and extend their marketing boundaries across the world; apply market entry strategies effectively. Evaluate the factors affecting international marketing. Develop aptness towards export planning and appreciate the role of various forums for international trade negotiations.

ELECTIVE:FINANCIALMANAGEMENT

FinancialManagement:ProgramSpecificObjectives:

- To familiarize the students with basic concepts of financial management and capital budgeting. Ranking and analyzing various investment proposals. Understand the importance and relevance of dividend decisions under legal framework. Gain knowledge about firm valuation using various models. Gain insight into Information asymmetry and principal-agent conflicts.
- Helps the students to understand the Indian financial system provides an overview of capital markets and market for government securities. Throws light about Banking functions and regulatory framework; imparts knowledge about merchant banking and functionsofcreditratingagencies;Comprehendsfraudulentactivitiesundercompanies act.
- Enables the students to gain knowledge about valuation of equity, debt and mutual funds;providesunderstanding oftheconcept ofmarket efficiency; impart awareness aboutEICframeworkandtechnicalanalysisformakingequityinvestment decisions; enables portfolio construction and evaluation using various measures.
- To help students acquaint to the methodology of Mergers and Acquisitions, Leverage Decisions and its practical impact. They learn about Financial Distress and Restructuring. To studythe impact ofDividend policyonthe market value ofthe firm. To be acquainted with the influence of Stock Repurchases on market capitalization.
- To help students gain an insight on the basics of derivatives; cognize the operations of Forward and Future Contracts; Comprehend the manoeuvres of Options Contracts and

trading Strategies; fathom the working of Valuation of options; apprehend the functioning of Commodity derivatives.

- Helps students to apprehend the role of International Financial Management in Corporate Financial Management, gain acumen on the Foreign Exchange Market structureandproceedings,achieveknowledgeonMeasurement ofExposureandrisk in exchange rates of International Markets, gets acquainted with the Management of Foreign Exchange exposure develops competence on evaluation of international investment decision.
- The students develop competencies on the basics of Income Tax, gain insight on the computation of income from business of a corporate entity, develop a vision on the computation of income from Capital Gains of Company, learn visualization on the set off and carry forward losses of corporate entity, develop prophecy on the tax implications in business Restructuring.

FinancialManagement:ProgramSpecificOutcome:

- At the end of the course students will be able to apply capital budgeting techniques to evaluatevarious investment proposals. Designsuitabledividendpolicy. Firmvaluation based on various models and information asymmetry in an ideal capital market.

- The student will be equipped about Indian financial system; Thorough about various financial instruments and stock market operations; Proficient enough to design corporate debt restructuring mechanism. Will be capable of assessing credit rating and take up the role of merchant bankers practically. Investigate into fraudulent activities under SEBI framework.
- At the end of the course the student will be able to make investment decisions into equity and debt; Will be able to predict the intrinsic value of investment and future stock price movements; Construct and manage active portfolio; Evaluate the performance of portfolio based on the performance measures.
- Acquire knowledge on the methodology, synergy of Mergers and Acquisitions,theories of Leverage Decision. Develop capability to analyze cause and effect of Financial Distress and Restructuring of corporate. Develops ability to understand the impact ofdividend policy and stock repurchases on market value ofthe firm. Enthralls mastery over Managing Internal Equity, Seasoned Equity Offerings and its pricing phenomenon.

- The students build capability to apply the basics of various derivative instruments in practical tasks, acquires proficiency on the operations of Forward and FutureContract's hedging and valuation in current scenario, Twigs the exercises of Options Contracts and trading Strategies and its practical implications, probes the operations of Valuation of options, captures the working knowledge of Commodity derivatives.
- Demonstrates capability to understand the role of International Financial Management in managing Corporate finance, develops insight into Foreign Exchange Market, get acquainted to Measurement of exchange rates, obtains Exposure to risk in exchange rates transactions of International Markets, develops an aptitude in evaluation of international investment decision.
- Students establishes mastery over the basic concepts of Income Tax demonstrateability to compute income from business of a Company with statutory compliance. achieves computational proficiency of income from Capital Gains of Company and its exemptions, comprehends the set off and carry forward losses treatment of corporate entity, upsurge knowledge on the tax collection at source and tax deducted at source, triumphs the computational expertise of the tax implications in business restructuring.

ELECTIVE:HUMANRESOURCEMANAGEMENT

HumanResourceManagement:ProgramSpecific Objectives

- To understand the basic concepts and nature ofHRD, its importance inthe present day context.Theygains insight intoHRD inGovernment, PSU'sandIT sector.Understand the importance of coaching, mentoring and counselling in development of human resources. Understand learning and development in the knowledge setting and understand the importance of career planning and development.
- To understand the importance of planned systemic change; learn about value, assumption and belief in organizationaldevelopment; understand the different types of intervention adopted and consultant and client issues.
- To understand the importance of training and its diversity; learnabout the different challenges, training needassessment,trainingdelivery, trainingevaluationandtraining interventions.
- Understand the meaning and nature of strategic HRM; complex relationships between business strategy and human resource management; contribution that strategic human resource management can make to promoting and achieving the organization'sstrategic intent. Theyget to knowthe strategic HR issues in Internationalassignments.

- Know the origin and factors responsible for the growth of labor legislations. Helps to understand the Indian Factories Act 1948; Bonus Act 1965 and Gratuity Act 1982; Workmen's Compensation Act 1932; ESI Act 1948 and Provident Fund; Payment of wages Act; Payment of Gratuity Act and code of discipline.
- Be aware of the present state of Industrial relations in India. Be acquainted with the concepts, principles and issues connected with trade unions, collective bargaining, workers participation, grievance redressal, and employee discipline and dispute resolution. Understand the various processes and procedures of handling Employee Relations. They get insight into the disciplinary procedure, lay off and retrenchment. They learn about the procedure for collective bargaining and its importance.
- The course helps students to understand the importance of Knowledge management, application ofknowledge in work practices, how to build knowledge management into strategic framework. They get insight into contributory disciplines to knowledge leadership, the importance of knowledge culture, the impact of organization structure on Knowledge management.

HumanResourceManagement:ProgramSpecificOutcomes

- Students will be in a position to manage employees effectively. Understand the role of coaching, mentoring and counseling in managing HR. Able to identify Key Performance areas and key result areas that contributes to effective management ofHR. Demonstrate ability to apply modern techniques of performance management in managing HR.
- Students will be able to manage planned change in organization effectively; will understand the importance of values, assumptions and beliefs in organization development; demonstrate ability to apply intervention techniques in managing Organization Development.
- Students will be able demonstrate the ability to carry out training need assessment by specifying goals, identifying constraints, resource analysis; theywill be implement the traditional and modern methods of training delivery and evaluate training programs with the use of different models and designs.
- Students will be able to understand the need for different HRM practices in alignment withdifferent business strategies throughclosed systemas wellas opensystemmodels such as behavioral perspective and cybernetic systems.

- They will be able to critically analyze the legal rules and institutions which regulate Indian work relationships using theoretical, contextual and historical perspectives. They demonstrate ability to implement the legal rules for the benefit of employees.
- Will be in a position to understand and apply the knowledge and understanding of Industrial relations in effectively managing human resources, create a sense of understanding and good relations between management and HR. Develop abilityhandle the grievances and participate effectively in collective bargaining. They will demonstrate a clear view of the different types of settlement available for employees. They will have an insight with regard to standing orders and disciplinary procedure.
- Demonstrate ability to investigate various issues in the application of knowledge management to organizational learning and decision-making. Develop ability to formulate action plans for knowledge intensive organizations; formulate a framework for thinking about knowledge intensive organizations; describe and work with intangibles.

COURSE CURRICULUM & REGULATIONS GOVERNING
MASTEROFBUSINESSADMINISTRATION(MBA)DEGREECOURSE

COURSESTRUCTURE

	First Semester	Course Code	Credits*			Marks		
Sl No	Subjects		(L+P/S/F)			Intl. Asst.	End Term	Total
			L	P/S/F	Total			
1	ManagementConceptsand Theories	CBA110	2	1	3	25	75	100
2	OrganizationalBehaviour	CBA120	2	1	3	25	75	100
3	BusinessEnvironment	CBA130	3	0	3	25	75	100
4	ManagerialCommunication	CBA140	2	1	3	25	75	100
5	ManagerialAccounting	CBA150	3	1	4	25	75	100
6	ManagerialEconomics	CBA160	2	1	3	25	75	100
7	Statisticsfor Management	CBA170	3	1	4	25	75	100
	Total		17	6	23	175	525	700

	Second Semester	Course Code	Credits*			Marks		
Sl No	Subjects		(L+P/S/F)			Intl. Asst.	End Term	Total
			L	P/S/F	Total			
1	MarketingManagement	CBB110	2	1	3	25	75	100
2	Human Resource Management	CBB120	2	1	3	25	75	100
3	Corporate Finance	CBB130	3	1	4	25	75	100
4	QuantitativeMethods	CBB140	3	1	4	25	75	100
5	BusinessResearchMethods	CBB150	3	0	3	25	75	100
6	OperationsManagement	CBB160	2	1	3	25	75	100
7	Management Information Systems	CBB170	2	1	3	25	75	100
	Total		17	6	23	175	525	700

	ThirdSemester	Course Code	Credits*			Marks		
Sl No	Subjects		(L+P/S/F)			Intl. Asst.	End Term	Total
1			L	P/S/F	Total			
2	Project Management	CBC110	2	1	3	25	75	100
	StrategicManagement	CBC120	2	1	3	25	75	100
Elective–MarketingManagement								
3	MM-I:ConsumerBehavior and Marketing Research	CBC210	3	1	4	25	75	100
4	MM-IISalesandLogistics Management	CBC220	3	1	4	25	75	100
5	MM-IIIIntegrated Marketingcommunication	CBC230	3	1	4	25	75	100
Elective–FinancialManagement								
3	FM-I:Investment Management	CBC130	3	1	4	25	75	100
4	FM-II:FinancialServices	CBC140	3	1	4	25	75	100
5	FM-III:Portfolio Management	CBC150	3	1	4	25	75	100
Elective–HumanResource Management								
3	HRM-I:HumanResource Development	CBC160	3	1	4	25	75	100
4	HRM-II: Organizational Change and Development	CBC170	3	1	4	25	75	100
5	HRM-III: Training and Development	CBC180	3	1	4	25	75	100

6	Project WorkDiary	CBC190	0	3	3	50	---	50

7	SummerInternshipReport	CBC200	---	---	---	50	---	50
	Total		13	8	21	225	375	600

	Fourth Semester	Course Code	Credits*			Marks		
SlNo	Subjects		(L+P/S/F)			Intl. Asst.	End Term	Total
			L	P/S/F	Total			
1.	Entrepreneurship	CBD110	2	0	2	25	75	100
Elective–MarketingManagement								
2.	MM4:ProductandBrand Management	CBD220	3	1	4	25	75	100
3.	MM5:Business Marketing Management	CBD230	3	1	4	25	75	100
4.	MM6:ServicesMarketing	CBD240	3	1	4	25	75	100
5.	MM7: International Marketing	CBD250	3	1	4	25	75	100
Elective–FinancialManagement								
2	FM4:FinancialStrategies	CBD120	3	1	4	25	75	100
3	FM5:Derivatives	CBD130	3	1	4	25	75	100
4	FM6:InternationalFinancial Management	CBD140	3	1	4	25	75	100
5	FM7:CorporateTaxation	CBD150	3	1	4	25	75	100
Elective–HumanResource Management								
2	HRM4:InternationalHuman Resource Management	CBD180	3	1	4	25	75	100
3	HRM5:LabourLegislations	CBD190	3	1	4	25	75	100
4	HRM6:Industrial Relations and Collective Bargaining	CBD200	3	1	4	25	75	100
5	HRM 7:Personal Growth and Interpersonal Effectiveness	CBD210	3	1	4	25	75	100
6	Project Report	CBD160	0	3	3		75	75
7	ProjectViva-voce	CBD170	---	---	---	---	25	25
	Total		14	7	21	125	475	600

L=Lecture–1 houroflectureperweek for15weeks= 1credit

P/S/F=Practicals /Seminars/Field Work – 2 hours ofPracticals / Seminars / field work per week for 15 weeks = 1 credit

Projectreportguidanceworkload:Guiding10studentsforprojectreportamountsto3 hours of lecture per week

ElectivePapers:Marketing:

MM1:ConsumerBehaviorandMarketingResearch MM 2:

Sales and Logistics Management

MM3:IntegratedMarketingcommunication MM
4: Product and Brand ManagementMM 5:
Business Marketing Management MM 6:
Services Marketing
MM7:InternationalMarketing

ElectivePapers:Finance
FM1:InvestmentManagement FM 2:
Financial Services
FM3:PortfolioManagement FM
4: Financial Strategies FM 5:
Derivatives
FM6:InternationalFinancialManagement FM 7:
Corporate Taxation

ElectivePapers:HumanResourceManagement HRM 1:
Human Resource Development
HRM2:OrganizationalChangeandDevelopment HRM 3:
Training and Development
HRM4:InternationalHumanResourceManagement HRM
5:Labour Legislations
HRM 6: Industrial Relations and Collective Bargaining
HRM7:PersonalGrowthandInterpersonalEffectiveness

FIRSTSEMESTER

1.1 ManagementConcepts&Theories

Course Code: CBA110

Course Objectives: To help students gain understanding of management concepts and theories, functions and responsibilities of managers. To enable them to analyze and understand the various functional areas of the organization and it's functioning.

Course Outcomes: On completion of this course, the students will be able to understand the concepts related to Business, demonstrate the roles, skills and functions of management, analyze effectively apply management concepts to diagnose and solve organizational problems and develop optimal managerial decisions. Understand the complexities associated with management of human resources in the organizations.

1.2 OrganizationalBehavior

Course Code: CBA120

Course Objectives: To help the students develop cognizance of the importance of human behavior, to understand howpeoplebehaveunder different conditionsandunderstandwhy people behave as they do and use this knowledge in managing human resourceseffectively. They learn how to predict and control behaviour.

Course Outcomes: Demonstrate capability to predict behavior and use this knowledge effectively. Understand how people behave in groups and how to manage groups effectively. Demonstrate the ability to analyse complexities associated with managementof individual behaviour, group behaviour and understanding the motive behind such behaviour in the organization.

1.3 BusinessEnvironment

Course Code: CBA130

Course Objectives: It accentuates the students to develop conceptual framework of business environment, Provides insight into the importance of economic structure of a country.

Course Outcomes: Students will be able to evaluate the various components in business decision-making and also the scope for ethics in business.

1.4 ManagerialCommunication

Course Code: CBA140

Course Objectives: It enables the students to sensitize the importance of communication skills and emphasizes on effective writing of business communication.

Course Outcomes: At the end of this course students are equipped about effective communication under multifaceted situation and also would be able to prepare business proposals.

1.5 ManagerialAccounting

Course Code: CBA150

Course Objectives: It helps the students to understand fundamental accounting concepts and to prepare the company's financial statements.It also helps them understand various costs and costing methods involved in manufacturing concerns.

Course Outcome: At the end of this course students will be capable of preparing the financial statement of a company and evaluate its performance based on the final accounts. And also theywill be able to evaluate relevant costs involved in the production process.

1.6 ManagerialEconomics

Course Code: CBA160

Course Objectives: This course gives a comprehensive overview of distinction between micro and macroeconomics concepts with the aim of developing within students a picture of how business organizations relate to the economy as a whole. The course then focuses on practical applications of economic analysis to problems of concern. Case studies and projects are used to demonstrate the methods used to determine economic feasibility and cost-effectiveness of products, services, and programs.

Course Outcomes: At the end of this course students will be able to design various competitive strategies and also production and cost optimization techniques for making optimal managerial decisions.

1.7 StatisticsforManagement

Course Code: CBA170

Course Objectives: This course gives the exposure towards the analytical skills required to handle data and enables themto enhance their knowledge on descriptive and inferential statistics in decision-making.

Course Outcomes: Students will be able to apply various statistical data analysis tools and techniques for making business decisions.

SECONDSEMESTER

1.1 MarketingManagement

Course Code: CBB 110

Course Objectives: Course familiarizes the students with the fundamental concepts of marketing. Understand the elements of marketing mix and marketing strategies toinfluence the consumer buying behavior.

Course Outcomes: At the end of this course, the students will be able to formulate marketing strategies that incorporate psychological and sociological factors which influence buying. Understand branding; identify marketing channels and product distribution through various sales promotion techniques

1.2 HumanResourceManagement

Course Code: CBB120

Course Objectives: To enable the students to understand the HR Management system at various levels in organizations, focus and analyse issues and strategies required to select and develop manpower resources, develop relevant skills necessary for application in HR related issues. Enable the students to integrate the understanding of various HR concepts along with the domain concept in order to take correct business decisions

Course Outcomes: Effectively manage and plan key human resource functions within organizations.Examinecurrent issues,trends,practices,andprocessesinHRM.Contribute to employee performance management and organizational effectiveness. Problem-solve human resource challenges.

1.3 Corporate Finance

CourseCode:CBB130

Course Objectives: To familiarize the students with basic concepts of financial management and financial system. Understand stock valuation models. To evaluatevarious investment proposals based on various capital budgeting techniques. Understand the optimal capital structure for a firm and dividend decisions.

Course Outcomes: At the end of the course the student will be able to apply basics of financial concept to choose among various investment, proposals. Estimate the working capital requirements; Design the optimal capital structure with relevant decisions on dividends.

1.4 Quantitativemethods

Course Code: CBB140

Course Objectives: Understand the mathematical tools that are needed to solve optimization problems. Understand and practice allocation problems, Assignments problems, Transportation problem, Queuing models for service allocation and Network Analysis (PERT & CPM) for project management. Get an insight into decision making under various situations.

Course Outcomes: At the end of this course the students will be able to use optimization techniques forprofit andcost functions. Applyappropriate models forallocationoflimited resources for logistics and assignment problems in the production area. Apply PERT and CPM for project management and game theory for managerial decisions

1.5 BusinessResearchMethods

Course Code CBB150

Course Objectives: It imparts the knowledge about the basics components of research design. Helps students understand various research analytical tools used in business research and enhance the critical thinking skills.

Course Outcomes: At the end ofthe course the student will be able to understand various research approaches, techniques and strategies appropriate in business research. Apply a range of quantitative and qualitative research techniques to business in day to day operations of organization.

1.6 OperationsManagement

Course Code: CBB160

Course Objectives: To acquaint the students with the basics ofproduction and operations functions. To understand how to select a good plant location and design plant layout. Understand the need for ensuring total quality, certifications and quality standard.

Course Outcomes: At the end ofthe course the students will be able to design production strategies, plant layout and choose feasible Plant Location. Scope for lean manufacturing and develop Total Quality Management Strategies. Understand the importance of ISO standards in production and supply chain management from the global perspective.

1.7 ManagementInformationSystems

Course Code: CBB170

Course Objectives: To understand the importance and emerging technologies in the field of management. Study telecommunication networks, understand SDLC. Study ERP Package, Web publishing and e-commerce. Understand the ethical issues in information management.

Course Outcomes: At the end of the course, students will be able identify to telecommunicationnetworks.Willbeableto develop functionalmodules for businesscase studies using ERP and upload the content on internet through web publishing.

THIRDSEMESTER

3.1 ProjectManagement

Course Code: CBC110

Course Objectives: To enable the students to understand project management and feasibility studies. Analyze project work break down structure, cost and time estimation. Understand project risk management with contingency planning; Evaluating project team performance and control; Ensuring project closure with post audit.

Course Outcomes: At the end of this course the students will be able to choose feasible project and allocate resources optimally. Develop responsibility matrix and arrive atproject completion time and cost. Mitigate risk factors and project crashing. Develop and manage virtual project teams.

3.2 StrategicManagement

3.3 Course Code CBC120

Course Objectives: The course provides insights into the core concepts of strategic management; to evaluate various business strategies in dynamic market environments. Provides insights into various strategic management models; importance of ensuring corporate ethics and governance. Understand growth strategy for business and strategy implementation process. Evaluating and monitoring strategy implementation.

Course Outcomes: At the end of this course the student will be able to craft a suitable business strategy. Incorporate various factors in environmental analysis. Develop a strategic business model in the competitive environment ensuring ethics and corporate governance; able to manage business portfolio; will be proficient in strengthening the core competencies of the firm; develops policies and procedures for strategy implementation.

ELECTIVEPAPERS

3.4 :ELECTIVE-FM1-AdvanceCorporateFinance Course

Objectives:

- Toprovide insight onthecashoutlayand inlayofdiverseprojectsofAdvance capital budgeting decisions.
- Toimpart knowledgeontherankingofprojectsbasedonadvancecapital budgeting techniques.
- To provide indepthknowledge onDividend Decisions impacting the market value of stocks and Income Tax Law pertaining to Dividends.
- To provide adhere on the valuation of Firm using the MM, CAPM, Binomial andBSOPM models valuation models.
- ToinculcatetheacquaintanceonInformationAsymmetryandPrincipalAgent Conflicts in the light of real world factors.

CourseOutcomes:

- Providesexpertiseonevaluationofdiverseprojects using Advancecapital budgeting techniques and its relevance in the current scenario.
- Gainsanproficiencyonrankingofprojectsbased onadvancecapitalbudgeting techniques.
- EnlightensabouttheDividendsignalsanditscompliance.
- Acquiresknowledgeofthe idealcapitalmarket theoriesonvaluationoffirmsusing MM, CAPM, Binomial and BSOPM models.
- Provides insight on Information Asymmetry and Principal Agent Conflicts real world factors and violation of conditions of ideal capital market on valuation of securities and firms

3.5 :ElectiveFM2:FinancialMarketsandInstitutions

3.6 Course Objectives:

- Toprovide insight ontheoverviewofIndianCapitalMarket andMoneyMarketof Indian Financial System.
- Toprovide indepthknowledgeonthedifferent marketparticipantsofIndian Capital Market.
- ToprovidepracticalexposureonOnlineStockMarketOperations
- Toknowthecurrentproblemsfacedbypublicsectorbanksin India.
- ToacquainttheknowledgeofMerchantBankingsystemandCreditRating.
- To be acquainted with the role of SEBI in regulating the CapitalMarket and Stock Exchanges

CourseOutcomes:

1. Overview of Indian Financial System: Indian Capital Market and Money Market, Foreign Institutional Investors (FIIs)-Portfolio Management Schemes of Indian Institutional Investors, Global Capital Flows-Hedge Funds, Private Equity.ADR and GDR.
2. IndianCapitalMarket: Primaryand SecondaryCapitalMarkets inIndia-Market for Stocks and Bonds, Market for Derivative Instruments (Financial andCommodities), Over the Counter Markets (OCTEI),NCDEX,MCX. Markets for Government Securities, Mock Exercises in Online Stock Market Operations on Sensex and Nifty.
3. Banking inIndia: current problemsofpublic sector banks, capitaladequacy norms, Basel norms, NPAproblem, corporate debt restructuring, and securitizationofdebt and asset reconstruction companies, the new Insolvency and bankruptcy code.
4. Merchant Banking and Credit Rating: Introduction to merchant banking, merchant bankers/lead managers, registration, obligation and responsibilities, underwriters, obligation, bankers to an issue, brokers to an issue. Issue management activitiesand procedure pricing of issue, issue ofdebt instruments, bookbuilding greenshoe option, services of merchant banks, Credit Rating - SEBI guidelines, limitations of rating.
5. Regulatory Mechanisms: The role of SEBI in regulating the Capital Market and Stock Exchanges-Outlines of the SEBI Act and Powers of SEBI- Important Cases dealt with by SEBI-Sahara, NSEL, Insider Trading Cases etc. Investigation into Corporate Frauds under Companies Act. NFRA and IBBI.

3.7 **ElectiveMarketingManagementIII:IntegratedMarketingcommunication Course**

CBC150

Course Objectives: To help the students understand determinants of promotion mix and salespromotion.Helpsstudentsunderstandplanninganddesigningcreativeapproachesfor advertisement and advertisement campaigns.Builds ability evaluate advertising budget and developing strategies to tap the rural markets.

Course Outcomes: At the end ofthis course the students willbe able to evaluate the sales promotion mix; designand draft advertisement layout for effective communication;ability to choose optimaladvertisement media through proper agency; develop abilityto ensuring ethics and standards of advertising.

FINANCIALMANAGEMENT

3.3 ElectiveFinancialManagementI:InvestmentManagement Course

Code: CBC130

Course Objectives: To familiarize the students with basic concepts of financial management and capital budgeting. Ranking and analyzing various investment proposals. Understand the importance and relevance of dividend decisions under legal framework. Gain knowledge about firm valuation using various models. Gain insight into Information asymmetry and principal-agent conflicts.

Course Outcomes: At the end of the course students will be able to apply capital budgeting techniques to evaluate various investment proposals. Design suitable dividend policy. Firm valuation based on various models and information asymmetry in an ideal capital market.

3.4 ElectiveFinancialManagementII:FinancialServices

Course Code CBC140

Course Objectives: This course helps the students to understand the Indian financial system provides an overview of capital markets and market for government securities. Throws light about Banking functions and regulatory framework; imparts knowledgeabout merchant banking and functions of credit rating agencies; Comprehends fraudulent activities under companies act.

Course Outcomes: At the end of this course the student will be equipped about Indian financial system; Thorough about various financial instruments and stock market operations; Proficient enough to design corporate debt restructuring mechanism. Will be capable of assessing credit rating and take up the role of merchant bankers practically. Investigate into fraudulent activities under SEBI framework.

3.5 ElectiveFMFinancialManagementIII:PortfolioManagement Course

Code: CBC150

CourseObjectives: Thiscourseenablesthestudentsto gainknowledgeabout valuationof equity, debt and mutualfunds;providesunderstanding ofthe concept ofmarket efficiency; impart awareness about EIC framework and technical analysis for making equity

investment decisions; enables portfolio construction and evaluation using variousmeasures.

Course Outcomes: At the end of the course the student will be able to make investment decisions into equityand debt;Willbe able to predict the intrinsic value ofinvestment and future stock price movements; Construct and manage active portfolio; Evaluate the performance of portfolio based on the performance measures.

HUMAN RESOURCEMANAGEMENT

3.3 ElectiveHumanResourceManagementI:HumanResourceDevelopment Course

CBC130

Course Objectives: Understand the basic concepts and nature of HRD, its importance in thepresent daycontext.Theygains insight into HRD inGovernment, PSU'sandIT sector. Understand the importance of coaching, mentoring and counselling in development of human resources. Understand learning and development in the knowledge setting and understand the importance of career planning and development.

Course Outcomes: Students will be in a position to manage employees effectively. Understand the importance ofcoaching, mentoring and counselling in managing HR. Able to identify Key Performance areas and key result areas that contributes to effective management of HR. Demonstrate ability to apply modern techniques of performance management in managing HR.

3.4 Elective Human Resource Management II: Organizational Change &Development

CourseCode:CBC140

Course Objective: To understand the importance of planned, systemic change; learnabout value, assumptionand beliefinorganizationaldevelopment;understand the different types of intervention adopted and consultant and client issues.

Course Outcome: Students will be able to manage planned change in organization effectively; will understand the importance of values, assumptions and beliefs in organization development; demonstrate ability to apply intervention techniques in managing Organization development.

3.5 ElectiveHumanResourceManagementIII:TrainingandDevelopment Course

Code: CBC150

Course Objective: The course helpsstudentsto understand the importance oftraining and its diversity; learnabout the different challenges, training need assessment, training delivery, training evaluation and training interventions.

CourseOutcome: Students will be able demonstratethe abilityto carryout training need assessment by specifying goals, identifying constraints, resource analysis; they will be implement the traditional and modern methods of training delivery and evaluate training programs with the use of different models and designs.

ELECTIVE PAPERS

MARKETINGMANAGEMENT

4.1Entrepreneurship

CourseCode:CBD110

Course Objectives: To help the students to develop entrepreneurial skills and mindset among the students. Understand the role of financial and educational institutions in fostering the entrepreneurial development. Analyze various perspectives of business environment and import-export policy from global perspective.

Course Outcomes: At the end of the course the students will be able to conceptualize the ideas and develop business models; Operate the business under the socio-economic and legal frame work; plan strategies to develop small scale business; gains exposure to international trade.

4.1 ElectiveMarketingManagementIV:ProductandBrandManagement Course Code: CBD120

Course Objectives: To impart knowledge about the product, product mix and marketing strategies; help understand new product development and product launching strategies; provide insights about marketing and pricing strategies; develops ability in brand management and design programs to build brand equity.

Course Outcomes: At the end of this course the students will be able to assess potential for product development and growth. Demonstrate ability of developing and launching a new product. Formulate marketing plan and ensure effective brand management will demonstrate potential to design and implement branding strategies.

4.2 ElectiveMarketingManagementV:BusinessMarketingManagement Course

Code: CBD130

Course Objectives: To enable the students to understand the difference between business and consumer marketing; understand the organizational customers buying behavior; enhance knowledge about marketing planning from the economic and industry perspectives; help students gain knowledge about supply chain management,marketing and distribution channels.

Course Outcomes: At the end of this course the students will be able to assess and evaluate organizational consumer buying behavior; formulate industrial product strategy and assess product life cycle; Ensure effective logistics and supply chain management; design and plan advertising and sales promotion; demonstrate ability in bidding and leasing.

4.3 ElectiveMarketingManagementVI:ServicesMarketing Course

Code: 140

Course Objectives: To studythe emerging trends in services marketing; Enables students to understand customer expectations; Learn to design service development strategies; Identify the gap between customers' expectations and service delivery; Understanding the integrated gap models to improve the service quality.

Course Outcomes: At the end of this course the students will be able to analyse and evaluate consumer behaviour in the services sector; ensuring customer service delivery through various channels; and able to promote services across various service sectors.

4.4 ElectiveMarketingManagementVII:InternationalMarketing Course

Code: CBD150

Course Objective: Understand emergence ofand basics of international marketing. Study international marketing environment from various perspectives and understand marketing mix strategy. Recognize the various facilities and provisions for exportsbygovernment of India and other institutions. Enablethe students to understand global level platforms for international economics and trade.

Course Outcomes: At the end of this course the students will be able to appreciate and

extendtheirmarketingboundariesacrosstheworld;applymarketentrystrategies

effectively. Evaluate the factors affecting international marketing. Develop aptnesstowards export planning and appreciate the role of various forums for international trade negotiations.

FINANCIALMANAGEMENT

4.2 ElectiveFinancialManagementIV:FinancialStrategies Course

Code: CBD120

Course Objectives: To help students acquaint to the methodology of Mergers and Acquisitions, Leverage Decisions and its practical impact. They learn about Financial Distress and Restructuring. To studythe impact of Dividend policyonthe market value of the firm. To be acquainted with the influence of Stock Repurchases on market capitalization.

Course Outcomes: Acquire knowledge on the methodology, synergy of Mergers and Acquisitions, theories of Leverage Decision. Develop capability to analyze cause andeffect of Financial Distress and Restructuring of corporate. Develops ability to understand the impact of dividend policy and stock repurchases on market value of the firm. Enthrallsmastery over Managing Internal Equity, Seasoned Equity Offerings and itspricing phenomenon.

4.3 ElectiveFinancialManagementV:Derivatives

Course Code CBD130

Course Objectives: The students gain an insight on the basics of derivatives, cognize the operations of Forward and Future Contracts, comprehend the maneuvers of Options Contracts and trading Strategies, fathom the working of Valuation of options apprehendthe functioning of Commodity derivatives.

Course Outcomes: The students build capability to apply the basics of various derivative instruments in practical tasks, acquires proficiency on the operations of Forward andFuture Contract’s hedging and valuation in current scenario, Twigs the exercises of Options Contracts and trading Strategies and its practical implications, probes the operations of Valuation of options, captures the working knowledge of Commodity derivatives.

4.4 ElectiveFinancialManagementVI:InternationalFinancialManagement Course Code: CBD 140

Course Objectives: Helps students to apprehend the role of International Financial Management in Corporate Financial Management, gain acumen on the Foreign Exchange Market structure and proceedings, achieve knowledge on Measurement of Exposure and risk in exchange rates of International Markets, gets acquainted with the Management of Foreign Exchange exposure develops competence on evaluation of internationalinvestment decision.

Course Outcomes: Demonstrates capability to understand the role of International Financial Management in managing Corporate finance, develops insight into Foreign Exchange Market, get acquainted to Measurement of exchange rates, obtains Exposure to risk in exchange rates transactions of International Markets, develops an aptitude in evaluation of international investment decision.

4.5 ElectiveFinancialManagementVII:CorporateTaxation Course Code CBD 150

Course Objectives: The students develop competencies onthe basics ofIncome Tax, gain insight onthe computation of income from business ofa corporate entity, develop a vision on the computation of income from Capital Gains of Company, learn visualization on the set off and carry forward losses of corporate entity, develop prophecy on the tax implications in business Restructuring.

Course Outcomes: Students establishes mastery over the basic concepts of Income Tax demonstrate ability to compute income from business of a Company with statutory compliance. Achieves computational proficiency of income from Capital Gains of Company and its exemptions, comprehends the set off and carry forward losses treatment of corporate entity, upsurge knowledge on the tax collection at source and tax deducted at source, triumphs the computational expertise of the tax implications in business restructuring.

HUMAN RESOURCEMANAGEMENT

4.2 ElectiveHumanResourceManagementIV:InternationalHumanResourceManagement

CourseCode:CBD120

CourseObjectives: International HRM isthestudy of the management ofhuman resourcesinan internationalcontext.This course focusesonthe HRchallengeswhich affect or influence the success ofthe entire enterprise, challenges that are often far beyond the scope of the traditional "personnel" function

CourseOutcomes: Itenhancestodevelopmanagerial skills, organisationalknowledge and technical abilities of HR managers and employees; To develop more and better handle of global business operations; To manage and secure the performance, compensation and career path of employees.

4.3 ElectiveHumanResourceManagementV:LabourLegislations Course Code 130

Course Objective: Know the origin and factors responsible for the growth of labor legislations. Helps to understand the Indian Factories Act 1948; Bonus Act 1965 and Gratuity Act 1982; Workmen's Compensation Act 1932; ESI Act 1948 and Provident Fund; Payment of wages Act; Payment of Gratuity Act and code of discipline.

Course outcome: They will be able to critically analyze the legal rules and institutions which regulate Indian work relationships using theoretical, contextual and historical perspectives. They demonstrate ability to implement the legal rules for the benefit of employees.

4.4 ElectiveHumanResourceManagementVI:IndustrialRelationsand Collective Bargaining

CourseCode:CBD140

Course Objectives: Be aware of the present state of Industrial relations in India. Be acquainted withthe concepts, principles and issues connected withtrade unions, collective bargaining, workers participation, grievance redressal, and employee discipline anddisputeresolution. Understandthe variousprocessesandproceduresofhandlingEmployee Relations. Theyget insight into the disciplinaryprocedure, layoffand retrenchment. They learn about the procedure for collective bargaining and its importance.

Course Outcomes: The students will be in a position to effectively manage human resources, create a sense of understanding and good relations between management and HR. Develop ability handle the grievances and participate effectively in collective bargaining. They will demonstrate a clear view of the different types of settlement available for employees. They will have an insight with regard to standing orders and disciplinary procedure.

4.5 Elective Human Resource Management VII: Personal Growth and Interpersonal Effectiveness

CourseCode:CBD150

Course Objectives: Understand how to set prioritiesaccording to *objectives*,planning, and timemanagement;Acquireinformationaboutassertive *communication* andthe transactional analysis model; Learn about concepts like emotional intelligence, stress management, and *self*-motivation.

Course Outcomes: Interpersonal skills are extremelyimportant forcreating and maintainingmeaningfulpersonalrelationshipsintheworkplace.Peoplewithgoodinterpersonal communication skills can, therefore, build healthy relationships with their colleagues and work much better as a team.

4.6.Project Report

CourseCode:CBD160

Course Objectives: It helps the studentsto get anexposure intothe industryand helps the students to gain hands on experience with professional management practices in all the functional areas that are essential for effective sustainable and holistic development both for the students as well as the organizations.

Course Outcomes: At the end of this course, students gain the managerial and professionalskillswhichenhancetheiremployability.Theylearnhowtocommunicateand negotiate effectively from the organizational perspective. It sensitizes the students to understand ethical issues and dilemmas that business often face.

4.7Project Viva Voce:

Course Objectives: Students need to present before a panel of three faculties about how they carried out their project work.

Course Outcomes:

Students gain confidence and ability to present the report effectively in an organized manner.

2.6.1-Courses having focus on employability/entrepreneurship/ skill development offered by the institution

Sl.No	Course Code	Title of the Course	Focus (Local/National/Regional/Global)	Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development
1	BCDSC101	Chemical Foundations of Biochem-1	Local/National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
2	BCOE101	OE:Biochemistry in Health and Diseases	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
3	BCDSC201	Chemical Foundations of Biochem-2	Local/National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
4	BCOEC201	OE:Nutrition and Dietetics	Local/National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
5	BCDSC102	Volumetric Analysis Practical	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
6	BCDSC202	Qualitative and Quanatitative Analysis Practical	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
7	BCDSC301	Bioorganic Chemistry	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
8	BCDSC302	Bioorganic Chemistry Practical	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
9	BCOE201	OE: Biochemical techniques	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
10	BCOE4	OE: Biochemical Toxicology	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
11	BCDSC401	Analytical Biochemisty	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
12	BCDSC402	Analytical Biochemistry Practical	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
13	BCDSC501	Biochemistry of Biomolecules and nutrition	Local/National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
14	BCDSC502	Qualitative analysis of biomolecules and their nutritional aspects	Local/National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
15	BCDSC503	Human Physiology and enzymology	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
16	BCDSC504	Human Physiology and enzymology Practical	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
17	BIO EI-T	A- Microbial Biochemistry / B - Cell Biology	National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
18	BIO VI-T	Genetics and counseling / Nutritional Biochemistry.	National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
19	BCDSC601	Metabolism with clinical correlations	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching

20	BCDSC602	Metabolism with clinical correlations Practical	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
21	BCDSC603	Molecular Biology and Immunology	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
22	BCDSC604	Molecular Biology and Immunology Practical	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
23	BIO-E2-T	A- Genetic Engineering/ B- Cancer Biology	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
24	BIO-V2-T	A- Biochemistry/ B. Biostatistics and bioinformatics	National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
25	BNDSC101	Microbial Diversity and Technology	Local/National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
26	BNDSC102	Microbial Diversity and Technology Practical	Local/National/Regional	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
27	BNDSC103	Diversity of non Flowering plants	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
28	OE-2	Diversity of non Flowering plants Practical	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
29	BNDSC301	Plant Anatomy and developmental biology	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
30	BNDSC302	Plant Anatomy and developmental biology P	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
31	BNDSC401	Ecology and conservation Biology	Local/National	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
32	BNDSC402	Ecology and conservation Biology-P	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
33	BNDSC501	Plant Morphology and Taxonomy	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
34	BNDSC502	Plant Morphology and Taxonomy - P	Local/National/Global	Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
35	BNDSC503	Genetics and Plant Breeding	Local/National/Global	Toxicologist,Government healthcare institutions,Chemical Engineer,Forensic Scientist,Research Scientist, Clinical Biochemist.
36	BNDSC504	Genetics and Plant Breeding -P	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
37	BNDSC601	Plant Physiology and Plant Biochemistry	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
38	BNDSC602	Plant Physiology and Plant Biochemistry - P	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
39	BNDSC603	Plant Biotechnology	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.

40	BNDSC604	Plant Biotechnology - P	Local/National/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
41	15323	landscaping and Gardening	Local/National/	Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching, Botanist.
42	15423	Mushroom cultivation technology	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
43	15523	floriculture	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
44	BTDSC101	Cell Biology and Genetics	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
45	BTDSC102	Cell Biology and Genetics Practical	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
46	BTOE101	Biotech for human welfare	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
47	BTC 102	Microbiological methods and Techq	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
48	BTC 102	Microbiological methods and Techq- P	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
49	OE	Applications of biotechnology in Agri	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
50	BTDSC301	Biomoleules	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
51	BTDSC302	Biolomoleucle practical	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
52	BTOE301	OENuritution and health	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
53	BTDSC301	molecular biology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
54	BTDSC302	molecular biology -P	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
55	BTOE301	OE Intellecctual Property rights	National/Regional/Global	IPR agents, law assistants patent oficer
56	BTDSC501	Genetic Engineering	National/Regional/Global	teaching Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
57	BTDSC502	Genetic Engineering -P	National/Regional/Global	Reasearch associate, project asst. Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
58	BTDSC503	Plant and animal Biotechnology	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
59	BTDSC504	Plant and animal Biotechnology -P	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.

60	BTDSC505	Biotechnology skills and analytical techniques	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
61	BTDSC506	Biotechnology skills and analytical techniques -P	Local/National//Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
62	BTDSC506	quality control methods in biology-P	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
63	BTDSC601	Immunology	National/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
64	BTDSC602	Immunology -P	National/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
65	BTDSC603	bioprocess and environmental biotechnology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
66	BTDSC604	bioprocess and environmental biotechnology -P	Local/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
67	CHDSC101	Chemistry-1	Local/Regional	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
68	DSC	Chemistry -2	Local/Regional/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
69	OE	Chemistry in Daily life	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
70	CHDSC102	Chemistry-1 Practical	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
71	DSCP	Chemistry -2- pratical	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
72	OE	Molecules of life	Local/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
73	CHDSC301	Chemistry -3	Local/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
74	CHDSC302	Chemistry -3 P	Local/Regional/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
75	CHDCS401	Chemistry -4	Local/Regional/Global	Manufacturing industries, Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
76	CHDSC402	Chemistry -4 P	Local/Regional/Global	teaching,Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.Industrail work
77	CH0E301	OE Atomic structure, Bonding and Concepts in Organic Chemistry OEC-3	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
78	CHOE401	OE Electrochemistry, Corrosion and Metallurgy	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.

79	CHDSC501	Chemistry paper-V	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
80	CHDSC502	Chemistry paper-V-P	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
81	CHDSC503	Chemistry paper -VI	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
82	CHDSC504	Chemistry paper-VI-P	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
83	CHDSC601	Chemistry paper-VII	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
84	CHDSC602	Chemistry paper-VII-P	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
85	CHDSC603	Chemistry paper-VIII	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
86	CHDSC604	Chemistry paper-VIII-P	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
87	CSDSC101	Computer Fundamentals and Programming in C	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
88	CSDSC102	C Programming Practical	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
89	OE	Office autamation	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
90	OE	Data structure and using C pragraming	Local/National/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
91	OE	Data structure&Using C practical	Local/National/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
92	OE	C programming Concepts	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
93	OE	Data structures lab	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
94	OE	Python programming concepts	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.

95	OE	Multimedia processing	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
96	CSDSC301	Object Oriented Programming in JAVA	Local/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
97	CSDSC302	JAVA programming Lab P	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
98	CSDSC401	Database Management systems	National/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
99	CSDSC402	DBMS Lab	National/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
100	SEC 2	Artificial Intelligance	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
101	CSOE301	OE Python Programming Concept	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
102	CSOE401	Fundamentals of Multimedia	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
103	DFSEC501	programming Python	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
104	DFSEC502	programming Python -P	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
105	DFSEC503	Computer networks	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
106	DFSEC504	Computer networks -P	Local/National/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
107	DFSEC505	cyber security	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.

108	DFSEC506	cyber security -P	Local/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
109	DFSEC601	web technology	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
110	DFSEC602	web technology -P	Local/National/Regional/	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
111	DFSEC603	statistical computing and R programming	Local/National/Regional/	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
112	DFSEC604	R programming -P	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
113	DFSEC605	internship	Local/National	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
114	DFSEC606	internship-P	Local/National/Regional/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
115	ELDSC101	Electronic Devices and Circuits	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
116	OE	Fundamentals and electoronics & D wirg	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
117	OE	Domestic equipmnent and manintenance	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
118	DSC2	Analog and digital electronics	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
119	OE III	Fundamental of semiconductive devices	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
120	OE IV	Renewable energy and energy harvesting	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
121	OE V	PCB design and fabrication	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
122	ELDSC102	Electronic Devices and Circuits Practical	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
123	DSCP2	Analog and digital electronics-practical	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.

124	DSCP2	Analog and digital electronics-practical	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
125	ELDSC301	Programming in C and digital design using Verilog	Local/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
126	ELDSC302	Programming in C and digital design using Verilog Practical	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
127	ELDSC401	Electric Communication-I	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
128	ELDSC402	Electric Communication-I P	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
129	ELDSC501	electronic communication-II	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
130	ELDSC502	electronic communication-II P	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
131	ELDSC503	embedded controllers	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
132	ELDSC504	embedded controllers P	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
133	ELDSC601	signals and systems	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
134	ELDSC602	signals and systems P	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
135	ELDSC603	sensors and internet of things	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
136	ELDSC604	mini projects	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
137	(AECCL2-1)	English (AECCL2-1)	National/Regional/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
138	(AECCL2-1)	English (AECCL2-1)	National/Regional/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
139	ENDSC101	Divisions of Environment	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
140	OE I	Environmental conservation movments	National/Regional/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
141	OE II	Environmental sustainable agriculture	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
142	OE III	Environmental pollution	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
143	DSC2	Ecology - theory and practice	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences

144	ENDSC102	Water quality analysis Practical	National/Regional/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
145	DSCP-2	Ecology - Analysis Practical	Local/National/Regional/	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
146	OE IV	Climate change and its implications	Local/ Regional/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
147	OE V	Environment and public health in C S	Local/National/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
148	OE VI	Wild Life and conservation	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
149	ENDSC301	Natural resources and management	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
150	ENDSC302	Mineralogy, Petrology, energy resources and medicinal plants P ES3P1	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
151	ENOE301	OE Women and environment	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
152	ENOE302	OE Environmental disasters and management	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
153	ENDSC401	Biodiversity, wildlife and conservation	Local/National/	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
154	ENDSC402	Biodiversity assessment and ecosystem services P	Local/National	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
155	ENOE401	OE Environment and sustainable agriculture	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
156	ENOE402	OE Initiatives for environmental management	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
157	AECC	Ability enhancement compulsory course AECC	Local/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
158	ENDSC501	air pollution, water pollution and environmental engineering	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
159	ENDSC502	air and water analysis -P	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
160	ENDSC503	environmental chemistry and instrumentation	National/Regional/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
161	ENDSC504	soil analysis, noise measurement and solid waste analysis -P	National/Regional/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
162	ENDSC601	environmentalmicrobiology and biotechnology	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences

163	ENDSC602	environmentalmicrobiology and biotechnology -P	Local/National/Regional	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
164	ENDSC603	environmental impact assessment and risk assessment	Local/National	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
165	ENDSC604	methods of environmental impact assesment and risk -P	Local/National/Global	Atmospheric sciences, ecology, environmental chemistry, geosciences, and social sciences
166	FSDSC101	Human Physiology	Local/National	Research associate, teaching
167	FSDSC102	Human Physiology Practical	Local/National/Regional	Research associate, teaching
168	OE-II	Basics of food Science	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
169	OE-II	Basics of Nutrition	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
170	DSC2	Fundamentals of human nutrition	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
171	OE-III	Healthy life style	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
172	OE-IV	Culinary science	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
173	FSNT3.1	Prinicples of food Science	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
174	DSCP-2	Fundamentals of human nutrition Practical	National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
175	FSNT3.1	Prinicples of food Science Practical	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
176	OE-V	Food Adulteration & C Nurtitional Pr	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
177	FSNT4.1	Life Cycle of Nutrition	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
178	FSNT4.1	Life cycle of Nutrition Practical	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
179	FSNT4.2	Food safety and Hygeine	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
180	OE-VI	Indian Traditioanl foods	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
181	FSDSC301	Principles of Food Science	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
182	FSDSC302	Principles of Food Science P	National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
183	FSOE301	OE Food adultration Common Nutritional problems	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
184	FSOE302	OE Common Nutritional problems	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching

185	FSDSC401	Life cycle nutrition	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
186	FSDSC402	Life cycle nutrition P	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
187	FSOE401	OE Food safety and hygiene	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
188	FSOE402	OE Indian traditional foods	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
189	FSDSC501	Food Preservation	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
190	FSDSC502	Food Preservation -P	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
191	FSDSC503	principles of diet therapy	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
192	FSDSC504	principles of diet therapy -P	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
193	SEC/DSE	A- Diet counseling	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
194	SEC/DSE	B- Baking and confectionary skills	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
195	FSDSC601	food microbiology	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
196	FSDSC602	food microbiology -P	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
197	FSDSC603	Therapeutic nutrition	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
198	FSDSC604	Therapeutic nutrition -P	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
199	DSE/VOC	internship -P	National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
200	ESDSC101			Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
201	ESDSC102	Maps, Sediment Soil, Field Visit Practical	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
202	OE-I	Crystallography,mineralogy & E.Min	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
203	OE-II	Pedology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
204	OE-III	Basics of earthsysytem and science	National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
205	OE-IV	Geo hazards & mitigation Statragies	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.

206	DSC-2	basis of Crystallography, Mlgy &petro	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
207	OE-V	Medical geology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
208	OE-VI	Industrial Geology	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
209	OE-VII	paleobiology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
210	OE-VIII	Gems and ornmental stones	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
211	OE-VII	Principles of Stratigraphy and palenotology	Local/National/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
212	OE-VIII	Principles of Stratigraphy and palenotology Practical	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
213	ESDSC301	Principles of Stratigraphy and palenotology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
214	ESDSC302	Stratigraphy and palenotology P	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
215	ESDSC401	Structural Geology and Hydrogeology	National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
216	ESDSC402	Hydrogeology and structural Geology P	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
217	ESOE301	OE Dimension stone technology	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
218	ESOE302	OE Marine Geology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
219	ESOE303	OE Climatology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
220	ESOE304	OE Watershed Management	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
221	ESOE401	OE The Geology and Society	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
222	ESOE402	OE Geophysical Exploration	Local/National/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
223	ESOE403	OE Geostatistics	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
224	ESOE404	OE Geotourism	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
225	ESDSC501	ore geology and indian mineral deposits	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.

226	ESDSC502	ore geology and indian mineral deposits-P	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
227	ESDSC503	remote sesing, GIS and GPS and Marine Geology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
228	ESDSC504	remote sesing, GIS and GPS and Marine Geology-P	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
229	ESDSC601	exploring geology and mining geology	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
230	ESDSC602	exploring geology-P	Local/National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
231	ESDSC603	engineering geology, geochemistry, Disaster and natural hazards management	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
232	ESDSC604	engineering geology and geochemistry-P	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
233	MADSC101	Algebra - I and Calculus-I	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
234	MADSC102	Theory Practical's on Alegbra -I and Calc – I Practical	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
235	OE-I	Optional mathematics	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
236	OE-II	Bussiness mathematics	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
237	OE-III	Mathematical aptitude-I	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
238	DSC-2	Algebra - II N Theory and Calculus	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
239	DSCP-2	Algebra - II Practical II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
240	OE-V	Optional mathematics-II	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.

241	OE-VI	Bussiness mathematics-II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
242	OE-VI	Mathematical aptitude- ii	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
243	MADSC301	Algebra III and Differential equation-I	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
244	MADSC302	Algebra III and Differential equation-I P	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
245	MAOE301	OE Discrete Mathematics	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
246	MAOE302	OE Mathematical aptitude- III	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
247	MADSC401	Real Analysis- I and Differential equation- II	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
248	MADSC402	On number theory and Calculus-II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
249	MAOE401	OE Basics of number theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
250	MAOE402	OE Mathemsticsl aptitude -IV	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
251	MADSC501	real analysis-II and complex anaysis	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
252	MADSC502	real analysis-II and complex anaysis -P	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
253	MADSC503	advanced algebra and discrete mathematics	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.

254	MADSC504	advanced algebra and discrete mathematics -P	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
255	MADSC505	programming in Python	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
256	MADSC506	programming in Python -P	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
257	MADSC601	linear algebra	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
258	MADSC602	linear algebra -P	Local/National	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
259	MADSC603	numerica; analysis	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
260	MADSC604	numerica; analysis-P	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
261	MATSEC6.1	internship	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
262	MCDSC101	General Microbiology	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
263	MCDSC102	General Microbiology Practical	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
264	OE-I	Microbial technology for Human Welfare	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
265	DSC1	Microbial biochemistry and physiology	Local/National/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
266	DSCP-2	Microbial biochemistry and physiology	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
267	OE_II	Environmental and sanitary microbiol	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
268	MCDSC102	General Microbiology Practical	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
269	MCDSC301	Microbial diversity	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.

270	MCDSC302	Microbial diversity P	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
271	MCOE301	OE Microbial enterpreneurship	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
272	MCDSC401	Microbial enzymology and metabolism	Local/National/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
273	MCDSC402	Microbial enzymology and metabolism P	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
274	MCOE401	OE Human microbiome	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
275	MCOE402	OE: Plant biochemistry -2	Local/National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
276	MCDSC501	microbial genetics	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
277	MCDSC502	microbial genetics -P	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
278	MCDSC503	food microbiology	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
279	MCDSC504	food microbiology -P	Local/National/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
280	MCDSC505	microbial and biochemical techniques	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
281	MCDSC506	microbial and biochemical techniques -P	Local/National/Regional/Global	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
282	MCDSC601	immunology and medical microbiology	Local/National/Regional/Global	Reasearch associat, teacher, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
283	MCDSC602	immunology and medical microbiology -P	Local/National/Regional	Microbiology labs, Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
284	MCDSC603	industrial microbiology	Local/National/Regional/Global	Microbiology labs, Forensic science technician, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
285	MCDSC604	industrial microbiology-P	Local/National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
286	VC	internship	Local/National/Regional	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
287	PHDSC101	Biophysics & Bioinformatics Practical	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
288	OE -I	Mechanics and Properties of Matter	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.

289	OE -II	Energy sources	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
290	DSC2	Climate sciences	Local/National//Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
291	PHDSC102	Electricity and magnetism	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
292	DSCP2	Physics-1 Practical	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
293	OEIII	Physics -II Practical	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
294	OE-IV	Astronomy and astrophysics	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
295	DSC-3	Medical physics	Local/National/	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
296	PHDSC301	Wave motion and optics	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
297	PHDSC302	Wave motion and optcs	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
298	PHOE301	Wave motion and optcs P	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
299	PHOE302	OE Optical Instruments	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
300	PHDSC401	OE Sports Science	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
301	PHDCS402	Thermal Physics and electronics	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
302	PHOE401	Thermal Physics and electronics P	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.

303	PHOE402	OE Nanotechnology	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
304	CC450	OE Electrical Instruments	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
305	PHDSC501	classical mechanics-I and quantum mechanics-I	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
306	PHDSC502	classical mechanics-I and quantum mechanics-I-P	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
307	PHDSC503	elements of atomic, molecular and laser physics.	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
308	PHDSC504	elements of atomic, molecular and laser physics.-P	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
309	SEC	employability skills or cyber security	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
310	PHDSC601	elements of condensed matter and nuclear physics	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
311	PHDSC602	elements of condensed matter and nuclear physics -P	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
312	PHDSC603	electronics instrumentation and sensors	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
313	PHDSC604	electronics instrumentation and sensors -P	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
314	VC	internship	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
315	SEDSC101	Fundamentals of Sericulture	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
316	OE-I	Science of Sericulture	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
317	OE-II	Mulberry crop production Technology	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs

318	SEDSC102	OE: Fundamentals of Sericulture Practical	Local/National	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
319	DSC-2	Mulberry Biology and cultivation	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
320	DSCP-2	Mulberry Biology and cultivation	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
321	OE-2	OE:Mulberry crop production Technology	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
322	SEDSC301	Sericulture biology and rearing technology	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
323	SEOE301	OE Silkworm rearing technology	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
324	SEDSC302	Silkworm biology and rearing technology P	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
325	SEDSC401	Mulberry and silkworm crop protection	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
326	SEOE401	OE Textile technology	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
327	SEDSC402	Mulberry and silkworm crop protection P	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
328	DSC-III	mulberry cytogenetics, breeding and physiology	Local/National	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
329	SEDSC501	mulberry cytogenetics, breeding and physiology -P	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
330	SEDSC502	silkworm genetics, breeding and physiology	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
331	SEDSC503	silkworm genetics, breeding and physiology -P	Local/National	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
332	SEDSC504	Biochemical techniques	Local/National	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
333	SEC-4	Biochemical techniques -P	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
334	SEC-4P	silkworm seed technology and vanya sericulture	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
335	SEDSC601	silkworm seed technology and vanya sericulture -P	Local/National/Regional	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
336	SEDSC602	silk technology, extension and economics	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs
337	SEDSC603	silk technology, extension and economics -P	Local/National/Regional/Global	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs

338	SEDSC604	internship	Local/National	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
339	OE-1	Statistical method and its applications	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
340	OE-II	Bussiniess Statistics	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
341	DSC-2	Probability and distrubtion-1	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
342	STDSCP102	Descriptive Statistics Practical	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
343	DSCP-2	Probability and distrubtion-1 Practical	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
344	OE-III	Applied Statistics	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
345	OE-IV	Bio Statistics	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
346	OE	Constitution of India	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
347	STDSC301	Probablity distributions-II	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

348	STDSC302	Probablity distributions-II P	National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
349	STDSC401	Statistical inference-I	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
350	STDSC402	Statistical inference-I P	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
351	STDSC303	Calculus and Probablity distribution	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
352	STOE301	OE Introduction to statistics with R	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
353	STOE302	OE Elements of statistical data analysis	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
354	STOE401	OE Population studies	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
355		matrix algebra and regression analysis	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
356	STDSC501	matrix algebra and regression analysis -P	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
357	STDSC502	analysis of variance and design of experiments	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

358	STDSC503	analysis of variance and design of experiments -P	Local/National//Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
359	STDSC504	statistical interference	Local/National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
360	STDSC601	statistical interference -P	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
361	STDSC602	sampling techniques and statistics fornational evelopment	National/Regional/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
362	STDSC603	sampling techniques and statistics fornational evelopment -P	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
363	STDSC604	Cytology, Genetics and Infectious Diseases	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
364	ZLDSC101	Cytology, Genetics and Infectious Diseases Practical	National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
365	ZLDSCP102	Economic Zoology	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
366	OE-I	Parasitology	Local/National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
367	OE-II	Biochemistry and Physiology	Local/National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
368	ZLDSC2	Biochemistry and Physiology	National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
369	ZLDSCP2	Molecular biology, Buioinstrumentation and techniques in biology	National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
370		Molecular biology, Buioinstrumentation and techniques in biologyPractical	National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.

371	ZLDSC301	Molecular biology, bioinstrumentation and techniques in biology	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
372	ZLDSC302	Molecular biology, bioinstrumentation and techniques in biology P	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
373	ZLDSCC401	Genetechnology immunology and computational biology	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
374	ZLDSCC402	Genetechnology immunology and computational biology P	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
375	ZLOE301	OE 3 Endocrinology	Local/National/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
376	ZLOEC401	OE 4 Animal behavior	Local/National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
377	15334	non- chordates and economic zoology	Local/National/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
378	ZLDSC501	non- chordates and economic zoology -P	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
379	ZLDSC502	chordate and comparitive anatomy	Local/National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
380	ZLDSC503	chordate and comparitive anatomy - P	Local/National/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
381	ZLDSC504	evolutionary and developmental biology	Local/National/Regional/Global	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
382	ZLDSC601	evolutionary and developmental biology -P	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
383	ZLDSC602	environmental biology, wild life management and conservation	Local/National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
384	ZLDSC603	environmental biology, wild life management and conservation -P	National/Regional/Global	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
385	ZLDSC604	English (AECCL2-1)	Local/National/Regional	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
386	(AECCL2-1)	English (AECCL2-1)	Local/National/Regional	Animal Taxonomist, Ecologist, Research scientist , Teaching, zoologist.
387	(AECCL2-1)	English (AECCL2-3)	Local/National	Laboratory technician, Forensic science technician, DNA analyst, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
388	EGAEC301	English (AECC L2 -4)	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
389	EGAEC401	English - III	Local/National	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
390		English - IV	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.

391		Introduction to Phonetics-I	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
392		Introduction to Phonetics-II	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
393		English	Local/National	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
394	AECC-1	English	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
395	AECC-2	Kannada lanagauge lesson B.Sc	Local/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
396	AECC-1	Kannada lanagauge lesson B.C.A	Local/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
397	AECC-2	Kannada l lesson and maangement B.B.A	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
398	AECC-2	Hindi	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
399	AECC-1	Hindi	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
400	AECC-1	Hindi functional Hindi	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
401	AECC-1	Short stories and functional Hindi	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
402	AECC-2	Hindi Collection of short stories and media writing	Local/National/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
403	HNAEC301	Sanskrit Drama and Vyakarana - B.SC , B.B.A, BCA	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
404	AECC-1	Sanskrit prose, grammer and translation	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
405	AECC-2	Sanskrit champu kavya and grammer	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
406	SAAEC301	Sanskrit drama and dramaturgy	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
407	SAAECC401	Sanskrit III	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
408	AECC	Sanskrit IV	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
409	AECC	Tamil Language - Semester III	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian

410	15310	Tamil Language - Semester IV	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
411	15410	Persian Language - Semester III	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
412	15308	Persian Language - Semester IV	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
413	15408	French Language - Semester III	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
414	15303	French Language - Semester IV	Local/Regional	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian
415	15403	Arabic Language - Semester III	Local/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
416	15301	Arabic Language - Semester IV	Local/Regional	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
417	15401	Fundamentals of Computers	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
418	CADSC101	Information Technology Practical	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
419	CADSCP102	Programming in C	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
420	CADSC103	C Programming Practical	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
421	CADSCP104	Accountancy	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
422	CADSC105	Data structure and Using C	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
423	CACP3	Java	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
424	CACP4	Data structure	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.

425	CAC5	Discrete Mathematical Structures	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
426	CAC6	Object oreiented concepts using Java	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
427	CAC5	Computer Fundamentals and Programming in C	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
428	CSDSC101	C Programming Practical	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
429	CSDSC102	Database management systems	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
430	CADSC301	DSMS P	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
431	CADSC302	C# and .Net technology	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
432	CADSC303	C# and .Net technology P	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
433	CADSC304	Computer networks	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
434	CADSC305	Python programming	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
435	CADSC401	Python programming P	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
436	CADSC402	Multimedia animation	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
437	CADSC403	Multimedia animation P	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.

438	CADSC404	Operating system concepts	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
439	CADSC405	Computer Concepts and C programming	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
440		Fundamentals of Information Technology	National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
441		C programming	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
442		FIT LAB practical	Local/National/Global	AI and Machine Learning, Cyber Security, Data Analysis, Cloud Computing, Blockchain Technology, Mobile App Development, Information Security,IT Operations and Governance.
443		Discrete transdformation	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
444		Environmental studies	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
445		Kannada	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
446		English	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
447		Data structures and file Processing	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
448		Data Structures Lab	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
449		System software and operting system	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
450		Digital electronics And C O	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
451		Digital Electronics LAB practical	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
452		Indian Constitution	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
453		Kannada	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
454		English	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.

455		object oriented programming	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
456		Java Lab	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
457		Operation Research	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
458		Accounting	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
459		Accountancy	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
460		Kannada	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
461		English	Local/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
462		Data base Management system	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
463		DBMS Lab	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
464		Numerical And statistical Ananlysis	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
465		Data Communication	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
466		Datacommunication	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
467		NT LAB practical	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
468		Web Designing LAB Practical	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
469		Data Mining and Data Ware Housing LAB Practical	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
470		Project LAB practical	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
471		Management Principles and Practice	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

472	BBDSC101	Fundamentals of Business Accounting	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
473	BBDSC102	Marketing Management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
474	BBDSC103	Business Organization	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
475	BBOE101	office organisation and Management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
476	BBOE102	Finanicial Accounting and reporting	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
477	BBADSC4	Human Resources and management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
478	BBADSC5	Bussiness Environment or Mathematics	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
479	BBADSC6A	People management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
480	BBOE103	Retail Management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
481	BBOE103	Cost accounting	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

482	BBDSC301	Organizational behavior	Local/National/Global	Artifical imtellegence, Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
483	BBDSC302	Statistics for buisness decisions	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
484	BBDSC304	Artificial intelligence	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
485	BBDSC304	OE Social media marketing/ rural marketing	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
486	BBOE301	Management accounting	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
487	BBOE401	Business analytics	Local/National/Global	
488	BBDSC402	Financial management	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
489	BBDSC403	OE Business leadership skills	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
490	BBOE401	Personal wealth management	Local/National/Global	banker, charterted accontant, accountant
491	BBDSC404	Production and operation management	Local/National/Global	bank jobs, shares agents
492	BBDSC501	income tax-I	Local/National/Global	marchantile agent , brokers, agents, promotors
493	BBDSC502	banking law and practice	Local/National/Global	marchantile agent , brokers, agents, promotors
494	BBDSC503	elective -I	Local/National/Global	marchantile agent , brokers, agents, promotors
495	BBDSE504	elective -2	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

496	BBDSE505	A -information technology for business	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
497	VC	B- digital marketing	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
498	VC	cyber security/ employability	Local/National/Global	
499	SEC-VB	Business law	Local/National/Global	
500	BBDSC601	income tax-II	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
501	BBDSC602	international business	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
502	BBDSC603	elective -I	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
503	BBDSE604	elective -2	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
504	BBDSE605	A- Goods and service tax	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
505	VC	B- ERP Application	Local/National/Global	Business Analyst , Economist · Data Analyst · Associate - Analytics & Business ,Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
506	VC	internship	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
507		Human Rights	National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

508	OE-1	Human Resources and management	National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
509	OE-2	Public Persobnall Adminstration	National	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
510	OE-3	Indian Polity: issues and Concerns	National	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
511	OE-1	International Relations	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
512	OE-2	Mangement of NGO	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
513	OE-3	State Adminstartion	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
514	OE-4	Self Defence	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
515	OE-1	Sports event Mangement	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
516	OE-2	Yoga and fitness	Local/National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
517	OE-3	Adventurous Sports	Local/National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
518	OE-4	Physical fittness for careers	Local/National/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
519	OE-5	Sports and recreation	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
520	OE-6	Environmental studies	Local/National/Regional/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
521	AECC-1	Environmental studies	Local/National/Regional/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
522	AECC-2	DIGITAL Fluency	Local/National/Regional/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
523	SEC-1	DIGITAL Fluency	Local/National/Regional/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
524	SEC-2	Phyiscal Education and Yoga	Local/National/Regional/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.

525	SEC-1	Health and Wellness	Local/National/Regional/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
526	SEC-2	Phyiscal Education and Sports	Local/National/Regional/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
527		kannada	Local/Regional	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
528	KAAEC301	malayalam	Local/Regional	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
529	MAAEC301	Tamil	Local/Regional	Social work, Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
530	15310	India and indian constitution	National	
531		NSS	National	
532		Virology, Becteriology, Mycology and Plant Pathology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
533	62101	Phycology, Bryophytes, Pteridophytes and Gymnosperms	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
534	62102	Systematics of Angiosperms	Local/Nationall/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
535	62103	SC:Algal Biology and Biotechnology	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
536	62104	SC:Phytopathology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
537	62105	SC: Fungal Biology & Biotechnology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
538		SC: Lichenology & Mycorrhizal Technology	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
539		Pyhytopathology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
540	62201	Cell Biology and Genetics	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
541	62202	Plant Breeding and Evolutionary Biology	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
542	62203	SC:Plant Anatomy and Histochemistry	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
543	62204	SC:Economic Botany	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.

544	62205	SC: Ethno-Botany & Intellectual Property Rights (IPR)	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
545		OE: Medicinal Plants	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
546		Biochemistry and Plant Physiology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
547	62301	Molecular Biology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
548	62302	Plant Biotechnology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
549	62303	SC:Plant Propagation and Plant Breeding	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
550	62304	SC: Molecular Genetics of Plants	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
551		SC: Molecular Plant Pathology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
552		SC: Phyto-chemistry & Herbal Techonology	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
553		OE: Plant Propogation Techniques	National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
554	OE	Plant Propogation and plant breeding	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
555		OE:Plant diversity and Human Wefare	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
556	OE	Virology, Becteriology, Mycology and Plant Pathology Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
557	A0010	Phycology, Bryophytes, Pteridophytes and Gymnosperms Practical	Local/National/Regional/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
558	A0020	Systematics of Angiosperms Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
559	A0030	Reproductive Biology of Angiosperms and Plant Morphogenesis Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
560	B0010	Cell Biology and Genetics Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
561	B0020	Plant Breeding and Evolutionary Biology Practical	National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.

562	B0030	Biochemistry and Plant Physiology Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
563	C0010	Molecular Biology Practical	National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
564	C0020	Plant Biotechnology Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
565	C0030	Ecology, Conservartion Biology & Phytogeography	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
566		Project Work	National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
567		Seed technology	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
568		Seed Pathology	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
569		Bio-Analytical Techniques	National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
570		Ecology, Conservartion Biology & Phytogeography Practical	Local/National/Global	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
571	D0010	Concepects & Modeles of Inorganic Chemistry	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
572	63101	Stereochemistry & Reaction Mechanism	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
573	63102	Basic Physical Chemistry	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
574	63103	Analytical Data Assessment and Tititrimetric Analysis	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
575	63104	SC-Kinetic and Optical Method of Analysis	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
576		SC- Chemistry of Selected Elements	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
577		SC- Chemistry of Natural Products-I	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
578		SC- Biophysical Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
579		Coordination Chemistry	Local/National/Global	Manufacturing industries, Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
580	63201	Synthetic Organic Chemistry	National/Global	teaching,Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.Industrail work
581	63202	Principles of Physical Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.

582	63203	Molecular Symmetry and Spectroscopy	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
583	63204	SC- Analytical Separations	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
584	63105	SC- Chemistry of Selected Elements	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
585	63106	SC- Chemistry of Natural Products-I	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
586	63107	SC- Biophysical Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
587	63108	Advanced Inorganic Chemistry	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
588	63301	Organometallic and Photochemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
589	63302	Advanced Physical Chemistry	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
590	63303	Molecular Spectroscopy	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
591	63304	SC- Electrochemical Methods of Chemical Analysis	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
592		SC- Frontiers in Inorganic Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
593		SC- Chemistry of Natural Products-II	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
594		SC- Materials Chemistry	Local/National	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
595		Inorganic Chemistry II	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
596	63306	Organic Chemistry II	Local/National/Global	Manufacturing industries, Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
597	63305	Bioinorganic Chemistry	National/Global	teaching,Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.Industrail work
598	63401	Heterocyclic & Bioorganic Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
599	63402	Nuclear, Radiation and Photochemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
600	63403	Principles, Chromotographic Separetions and Themal Methods of Analysis	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
601	63404	SC- Automated and Methods of Chemical Analysis	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.

602		SC- Bioinorganic Photochemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
603		SC- Medicinal Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
604		SC- Quantum Chemistry and Biosensors	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
605		OE: Environmental Science	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
606	C5700	Analytical Chemistry Practicals - I	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
607	A0090	Inorganic Chemistry Practicals - I	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
608	A0100	Organic Chemistry Practicals - I	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
609	A0110	Physical Chemistry Practicals - I	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
610	A0120	Concepts and Models of Inorganic Chemistry Practical	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
611	A0010	Stereochemistry and Reaction Mechanism Practicals	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
612	A0020	Basic Physical Chemistry Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
613	A0030	Analytical Data Assessment and Titrimetric Analysis Practicals	Local/National/Global	Manufacturing industries, Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
614	A0040	Coordination Chemistry Practicals	Local/National/Global	teaching,Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.Industrail work
615	B0010	Synthetic Organic Chemistry Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
616	B0020	Principles of Physical Chemistry Practicals	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
617	B0030	Molecular Symmetry and Spectroscopy Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
618	B0040	Analytical Chemistry Practical - II	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
619	B0060	Inorganic Chemistry Practical - II	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
620	B0070	Organic Chemistry Practical - II	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.

621	B0080	Physical Chemistry Practical - II	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
622	B0090	Advanced Inorganic Chemistry Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
623	63301	Organo Metalic and Photo Chemistry Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
624	63302	Advanced Physical Chemistry Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
625	63303	Molecular Spectroscopy Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
626	63304	Inorganic Chemistry II Practicals	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
627	63306	Organic Chemistry II Practicals	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
628	63305	General Chemistry	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
629	CHOE	Physical Practicals -III	Local/National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
630	CH SCP	Disertation	National/Global	Chemical Engineer,Forensic Scientist,Research Scientist, Government healthcare institutions.
631	CHSCP	Paper –I – (Hard Core-I) English Literature From Chaucer To Milton	Local/National/Regional	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
632	ENA110	Paper –II – (Hard Core-II) Elizabethan Age	Local/National/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
633	ENA120	Paper –III – (Hard Core-III) 17th And 18th Century English Literature	Local/National/Regional	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
634	ENA130	Paper-IV (Hard Core – IV) - 19th Century English Literature	Local/National/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
635	ENA140	Paper V- Soft Core , Introduction to Phonetics	Local/National/Regional/Global	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
636	ENA150	Soft Core II Cross-Cultural Women Writers	Local/National/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
637	END160	Paper I –The Modern Age - I	National/Regional	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
638	ENB110	Paper II - Literary Criticism	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
639	ENB120	Paper III– Indian Writing In English - I	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager

640	ENB130	Paper- IV (Soft Core) Feminism	National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
641	ENB140	Soft Core II :Carrebean fiction and Poetry	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
642	END160	Paper- V (Open Elective) Communication Skills	Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
643	ENB160	Paper- I – (Hard Core-I) The Modern Age-II	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
644	ENC110	Paper- II– (Hard Core-Iv) Indian Writing In English-Ii	National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
645	ENC120	Paper- III – (Hard Core-Iii) New Literatures In English	Local/National/Regional/Global	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
646	ENC130	Soft Core Paper 1Modern Indian Poetry In English	Local/Regional/Global	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
647	ENC140	Soft Core Paper II Nobel Laureates	Local/Regional/Global	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
648	ENC140	Paper- I – (Hard Core-I) Literary Criticism-Ii	Local/Regional	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
649	END110	Paper- II – (Hard Core-Ii) American Literature	Local/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
650	END120	Paper- III European Classics (Compulsory Soft Core Paper)	Local/National/Regional	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
651	END130	Paper – IV (Soft Core I) Contemporary South Asian Immigrant Novel	Local/National/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
652	END140	Paper IV Soft Core II Subaltern Women's Autobiographies	Local/National/Regional	Professor, writer, teacher,Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
653	END160	Paper VvSoft Core III Partition Literature	Local/National/Regional	English profesor, teacher Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
654	END170	Food Science and Food Processing-I	Local/National/Regional	SCIENTIST, Ph.D, Research associate, teaching
655	61101	Nutritional Biochemistry	Local/National/Global	SCIENTIST, Ph.D, Research associate, teaching
656	61102	Body composition and macronutrients	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
657	61103	Community nutrition	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
658	61104	Food fortification	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
659	61105	Food Hygiene and Sanitation	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.

660	61106	Food Microbiology	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
661	61107	Assessment of Nutritional status	National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
662	6190	Basics of Food Sciences	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
663	FSA109	Basics of nutritional sciences	Local/National/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
664	FSA200	SC:Functional properties of foods	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
665	61201	Food Science and Food Processing-II	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
666	61202	Micronutrients-I -Minerals	Local/National/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
667	61203	Food laws and food safety	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
668	61204	SC:Food packaging technology	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
669	61205	Micronutrients-II -Vitamins	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
670	61206	Research methods and statistical analysis	Local/National/	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
671	61207	SC:Enzymes in food processing (self study)	National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
672	61208	OE: Nutrition for Health	National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
673	61209	Product development and sensory evaluation	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
674	61301	Food Preservation	Local/National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
675	61302	Principles of clinical nutrition	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
676	61303	SC: Biostatistics & Computer Applications	Local/National	SCIENTIST, Ph.D, Research associate, teaching
677	61304	SC:Enterpreneurship & Marketing	Local/National/Regional/Global	SCIENTIST, Ph.D, Research associate, teaching
678	61305	SC:Advances in nutrition research	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
679	61306	SC:Quality control in food industries	Local/National	Research, medical sales, healthcare, pharmaceuticals, teaching
680	61307	SC:Food Additives	Local/National	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
681	61308	OE: Culinary Dcience-Principles & Techniques	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.

682	61309	Term Paper(HC)	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
683	61310	Computational Statistics and Application(OE)	National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
684	C5900	Food Science and Food Processing-I Practical	National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
685	A0010	Nutritional Biochemistry Practical	Local/National/Regional	SCIENTIST, Ph.D, Research associate, teaching
686	A0020	Body composition and macronutrients Practical	Local/National/Regional	SCIENTIST, Ph.D, Research associate, teaching
687	A0030	Community Nutrition Practical	National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
688	A0040	Food Science and Food Processing-II Practical	National/Regional/Global	Research, medical sales, healthcare, pharmaceuticals, teaching
689	B0010	Micronutrients-I -Minerals Practical	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
690	B0020	Food laws and food safety Practical	Local/National/Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
691	B0030	Micronutrients-II -Vitamins Practical	Local/National/Regional	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
692	B0040	Research methods and statistical analysis Practical	Regional/Global	Food processing industries,hotels,Hospitals, Restaurants, Dairy product industries, Food research and development laboratories.
693	B0050	Product Development and Sensory Evaluation Practical	Local/National/Regional	Research, medical sales, healthcare, pharmaceuticals, teaching
694	C0110	Food Preservation Practical	Local/National	dietician, food analysisit, Teaching
695	C0120	Principles of Clinical Nutrition Practical	Local/National/Regional	dietician, food analysisit,Teaching
696	C0130	Algebra – I	Local/National/Regional	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
697	65101	Real Analysis – I	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
698	65102	Real Analysis – II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
699	65103	Complex Analysis – I	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
700	65104	SC:Linear Algebra	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.

701	65105	SC: Combinatories & Graph Theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
702	65106	Algebra II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
703	65201	Real Analysis III	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
704	65202	Complex Analysis II	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
705	65203	SC: Ordinary and Partial Differential Equations	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
706	65204	SC:Graph Theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
707	65205	SC: Representaion Theory of Finite Groups	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
708	65206	Elements of Functional Analysis	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
709	65301	Topology I	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
710	65302	SC:Commutative Algebra	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
711	65303	SC:Theory of Numbers	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
712	65304	SC:Algebric Number Theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
713		SC:Galosis Theory	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.

714		SC:Geometric Function Theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
715		SC:Probability Distribution & Inferential Statistics	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
716		OE: Differential Equations & its applications	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
717		Measure and Integration	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
718	65401	Topology II	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
719	65402	SC:Advanced Graph Theory	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
720	65403	SC:Theory of Partitions	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
721	65404	SC: Differential Geometry	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
722		SC: Advanced Functional Analysis	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
723		SC: Hypergeometric Functions & q-series	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
724		SC: Mathematical Finance	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
725		OE: Algorithms & Computations	National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.
726		Management Concepts & Theories	Local/National/Global	Mathematician, Computer engineer, Statistician, Architect, Actuary, Economist, Mathematics Teacher, Market Research Analyst, Financial Planner, Insurance Underwriter.

727	CBA110	Organizational Behavior	National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
728	CBA120	Business Environment	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
729	CBA130	Managerial Communication	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
730	CBA140	Managerial Accounting	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
731	CBA150	Managerial Economics	Local/National/Regional	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
732	CBA160	Statistics for Management	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
733	CBA170	Marketing Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
734	CBB110	Human Resource Management	National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
735	CBB120	Corporate Finance	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
736	CBB130	Quantitative Methods	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
737	CBB140	Business Research Methods	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
738	CBB150	Operations Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
739	CBB160	Management Information Systems	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
740	CBB170	Project Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
741	CBC110	Strategic Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

742	CBC120	Elective - FM I-Investment Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
743	CBC130	Elective – FM II-Financial Services	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
744	CBC140	Elective – FM III –Portfolio Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
745	CBC150	Elective –HRM I-Human Resource Development	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
746	CBC160	Elective –HRM II-Organizational Change and Development	Local/National/Regional	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
747	CBC170	Elective –HRM III- Training and Development	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
748	CBC180	Elective MM I-Consumer Behavior and Marketing Research	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
749	CBC210	Elective MM-II: Sales and Logistics Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
750	CBC220	Elective MM-III: Integrated Marketing Communication	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
751	CBC230	Project Work Dairy	National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
752	CBC190	Summer Internship Report	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
753	CBC200	Entrepreneurship	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
754	CBD110	Elective FM-IV: Financial Strategies	National/Regional/Global	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.

755	CBD120	Elective FM-V: Derivatives	National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
756	CBD130	Elective FM-VI: International Financial Management	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
757	CBD140	Elective FM-VII: Corporate Taxation	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
758	CBD150	Elective –HRM IV: International Human Resource Management	Local/National/Regional/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
759	CBD180	Elective –HRM V: Labor Legislation	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
760	CBD190	Elective –HRM VI: Industrial Relation and Collective Bargaining	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
761	CBD200	Elective –HRM VII: Personal Growth and Interpersonal Effectiveness	Local/National/Regional/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
762	CBD210	Elective MM –IV-Product and Brand Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
763	CBD220	Elective MM V- Business Marketing Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
764	CBD230	Elective MM VI- Services Marketing	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
765	CBD240	Elective MM VII- International Marketing	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
766	CBD250	Project Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
767	CBD160	Enterpreneurship and bussiness	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

768	CBD170	Elective -I	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
769	CBA110	Elective -II	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
770	CBA120	Elective -III	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
771	CBA130	Bisiness Famialiarization report	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
772	CBA140	Consumer Behaviour and marketing reasearch	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
773	Elective I	Sales and Logistics management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
774	Elective I	Advertiizing and sales promotion	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
775	Elective I	Advance corporte Finiance	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
776	Elective -G II	Financial market and Insitutions	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
777	Elective -GII	Portfolio mangement	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
778	Elective -GII	Human Resource development	Local/National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
779	Elective -GIII	Organisational Change and development	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
780	Elective -GIII	Training and developmenrt	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.

781	Elective -GIII	International economics	Local/National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
782	Elective -GIV	India and WTO	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
783	Elective -GIV	Export and Import Procedures and documentation	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
784	Elective -GIV	System Analysis and Design	Local/National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
785	Elective -GV	Software engineering and management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
786	Elective -GV	Datebase mangement and techniques	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
787	Elective -GVI	Supply chain management	Local/National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
788	Elective -G VI	Operation strategy	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
789	Elective -G VI	Service and Retail marketing	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
790	Elective -GVI	Startegic management	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
791	CBD170	Elective -I	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
792		Elective -II	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
793		Elective -III	National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
794		Elective -IV	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager

795		Project work	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
796		Product and Brand mangement G I	National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
797	Elective -I	Business marketing mangement GI	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
798	Elective -II	Service marketing GI	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
799	Elective -III	International Marketing GI	Local/National/Global	Journalist, content creator, writer, publisher, editor, technical writer, Social media manager
800	Elective -IV	Startegic Financial management GII	Local/National	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
801	Elective -IV	Derivatives- GII	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
802	Elective -V	International finacial Management	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
803	Elective -VI	Corporate taxation -GII	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
804	Elective -VII	Startegic Human R management	Local/National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
805	Elective -IV	Labour Legisation -GIII	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
806	Elective -V	Industrial relations and collective Bargaining -GIII	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
807	Elective -VI	Knowledge management-GIII	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
808	Elective -VII	India's foreign trade-GIV	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
809	Elective -IV	International Trade policy -GIV	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.

810	Elective -V	International finincial mangement -GIV	Local/National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
811	Elective -VI	International marketing _GIV	National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
812	Elective -VII	Enterprise R palnning and B Processes and reengineering -GV	Local/National/Global	Physical Education School Teacher, Physical Education College/ University Trainer, Aerobics, Yoga teacher, Nutritionist, Naturopathy, Sports Journalist, Sports Organizer/ Presenter.
813	Elective -IV	electronic commerce -GV	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
814	Elective -V	IPR and Cyber laws -GV	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
815	Elective -VI	business startgies -V	National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
816	Elective -VII	Sales and logistics Management GVI	Local/National/Global	Copywriter, Journalist, content creator, writer, publisher, editor, technical writer, Librarian, Social media manager.
817	Elective -IV	Retail mangement -GVI	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
818	Elective -V	Promotion and relationship Mt -GV	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
819	Elective -VI	operations research	Local/National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
820	Elective -VII	operations research	National/Global	Marketing manager, Human resources manager , Sales manager, Social media manager, Sales manager, Operations manager. Business analyst, Chief executive officer, Accounting manager, Finance manager, Data Analyst.
821	MBDSC-1	General Botany	Local/National	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
822	MBDSC-2	General Zoology	Local/National	zoologist, Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
823	MBDSC-3	Cell biology and Plant physiology	Local/National/Global	cell biologist, Ph,D., Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
824	MBDSC-4	Inorganic and physical chemistry	Local/National/Global	chemist, Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
825	MBDSCP-1	General Botany Practical	Local/National/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.

826	MBDSP-2	General Zoology Practical	Local/National/Regional	Botanist, Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
827	MBDSCP-3	Cell biology and Plant Physiology Practical	National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
828	MBDSCP-4	Inorganic and Physical chemistry Practical	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
829	MBDSC301	Microbiology	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
830	MBDSC302	Microbiology Practical	National/Regional/Global	microbilogist , Plant Taxonomist, Ecologist, Agronomist, Horticulturist, Research scientist , Teaching.
831	MBDSC303	biochemistry	National/Regional/Global	biochemist
832	MBDSC304	biochemistry practical	National/Regional/Global	biochemist
833	MBDSC401	reproductive and developmental biology	Local/National//Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
834	MBDSC402	reproductive and developmental biology -P	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
835	MBDSC403	plant physiology II and animal physiology	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
836	MBDSC404	plant physiology II and animal physiology -P	National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
837	MBDSC501	metabolism I	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
838	MBDSC502	metabolism I -P	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
839	MBDSC503	enzymology	National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
840	MBDSC504	enzymology -P	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
841	MBDSE505	principles of genetics / forensic biology	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
842	MBDSE506	biophysics / nannoscience	National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
843	VOC-1	biochemical techniques	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
844	EC-1	bioinformatica	National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
845	MBDSC601	metabolism II	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
846	MBDSC602	metabolism II -P	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.

847	MBDSC603	molecular genetics	National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
848	MBDSC604	molecular genetics -P	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
849	MBDSE605	genetic engineering / clinical biochemistry	National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
850	MBDSE606	molecular cell biology/ molecular endocrinology	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
851	OC-2	cell and tissue culture technology	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
852	NT-1	internship	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
853	66101	Classical Mechanics	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
854	66102	Linear Vectore Space and Special Functions	Local/National/Regional	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
855	66103	Group theory and Fourier Transforms	Local/National	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
856	66104	Classical and relativistic electrodedynamics, optics	Local/National/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
857	66105	Computer Lab Cl - A (HC)	National/Regional/Global	Forensic science technician, DNA analyst, Laboratory technician, Pharmacologist, Physician assistant, Biologist, Biomedical engineer.
858	66106	SC: Electronics Lab	Local/National/	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
859	66201	Continuum Mechanic and Relativity	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
860	66202	Thermodynamics Classical and Quantum Statistical Mechanics	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
861	66203	Quantum Mechanics I	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
862	66204	Spectroscopy and Fourier Optics	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
863	66205	Computer Lab(HC)	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.

864	B5120	OE: Environmental Science	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
865	66301	Quantum Mechanics II	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
866	66302	Condensed Matter Physics	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
867	66303	Solid State Physics I	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
868	66304	SC: Accelerator Physics	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
869	66305	SC: Numerical Methods	Local/National/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
870	66306	Condensed Matter Physics Lab	Local/National	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
871	YPH305	Theoretical Physics I	Local/National/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
872	YPH304	Nuclear and Particle Physics	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
873	PYC140	Accelarator Physics	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
874	PYD220	Solid State Physics 2	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
875	PYD230	Solid State Physics 3	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
876	PYD240	Electronics	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
877	YPH105	Computer Lab CL-A Practical	Local/National/Regional/Global	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.

878	YPH106	Electronics Lab Practical	National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
879	YPH205	Computer Lab CL-B Practical	Local/National/Regional/Global	
880	YPH206	Optics Lab Practical	Regional/Global	
881	YPH301	Consensed Matter Physics Practical	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
882	YPH307	Solid State Physics I Practical	Local/National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
883	YPH308	Nuclear Physics I Practical	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
884	YPH309	Theoretical Physics I Practical	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
885	YPH405	Nuclear Physics Lab Practical	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
886	YPH406	Solid State Physics 3 Practical	Local/National	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
887	YPH407	Electronics Practical	Local/National/Regional	Communications and Signal Processing, Computer Engineering, Controls. Electrophysics. Power Systems, Microelectronics.
888	YPH408	Accelarator Physics Practical	National/Regional/Global	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
889	YPH409	Nuclear Physics I Practical	Local/National/Regional	Research scientist, Teacher, Lecturer/academic, Sound engineer, Astronomer,Clinical scientist, medical physics, Lecturer/academic, Nanotechnologist, Radiation protectionist.
890	H0070	Solid and hazardous waste management (Open Elective)	Local/National/Regional	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
891	H0070	Water and waste water treatment technologies (open Elective)	Local/National	Environmental scientist, Geologist, teacher, Marine biologist, Meteorologist, Research scientist.
892	OE Theory	Sericulture technology	Local/National	Sericulture specialist, silk industry, Research associate, teaching, silk farming, entrepreneurs