	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

2.6.1 PROGRAM OUTCOME & COURSE OUTCOME MAPPING

DEPARTMENT OF ENGLISH

PROGRAMME NAME	**M.A. ENGLISH**

Program Specification Outcome:

PO1: Develop the ability to read and learn English Literature. Such maturity is a much a function of how historyof English is learned as it is of what English culture is learned.

PO2: English Literature broadens their Horizons

PO3: Students would have think critically about complex topics from different perspectives

PO4: Writing essays allows you to develop skills such as carrying out research, developing persuasivearguments and writing in a coherent, articulate way and confidence to publish papers.

PO5: English Literature degree includes becoming a writer, researcher, or teacher.

SEMESTER I
PART III – CORE – THEORY

PAPER	I	COURSECODE	20PEN1C1	COURSENAME	BRITISH LITERATURE I

Co Number	**Co statement**	**Knowledge Level**
Co1	Students would have understood the significance of human values and moral values as reflected in the poem	K5
Co2	Students would have fostered the spirit of adventure as well as deepfaith on god.	K5
Co3	The students would have understood the new literary form of poetry i.eelegy and its features.	K4
Co4	Students would have learnt the historical background and the literarydevelopments from rural to urban in 18th century.	K3
Co5	They would have understood the prominence of logic and reason in the18th century british literature.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	II	COURSE CODE	20PEN1C2	COURS ENAME	ASPECTS OF ENGLISH LANGUAGE AND LITERATURE

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students would have learnt the importance of skills of writing, reading, speaking and listening	K5
CO2	It will help the students to broaden their horizon.	K5
CO3	The students would have strengthened their knowledge in pronounciation, phonetics and differentiating miscommunication from effective communication.	K4
CO4	The students would have received the various functions of language.	K3
CO5	The Students will learn Translation.	K6

PAPER	III	COURSE CODE	20PEN1C3	COURSE NAME	NDIAN WRITING IN ENGLISH

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	By the end of course the students would have gained knowledgeabout the masterpieces in Indian classical literature .	K5
CO2	Students would have motivated by the superb classical drama ofKalidas and Sudrak.	K5
CO3	Students would have been imbibed by the virtue of sacrifice ,passions, integrity, tolerance and selflessness.	K4
CO4	Students would have motivated to make a comparative study ofEnglish literature and Indian classical literature.	K3
CO5	Students would have understood the richness of Indianliterature	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	EIA	COURSECODE	20PEN1E1A	COURSE NAME	GRAMMAR RHETORICAND WRITING

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Student learns then basic rhetorical ability by completing texts for at least three different rhetorical situations, with each one written appropriately for that context.	K5
CO2	Student learns awareness of basic proofreading and editing skillsby completing finished drafts that follow appropriate conventions of grammar punctuation, usage, and spelling.	K5
CO3	Student learns revise and reflect on all major projects [at least three] effectively, based on instructor feedback, peer review, andselfassessment.	K4
CO4	Student learns effectively use different software programsand applications to compose and revise documents in different modes and mediums.	K3
CO5	Student learnsdemonstrate awareness of multiple genres by producing at least one effective text in a professional, public,and non-essay genre.	K6

PAPER	EIB	COURSE CODE	20PEN1E1B	COURSENAME	WORLD LASSICS IN TRANSLATION

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Analyze literary text in english or english translation in term oftheir main stylistic and thematic featues.	K5
CO2	Discuss the literary , hoistorical, soical and cultural backgroundof these texts.	K5
CO3	Identify some of the main theoritical and methodologiacl issuesinvoled in reading world literature.	K4
CO4	Communicate findings clearly and engagingly.	K3
CO5	Students would learnt the richness of world literature.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	AOC-I	COURSE CODE	20PEN1A1	COURSE NAME	BUSINESS ENGLISH

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Students would have learnt the importance of skills of writing,reading, speaking and listening	K5
CO2		K5
CO3	The students would have strengthened their knowledge in pronunciation, phonetics and differentiating miscommunicationfrom effective communication.	K4
CO4		K3
CO5	The students would have received the various functions oflanguage.	K6

SEMESTER II
PART III – CORE – THEORY

PAPER	IV	COURSE CODE	20PEN2C4	COURSE NAME	BRITISH LITERATURE -II

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Students would have understood the significance of humanvalues and moral values as reflected in the poem	K5
CO2	Students would have fostered the spirit of adventure as well asdeep faith on god.	K5
CO3	The students would have understood the new literary form ofpoetry i.e Elegy and its features.	K4
CO4	Students would have learnt the historical background and theliterary developments from rural to urban in 18th century.	K3
CO5	They would have understood the prominence of logic and reasonin the 18th century British literature.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	V	COURSE CODE	20PEN2C5	COURSE NAME	SHAKESPEARE

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	The student will be able to gain an insight into the age ofShakespeare	K5
CO2	The student will be able to understand the themes andtechniques of Shakespearean plays and sonnets	K5
CO3	The student will be able to analyse Shakespeare's workscritically	K4
CO4	The student will be able to gain an insight into the age ofShakespeare	K3
CO5	The student will be able to understand the themes andtechniques of Shakespearean plays and sonnets	K6

PAPER	VI	COURSE CODE	20PEN2C6	COURSE NAME	LITERARY CRITICISM

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	The students would have gained perception on the various importantdevelopments in the field of criticism.	K5
CO2	New literary terms and concepts would have been learnt.	K5
CO3	The students would have gained knowledge for analyzing critically awork of art.	K4
CO4	To acquaint the students with the history of English criticism in terms of teaching of certain important texts and ideas of everlastingsignificance ingrained in them.	K3
CO5	The students would have gained perception on the various importantdevelopments in the field of criticism.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	E IIA	COURSE CODE	PEN2E2A	COURSE NAME	POSTCOLONIAL LITERATURE

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Students would have gained knowledge on the terms andconcepts exclusives of the post colonial literature.	K5
CO2	Students would have familiarize themselves with thedevelopment of post colonial literature	K5
CO3	Students would have acquainted themselves with the majortheories and reputed writers who practice those theories.	K4
CO4	Students would have understood how the colonial power has provoked from the nation in their search for a literature of their own.	K3
CO5	Students would have gained knowledge on the terms andconcepts exclusives of the post colonial literature.	K6

PAPER	E IIB	COURSE CODE	PEN2E2B	COURS ENAME	DIASPORIC LITERATURE

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Student acquires the insight into a range of literary texts in English engaging with issues such as human mobility, migrationand diaspora;	K5
CO2	Student acquires familiarity with contemporary critical debates onmigration and diaspora, and their relation to literature;	K5
CO3	Student acquires an understanding of transnational approaches tothe study of literature;	K4
CO4	Student acquires and process critical material;	K3
CO5	Student acquires proficiency in the use of critical material in awritten literary analysis;	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	AOC II	COURSE CODE	20PEN2A2	COURSE NAME	ADVANCED SKILLS FOR SPOKEN COMMUNICATION

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students would have learnt the importance of skills of writing,reading, speaking and listening	K5
CO2	Students will broaden their horizon.	K5
CO3	The students would have strengthened their knowledge in pronunciation, phonetics and differentiating miscommunicationfrom effective communication.	K4
CO4	Student acquires a good ability to participate, orally and inwriting, in a discussion of literary works in fluent English.	K3
CO5	The students would have received the various functions oflanguage.	K6

SEMESTER III
PART III – CORE – THEORY

PAPER	VII	COURSE CODE	20PEN3C7	COURSE NAME	THEORY OF COMPARATIVE LITERARTURE AND CLASSICS IN TRANSLATION

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students would be able to differentiate between canonical andthe comparative literature.	K5
CO2	Students would have understood the effectiveness of comparative literature which have a mass appeal by having avast knowledge on comparative literature and its theory	K5
CO3	Students would have gained a better understanding of thecomparative roots of literature.	K4
CO4	Students would have understood how to relate sense andnonsense in literature.	K3
CO5	Students would learnt the richness of world literature.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	VIII	COURSE CODE	20PEN3C8	COURSE NAME	LITERARY THEORY ANDCRITICISM

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Students would have understood different aspects of literarystudies known as theory	K5
CO2	Students would have sensitized the importance of feministicmovement and its impact on society.	K5
CO3	Students would have learnt the scope of orientalism and itsimportance	K4
CO4	The background reading of East and west , state and culture andlanguage would have widened their idea and thoughts.	K3
CO5	Students would have understood different aspects of literarystudies known as theory	K6

PAPER	IX	COURSE CODE	20PEN3C9	COURSE NAME	AMERICAN LITERATURE

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Students would have understood how the great American themes of self reliance individualism, sin and redemption were shaped through its rich and varied literature.	K5
CO2	By the end of course, students would have gained knowledge about how multiculturalism was shaped through its rich literature .	K5
CO3	Students would have learnt some aspects of American English usage and diction.	K4
CO4	Students would have gained an understanding of how society, culture and politics affect literature.	K4
CO5	Students would have understood how the great American themes of self reliance individualism, sin and redemption were shaped through its rich and varied literature.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	X	COURSE CODE	20PEN3C10	COURSE NAME	RESEARCH METHODOLOGY

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Student would be able to understand some basic concepts ofresearch and its Methodologies.	K5
CO2	Student would be able identify appropriate research topics.	K5
CO3	Student would be able to select and define appropriate research problem and Parameters.	K4
CO4	Student would be able to prepare a project proposal (to undertakea project).	K5
CO5	Student would be able to organize and conduct research(advanced project) in a more appropriate manner.	K6

PAPER	E IIIA	COURSECODE	20PEN3E3A	COURSENAME	FEMINIST WRITINGS IN ENGLISH

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students would have understood the gender equality and women's rights.	K5
CO2	Students would have understood the revolutionary changes occured due to women empowerment.	K6
CO3	Students would have been aware of the negative impact of female feticide and woman exploitation in the society.	K4
CO4	Students would have sharpened their knowledge comprehending the role of woman for the betterment of society.	K3
CO5	Students would have understood the gender equality and women's rights.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	EIIIB	COURSE CODE	PEN3E3B	COURSE NAME	CREATIVE WRITINGS IN ENGLISH

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students would have understood the Poetry formations as figuresof Speech and enhance their imaginative power.	K5
CO2	Students would have explore the idea of plot and dialogues.Which enhance their communication skills.	K5
CO3	Students would have been creative as media members.	K6
CO4	Students would have sharpened their knowledge comprehendingthe role of best writer.	K3
CO5	Students would have understand the criticisms.	K6

SEMESTER III
PART III – CORE – THEORY

PAPER	XI	COURSE CODE	20PEN4C11	COURSE NAME	NEW LITERATURES INENGLISH

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Student would have a broad understanding of literatures in English and translation and appreciate the role that historical context plays in the creation and interpretation of literary Works	K5
CO2	Student would learn to engage questions of justice, value,spirituality, and meaning raised by literary texts	K5
CO3	Student would able to analyze the role that intersections among race, gender, class, sexuality, and/or national or global historyplay in literary studies	K4
CO4	Student would able to write and speak effectively for specificaudiences and purposes in university, public, and professionallife	K3
CO5	Student would have a broad understanding of literatures in English and translation and appreciate the role that historical context plays in the creation and interpretation of literary works	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	XII	COURSE CODE	20PEN4C12	COURSE NAME	TRANSLATION THEORY AND PRACTISE

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Developed expertise in their working languages in the practice oftranslation;	K5
CO2	Mastered the different theoretical knowledge and know-howrelating to translation and become able to employ them in anappropriate fashion in order to translate a document while respecting the author's intentions and register;	K5
CO3	Assimilated a range of thematic (disciplinary) and cultural knowledge which they are capable of employing and completingindependently in order to carry out their translation assignment;	K4
CO4	Mastered all aspects of written communication, and in particularaccuracy, readability and flow to a high level of expertise;	K3
CO5	Become able to implement a rigorous scientific and methodological approach to a translation problem and therebyimprove their service;	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	XIII	COURSE CODE	20PEN4C13	COURSE NAME	ECO LITERATURE

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	Students should be able to appreciate the distinctive contribution that the study of literature can make to thinking about sustainability and environmental crisis	K5
CO2	students should be able to recognise the historical changefulness of foundational words and ideas such as 'nature,' 'country,' 'environment,' 'animal,' and 'landscape'	K5
CO3	Students should be able to identify some of the main controversies, problems, and priorities in the field of environmental literary studies	K4
CO4	students should be able to show a detailed knowledge of the set literary texts, and make connections between those texts and the conceptual issues involved in interpreting them	K3
CO5	students should be able to articulate their understanding of the set texts in an essay and an exam, displaying an appropriate competence in scholarly writing	K6

PAPER	EIVA	COURSE CODE	20PEN4E4A	COURSE NAME	ENGLISH LITERATURE FORUGC EXAMINATION

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	The students are motivated for prospective career in governmentand corporate sector.	K5
CO2	The students are able to attempt any competitive exam as theyare provided with the syllabus of the exam, review and weightage given to each subject.	K5
CO3	They have look into previous year's questions and create astudy plan.	K4
CO4	They are asked to remember concepts in a short way.	K3
CO5	They develop the habit of taking notes so as to revise easily.	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	EIVB	COURS ECODE	20PEN4E4B	COURS ENAME	ENGLISH FOR COMPETITIVE EXAMINATION

CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	The student gains the ability to analyze a problem and toidentify the appropriate computing requirement.	K5
CO2	Student develop the ability to use skills, and tools necessaryfor communication practices	K5
CO3	Student acquires understanding of professional, ethical andsocial responsibilities.The ability to work in group.	K4
CO4	Student acquainted ability to communicate effectively with arange of audiences. The ability to face the test and interview conducted bydifferent companies and succeed	K3
CO5	Student acquires ability to recognize the need for continuingprofessional development	K6

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

DEPARTMENT OF PHYSICS

PROGRAMME NAME (UG)	**B.Sc., PHYSICS (BACHELOR OFSCIENCE IN PHYSICS)**

PROGRAMME OUTCOMES

PO1: At the end of the program the students will develop a strong analytical skill and will be able to study criticallya physics problem, solve the problem using different tools and present the result or conclusion.

PO2: They will develop a good communications skill such that they can explain complicated physics technicalterminologies in simple manner.

PO3: To understand the theory and consequence of the various physical occurrences.PO4: To carryout experiments to interpret the laws and concepts of physics.

PO5: They will be aware of their ethical and moral values and not practice fabrication and plagiarism. They willknow of the responsibility of preserving our environment and the world. Finally they will be ready to work induvial as well as in a team.

SEMESTER - 1

PAPER	**I**	**COURSE CODE**	**21UPH1C1**	**COURSE NAME**	**PROPERTIES OF MATTER AND ACOUSTICS**

CO 1	Understand the concept of gravitational field for different shaped material
CO 2	Acquire knowledge the relation between the elastic constant
CO 3	Understand the concept to measure the surface tension of the liquid
CO 4	Acquire knowledge to Deal with liquids based on their viscosity
CO 5	Understand the concept the absorption and reflection of sound by various materials and describe therequirements for good architectural acoustics

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	M	M
CO 2	S	S	M	M	S
CO 3	S	S	S	S	M
CO 4	S	S	S	M	S
CO 5	S	S	M	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UPH1C2P**	**COURSE NAME**	**PRACTICAL –I MAJOR PRACTICAL - I (General)**

CO 1	Arrange the sonameter setup and verify its law
CO 2	Design non-uniform bending using pin and microscope

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	S	M
CO 2	S	S	M	M	S

S- Strong, M- Medium, L- Low

SEMESTER II

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21UPH2C3**	**COURSE NAME**	**MECHANICS AND RELATIVITY**

CO 1	Acquire knowledge about the motion of the two interacting bodies
CO 2	Understand the moment of inertia of different shaped bodies.
CO 3	Have knowledge of the fundamentals of harmonic oscillator models.
CO 4	Know about the conservation of energy, linear and angular momentum
CO 5	Learn about the concepts of length contraction and time dilation

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	M	S
CO 2	S	S	M	S	M
CO 3	S	S	S	S	S
CO 4	S	S	M	M	S
CO 5	S	S	S	S	M

S- Strong, M- Medum, L- Low

PAPER	II	COURSE CODE	21UMB2C4P	COURSE NAME	PRACTICAL – II MICROBIAL PHYSIOLOGY

CO 1	Understand and analyses Growth curve and generation time
CO 2	Understand Physiological Characteristics of microbes
CO 3	Outline the Effect of high salt concentration
CO 4	Understand the hydrolysis process
CO 5	Outline the spore staining

Cos/Pos	PO1	PO 2	PO3	PO4	PO5
CO 1	S	S	S	S	S
CO 2	S	M	S	S	S
CO 3	S	S	S	S	S
CO 4	S	S	S	S	M
CO 5	M	S	M	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER III

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21UMB3C5**	**COURSE NAME**	**IMMUNOLOGY AND IMMUNOTECHNOLOGY**

CO 1	Understand the history and types of immunity
CO 2	Demonstrate the various antigen-antibody techniques.
CO 3	Explain the knowledge about hypersensitivity reactions
CO 4	Demonstrate the Preparation and Purification of antigens
CO 5	Explain Immunotechniques and its applications

Cos/Pos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO 1	**M**	**S**	**M**	**M**	**L**
CO 2	**S**	**M**	**M**	**S**	**M**
CO 3	**S**	**S**	**S**	**S**	**S**
CO 4	**S**	**S**	**S**	**S**	**S**
CO 5	**S**	**S**	**S**	**S**	**S**

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UMB3C6P**	**COURSE NAME**	**PRACTICAL-III: IMMUNOLOGY AND IMMUNOTECHNOLOGY**

CO 1	Perform ABO blood grouping
CO 2	Understand the Tube agglutination
CO 3	Understand the Differential staining
CO 4	Perform immune electrophoresis.
CO 5	Detection of HCG by Dot ELISA

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	M	S
CO 2	S	S	S	S	M
CO 3	S	S	S	S	S
CO 4	S	S	S	S	S
CO 5	M	S	S	S	S

S- Strong, M- Medium, L- Low

PART IV – NON MAJOR ELECTIVE-I-THEORY

PAPER	**I**	**COURSE CODE**	**21UMB3N1A**	**COURSE NAME**	**A) VERMI CULTURE**

CO 1	Know the scope and breeding techniques
CO 2	Understand the Taxonomic position and Endogeneic species
CO 3	Outline the Applications of Vermiculture
CO 4	Know Quality control, market research, marketing techniques
CO 5	Understand the Potentials and constraints for vermiculture

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	S	S	S	M	S
CO 5	S	M	S	S	S

S- Strong, M- Medium, L- Low

PAPER	II	COURSE CODE	21UMB3N1B	COURSE NAME	B) MUSHROOM TECHNOLOGY

CO 1	Differentiate edible and Poisonous mushrooms
CO 2	Create an nutrient profile of mushroom
CO 3	Examine cultivation system of mushroom
CO 4	Formulation of mushroom food preparation
CO 5	Determine health benefits of mushroom

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	M	M	M	M	S
CO 2	M	M	S	M	S
CO 3	M	M	M	S	M
CO 4	S	S	S	S	S
CO 5	S	S	M	S	S

S- Strong, M- Medium, L- Low

PAPER	**III**	**COURSE CODE**	**21UMB3N1C**	**COURSE NAME**	**C) BIOFERTILIZER TECHNOLOGY**

CO 1	Explain Soil Environment
CO 2	Create Knowledge about Phosphate solubilization and study the mass cultivation methods
CO 3	Analyze Non- Symbiotic Biofertilizers and study the mass cultivation methods, SymbioticBiofertilizers and study the mass cultivation
CO 4	methods
CO 5	Expand view of Major plant disease

Cos/Pos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO 1	**M**	**M**	**M**	**S**	**S**
CO 2	**S**	**S**	**S**	**M**	**M**
CO 3	**S**	**S**	**S**	**S**	**S**
CO 4	**S**	**S**	**S**	**S**	**M**
CO 5	**S**	**M**	**L**	**S**	**S**

S- Strong, M- Medium, L- Low

SEMESTER IV

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21UMB4C7**	**COURSE NAME**	**CLINICAL MICROBIOLOGY**

CO 1	Describe and Classify the various pathogens and its Characterization.
CO 2	Measures for prevention of epidemics
CO 3	Diagnose the various bacterial pathogens
CO 4	Analyze various human viral diseases
CO 5	Evaluate and compare the various fungal infections and protozoan diseases

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	L	M	L	S	S
CO 2	S	S	S	S	M
CO 3	S	S	S	S	M
CO 4	S	S	S	S	M
CO 5	S	M	M	M	M

S- Strong, M- Medium, L- Low

PAPER	II	COURSE CODE	21UMB4C8P	COURSE NAME	PRACTICAL PERTAINING CLINICAL MICROBIOLOGY

CO 1	Isolation of pathogen
CO 2	Detection of Hbs antigen
CO 3	Perform the Cogulase test
CO 4	Examine the Fungal dermatitis
CO 5	Examine the Germ tube test

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	M	S	S
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	M	S	S	S	S
CO 5	S	M	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART IV – NON MAJOR ELECTIVE - II - THEORY

PAPER	**I**	**COURSE CODE**	**21UMB4N2A**	**COURSE NAME**	**A) MICROBIAL METABOLITES**

CO 1	Understand the Microbes metabolites and industrial production
CO 2	Explain the Microbes in Food Processing
CO 3	Role of probiotics
CO 4	Understand the Eco Microbiology
CO 5	Design of bioreactor

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	M	M	S
CO 2	S	M	S	S	S
CO 3	M	S	S	M	S
CO 4	S	S	S	S	S
CO 5	S	S	S	M	M

S- Strong, M- Medium, L- Low

PAPER	**II**	**COURSE CODE**	**21UMB4N2B**	**COURSE NAME**	**B) SOCIAL AND PREVENTIVE MEDICINE**

CO 1	Understand and determinants of health
CO 2	Outline the Epidemiology and sources of epidemiological data
CO 3	Know the Important Epidemiological Outbreaks
CO 4	Understand the Pathogenesis and Treatment of some bacteria
CO 5	Understand the Bioethics and Medical ethics

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	S	M
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	S	S	M	S	S
CO 5	S	S	S	S	S

S- Strong, M- Medium, L- Low

PAPER	III	COURSE CODE	21UMB4N2C	COURSE NAME	C) MICROBIAL NUTRITION

CO 1	Understand the Nutritional types
CO 2	Know the Media type and Preservation Components
CO 3	Understand the Measurement of cell mass and cell number; Factors affecting microbial growth
CO 4	Outline the Chemical factors
CO 5	Understand the microbial photosynthesis

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	M	S	S	S
CO 2	S	S	S	M	S
CO 3	S	S	S	S	S
CO 4	M	S	S	S	S
CO 5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER V

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**IX**	**COURSE CODE**	**21UMB5C9**	**COURSE NAME**	**AGRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY**

CO 1	Define the basic view of soil Microorganisms
CO 2	Understand the production of Biofertilizer
CO 3	Explain the Microbial association in soil & organic forming
CO 4	Discuss about Biogeochemical cycles
CO 5	Discuss about Bioremediation and microbial decomposition

Cos/Pos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO 1	**M**	**S**	**S**	**S**	**M**
CO 2	**S**	**S**	**S**	**S**	**S**
CO 3	**S**	**S**	**M**	**S**	**M**
CO 4	**S**	**S**	**S**	**S**	**S**
CO 5	**S**	**M**	**S**	**S**	**S**

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**X**	**COURSE CODE**	**21UMB5C10**	**COURSE NAME**	**INDUSTRIAL MICROBIOLOGY**

CO 1	Understand Isolation of culture, inoculums development and strain improvement
CO 2	Demonstrate the basic design of a fermenter and its types
CO 3	Discuss the steps in upstream processing
CO 4	Discuss the steps in downstream processing and assess the nature
CO 5	Understand utility of various fermented products

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	S	S
CO 2	S	S	S	S	S
CO 3	S	S	M	S	M
CO 4	S	S	S	S	S
CO 5	M	S	S	S	S

S- Strong, M- Medium, L- Low

PAPER	**XI**	**COURSE CODE**	**21UMB5C11**	**COURSE NAME**	**FOOD AND DAIRY MICROBIOLOGY**

CO 1	Outline the sources and components of food and their preservation techniques.
CO 2	Analyze the factors influencing the food spoilage.
CO 3	Outline the food intoxication and infection
CO 4	Design appropriate techniques for the recovery of fermented products
CO 5	Compare the production processes of various fermented foods.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	S	S	S	M
CO 2	S	S	S	S	S
CO 3	S	S	S	S	S
CO 4	S	M	S	S	S
CO 5	M	S	S	S	M

S- Strong, M- Medium, L- Low

PAPER	XI	COURSE CODE	21UMB5C12P	COURSE NAME	PRACTICAL'S PERTAINING CCIX, CCX & CCXI

CO 1	Perform Isolation of PGPR Bacteria
CO 2	Isolate the Rhizobium from root nodules
CO 3	Detect indole acetic acid producing bacteria
CO 4	Determine the Nitrogen fixation activity of microorganisms
CO 5	Determine the BOD and COD from sewage

Cos/Pos	PO1	PO2	PO3	PO4	PO5
CO 1	S	M	S	S	S
CO 2	S	S	S	S	S
CO 3	M	S	S	S	S
CO 4	S	S	S	S	M
CO 5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PROGRAMME NAME (UG)	**B.Sc., CHEMISTRY(BACHELOR OFSCIENCE IN CHEMISTRY)**

PROGRAMME OUTCOMES

- Curriculum enhances the basic concepts, skills in problem solving, critical thinking and analytical reasoningin chemistry.
- Explore the new area of research with innovative ideas in novel chemistry and other scientific fields.
- Specific placement in R &D, chemical, pharmaceuticals, food products and life oriented material industries.
- Crop up all the competitive group examinations.
- Imbibed behavioural , moral and ethical values in personal life leading to highly cultured and civilizedpersonality.

PART III - C O R E COURSE-THEORY/PRACTICAL

SEMESTER - 1

PAPER	**I**	**COURSE CODE**	**21UCH2C1**	**COURSE NAME**	**GENERAL CHEMISTRY-I**

COURSE OUTCOMES

CO	CO Statement	Knowledge level
CO1	Leaner's will be able to draw atomic structure of periodic elements.	KI
CO2	Capacity to write mechanism of organic reaction.`	KI
CO3	Understood chemistry of Alkanes alkenes and alkynes.	KI
CO4	Learners can able to explain theories of gases.	K2
CO5	Capacity to explain structure of organic molecules	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	M
CO2	S	S	M	S	S
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	M	S

S- Strong, M- Medium, L- Low

PAPER	II	COURSE CODE	21UCH1C2P	COURSE NAME	PRACTICAL –I VOLUMETRIC ANALYSIS

COURSE OUTCOMES

CO	CO Statement	Knowledg elevel
CO1	Students will be able to do volumetric analysis systematically .	K2
CO2	Compare the hardness present drinking water.	K2
CO3	On the successful completion of the course able to handleweighing machine.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	M
CO2	S	S	M	S	S
CO3	M	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER II

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21UCH2C3**	**COURSE NAME**	**GENERAL CHEMISTRY- II**

COURSE OUTCOMES

CO	**CO Statement**	**Knowledge level**
CO1	Capacity to explain chemistry of d and f block elements and its metallurgy.	K1
CO2	Understood chemistry of benzene , benzenoid compounds, and about alcohol and phenols.	K1
CO3	Understood acidic strength of alcohols and phenols.	K1
CO4	Leaner's can explain the basics of kinetics and catalysis.	K1
CO5	Able to explain laws of thermodynamics	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	M	S	S
CO3	M	S	S	S	S
CO4	S	S	M	S	M
CO5	M	S	S	M	S

S- Strong, M- Medum, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UCH2C4P**	**COURSE NAME**	**PRACTICAL – II INDUSTRIAL CHEMISTRY PRACTICAL**

COURSE OUT COMES

CO	**CO Statement**	**Knowledge level**
CO1	Students will be able to carry out advanced industrial chemistrypractical's.	K2
CO2	Learners can able to determine the saponification value .	K2
CO3	Understood the percentage of chlorine in bleaching powder.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	M	S	S	S
CO3	M	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER III

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21CH3C5**	**COURSE NAME**	**GENERAL CHEMISTRY-III**

CO	**CO Statement**	**Knowledge level**
CO1	Students will be able to understand atomic structure, bonding, VB andMO theories.	K1
CO2	Leaner's can able to write preparations of organometallic compounds .	K2
CO3	Capacity to explain structure and nomenclature of Aldehyde, Ketone .	K2
CO4	Able to understand about solid state and semiconductors.	K1
CO5	Capacity to explain comparative study of carboxylic acids.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	M
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21CH3C6P**	**COURSE NAME**	**PRACTICAL-III: SEMIMICROANALYSIS**

CO	**CO Statement**	**Knowledge level**
CO1	Students can able to analyse the cations and anions present in the mixture.	K2
CO2	Learners able to distinguish common and rare cations.	K2
CO3	capacity to eliminate interfering acid radicals.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	M	S	S	S
CO3	M	S	S	S	M

S- Strong, M- Medium, L- Low

PART IV – NON MAJOR ELECTIVE-I-THEORY

PAPER	**I**	**COURSE CODE**	**21UCH3N1A**	**COURSE NAME**	**D) CHEMISTRY IN EVERYDAY LIFE**

CO	**CO Statement**	**Knowledge level**
CO1	Leaner's can able to understand preparations of synthetic and naturalpolymers.	K1
CO2	Students will be able to explain concepts of water chemistry.	K2
CO3	Leaner's can distinguish pesticides ,Fungicides & Herbicides.	K2
CO4	Understood concepts of pasteurizing of food materials.	K1
CO5	Capacity to understand theories of dye.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	M
CO5	S	S	S	M	S

PAPER	**II**	**COURSE CODE**	**21UCH3N1B**	**COURSE NAME**	**E)AGRICULTURE CHEMISTRY**

CO	**CO Statement**	**Knowledg elevel**
CO1	Leaner's can able to understand chemical composition of soil.	K1
CO2	Understood the chemistry of fertilizers and their mechanism of action.	K2
CO3	Students can able to understand classification of insecticides.	K2
CO4	Able to understand structure and function of fungicides and herbicides.	K1
CO5	Students can able to understand types of plant growth regulators.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**III**	**COURSE CODE**	**21UCH3N1C**	**COURSE NAME**	**F) HEALTH CHEMISTRY**

CO	**CO Statement**	**Knowledg elevel**
CO1	Pupil will able to explain essentials of health.	K1
CO2	Learners will able to explain chemistry of drugs.	K2
CO3	Understand chemistry of BP ,HB & Blood sugur.	K2
CO4	Able to explain action of enzyme and hormones.	K1
CO5	Learners will able to find out the reasons for diseases.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

SEMESTER IV

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**21UCH4C**	**COURSE NAME**	**GENERAL CHEMISTRY-IV**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Capacity to describe concepts of atomic structure and quantum mechanics.	K2
CO2	Capacity to design structure of of coordination compounds and hybridization.	K2
CO3	Students will able to explain stereochemistry of organic compounds.	K1
CO4	Understood properties of ideal and real solution.	K1
CO5	Learns to explain adsorption isotherms	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	S
CO2	S	S	S	S	M
CO3	M	S	S	M	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UCH4C8P**	**COURSENAME**	**PHYSICAL CHEMISTRY PRACTICAL**

COURSE OUT COMES

CO	CO Statement	Knowledg elevel
CO1	Students can able to do conductometric titration, potentiometric titrations.	K2
CO2	Able to determine of molecular weight by Rast method.	K2
CO3	Able to carry out Partition Co-efficient of iodine.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART IV – NON MAJOR ELECTIVE - II - THEORY

PAPER	**I**	**COURSE CODE**	**21UCH4N1A**	**COURSE NAME**	**D) FOOD AND NUTRITION**

CO	**CO Statement**	**Knowledg elevel**
CO1	Puplis understand basic concept about minerals and vitamins.	K1
CO2	understand the biological functions vitamins.	K2
CO3	Students can able to understand Diets for school children adolescents.	K2
CO4	Learners can able to explain food preservation techniques.	K2
CO5	Students can identifythe food adulterants.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	S	S
CO2	S	S	S	S	M
CO3	M	S	S	M	S
CO4	S	M	S	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UCH4N1B**	**COURSE NAME**	**E) NANOSCIENCE AND ITS APPLICATION**

CO	**CO Statement**	**Knowledge level**
CO1	Learners get the capacity to explain techniques of nano science and nanotechnology.	K1
CO2	Students will be able to describe the synthesis of nanomaterials.	K2
CO3	Understand charactersation of nano materials.	K2
CO4	Capacity to understand nanomaterials applications.	K2
CO5	Understand different filed of nanotechnology.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	M	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**III**	**COURSE CODE**	**21UMB4N2C**	**COURSE NAME**	**F) MICROBIAL NUTRITION**

COURSE OUT COMES

CO	CO Statement	Knowledg elevel
CO1	Capacity to deduce the structure of bimoleculs.	K1
CO2	Ability to understand DO, BOD, COD.	K2
CO3	Ability to Explain error analysis.	K2
CO4	Capacity to derive Beer Lambert's law.	K2
CO5	Capacity to explain types of intermediates.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	S	S
CO4	S	S	S	S	S
CO5	S	S	M	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER V

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**IX**	**COURSE CODE**	**21UCH5C**	**COURSE NAME**	**INORGANIC CHEMISTRY -I**

CO Statement	**nowledgelevel**
Ability to understand the oxyacids of halogens and interhalogencompounds.	K1
Students will able to explain the recent development inNuclear chemistry	K2
Learners can able to Write Cristal field splitting in tetrahedraland octahedral complexes	K1
Ability to understand factors effecting stability of complexes.	K2
Puplus understand metal alkynyl complexes.	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	S	S	M	S	S
CO4	S	S	S	S	S
CO5	S	S	M	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**X**	**COURSE CODE**	**21UCH5C1**	**COURSE NAME**	**ORGANIC CHEMISTRY-I**

CO	**CO Statement**	**Knowledge level**
CO1	Capacity to understand molecular rearrangements.	K1
CO2	Students can able to draw the cyclic structure of mono Saccharides & di saccharides	K2
CO3	Learners will able to write conformations of organic compounds.	K1
CO4	Able to draw structure of heterocyclic compounds.	K2
CO5	Ability for the Structure elucidation of alkaloids and terpenoids	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	M	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5C1**	**COURSE NAME**	**PHYSICAL CHEMISTRY-I**

COURSE OUT COMES

CO	CO Statement	nowledge level
CO1	Leaner's can explain about electromagnetic spectra .	K1
CO2	Able to understand Modes of vibration of linear and non linear molecules	K2
CO3	Students able to define about the fundamentals photochemistry.	K1
CO4	Capacity to explain importance of nanotechnology .	K2
CO5	Understand colligative properties	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	M	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSECODE**	**21UCH5C12P**	**COURSENAME**	**ORGANIC QUALITATIVE ANALYSIS PRACTICAL**

COURSE OUT COMES

CO	CO Statement	knowledge level
CO1	capacity to carry out organic qualitative analysis	K1
CO2	Able to carry out organic preparation	K2
CO3	Capacity to distinguish between Aromatic and aliphatic compounds	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART III – MAJOR BASED ELECTIVE-I- THEORY

PAPER	**XI**	**COURSE CODE**	**21UCH5M1**	**COURSE NAME**	**ANALYTICAL CHEMISTRY**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Capacity to handle various chemicals in proper ways.	K1
CO2	Ability to carry out data analysis	K2
CO3	To explain various separation techniques	K1
CO4	Understood importance of chromatography and separation techniques	K2
CO5	Students able to explain theories of Electro gravimetry, Coulometry.	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	M	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5M1B**	**COURSE NAME**	**MATERIAL AND NANO CHEMISTRY**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Students can understand Top down and bottom up approaches in Nanotechnology.	K1
CO2	Capacity to explain Types of ionic crystals.	K2
CO3	Ability to understand modern engineering materials and synthesis of Nanomaterials	K1
CO4	Capacity understand characterization of nanomaterials	K1
CO5	Capacity understand characterization of nanomaterials	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5M1**	**COURSE NAME**	**IMPORTANCE OF BIOINORGANIC CHEMISTRY**

COURSE OUT COMES

CO	CO Statement	nowledge level
CO1	Capacity to explain structure and functions of certain metallo-enzymes	K1
CO2	Students can understand metalloenzymes.	K2
CO3	Understand about chemotheraphy.	K2
CO4	Leaners will be able to describe mechanism of binding interactions of metal complexes with biomolecules	K1
CO5	Capacity to explain and drug action in biological systems.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART IV– SKILL BASED ELECTIVE I THEORY

PAPER	**XI**	**COURSE CODE**	**21UCH5S1A**	**COURS ENAME**	**FUNDAMENTAL ASPECTSOF ELECTRO ANALYTICAL TECHNIQUES**

COURSE OUT COMES

CO	**CO Statement**	**Knowledge level**
CO1	Capacity to explain about various techniques like	K2
CO2	potentiometry	K2
CO3	amperometrycoulometry	K2
CO4	electrogravimetry	K2
CO5	polarography	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	M
CO4	S	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5S1B**	**COURSE NAME**	**WATER QUALITY ANALYSIS**

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	**Ability to** understand water quality measurements	K2
CO2	Capacity to explain the ground water and surface water pollution and its control measures.	K2
CO3	Leaners can explain water treatment methods	K2
CO4	Students understand industrial effluent treatment methods and water resources management	K2
CO5	Understand water resources managements.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M
CO4	S	S	S	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5S1C**	**COURSE NAME**	**MEDICINAL CHEMISTRY**

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Capacity to explain common diseases .	K2
CO2	Ability to understand sources of drugs.	K2
CO3	Leaners can able to explain concepts of chemotherapy.	K2
CO4	Ability to understand causes of Diabetes	K2
CO5	Capacity to understand health promoting drugs.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	S
CO4	S	S	S	S	S
CO5	M	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART IV – SKILL BASED ELECTIVE-II- THEORY

PAPER	**XI**	**COURSE CODE**	**21UCH5S1A**	**COURSE NAME**	**CLINICAL CHEMISTRY**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Leaner's get the ability to understanddrugs terminology	K2
CO2	Capacity to define the terms antibiotics	K2
CO3	Able to define antiseptics and anesthetics	K2
CO4	Capacity to understand composition of blood.	K2
CO5	Able to explain organic diagnostic agents	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	S	S	S	M	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5S1B**	**COURSE NAME**	**CHEMISTRY OF NATURALPRODUCTS**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Ability to explain chemistry of amino acids and proteins.	K2
CO2	Capacity to draw structure of nucleic acids.	K2
CO3	Students can understand classification of carbohydrates.	K2
CO4	Leaner's will be able to explain about vitamins	K2
CO5	Capacity to understand mechanism of enzyme action	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	S

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH5S1C**	**COURSE NAME**	**DYEING TECHNIQUES AND WATER TREATMENT**

COURSE OUT COMES

CO	**CO Statement**	**nowledge level**
CO1	Ablity to understand chemistry of dye and pigments.	K2
CO2	Able to understand dyeing techniques.	K2
CO3	Capacity to understand vat dye process.	K2
CO4	Capacity to discuss sewage treatment methods.	K2
CO5	Learners can able to industrial waste water treatment.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	M	S	S	S	S
CO3	S	S	S	M	S
CO4	S	S	M	S	S
CO5	S	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER VI

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**XI**	**COURSE CODE**	**21UCH6C13**	**COURSE NAME**	**ORGANIC CHEMISTRY -II**

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Learners will be able to write reaction mechanism & molecular rearrangements	K2
CO2	Capacity to Write the mechanism of organic reaction.	K2
CO3	Students will be able to explain chemistry of proteins and vitamins	K2
CO4	Understand basic principle of spectroscopy.	K2
CO5	Ability to discuss analgesics and sedative.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	S	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	S

S-Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH6C14**	**COURSE NAME**	**PHYSICAL CHEMISTRY-II**

CO1	On successful completion of the course the students should have learntabout the	K2
CO2	fundamentals of electrochemistry	K2
CO3	Learners will be able to explain concepts of quantum mechanics	K2
CO4	Capacity to define all fundamental thermodynamic properties	K2
CO5	Students can able to state and define phase rule.	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH6C15P**	**COURSE NAME**	**GRAVIMETRIC ANALYSIS PRACTICALS**

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Students will able to carried out gravimetric analysis .	K2
CO2	Students will be able to find out melting /boiling point of given organicsubstance.	K2
CO3	Ability to candle sinterd and silica curcible	K2

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	S

S- Strong, M- Medium, L- Low

PART III – MAJOR BASED ELECTIVE-II - THEORY

PAPER	**XI**	**COURSE CODE**	**21UCH6M2**	**COURSE NAME**	**NUCLEAR AND INDUSTRIAL CHEMISTRY**

CO	CO Statement	Knowledgelevel
CO1	Capacity to explain concepts of nuclear chemistry.	K2
CO2	Ability to understand chemistry of hydrogen bond	K2
CO3	Able to define radioactivity.	K2
CO4	Understand chemical explosives.	
CO5	Students can able to understand the basic concepts of industrialchemistry.	

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	M

S- Strong, M- Medium, L- Low

PAPER	XI	COURSE CODE	21UCH6M2B	COURSE NAME	ORGANOMETALLIC CHEMISTRY

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Students can able to understand chemistry of organo metalliccompound.	K1
CO2	Able to illustrate the structure alkene and alkyne complexes.	K2
CO3	Understand reactivity of alkene and alkyne complexes.	K1
CO4	Ability to understand structure of cyclopentadiene complex.	K2
CO5	Students can able to understand types of catalysis.	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	M	S	S	S	M

S- Strong, M- Medium, L- Low

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XI**	**COURSE CODE**	**21UCH6M3**	**COURSE NAME**	**ESSENTIALMOLECULES FOR LIFE**

COURSE OUT COMES

CO	CO Statement	Knowledg elevel
CO1	Students can able to explain structure ofamino acids and proteins.	K1
CO2	Ability to undertstand types of carbohydrates.	K2
CO3	Learners can able to elucidate structure of vitamins.	K1
CO4	Learners can explain importance of the enzymes and hormones.	K1
CO5	Ability to undertstand structure of DNA & RNA	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M
CO4	S	S	M	S	S
CO5	M	S	S	S	S

S- Strong, M- Medium, L- Low

PAPER	XI	COURSE CODE	21UCH6M3	COURSE NAME	POLYMER CHEMISTRY

PART III MAJOR BASED ELECTIVE -III - THEORY

COURSE OUT COMES

CO	CO Statement	Knowledg elevel
CO1	Leaner's can able to understand chemistry of Rubbers.	K1
CO2	Ability to understand polymer degradation and polymer properties.	K2
CO3	Understand types of polymerisation.	K1
CO4	Students can able to understand synthesis of commercial polymers.	K1
CO5	Ability to understand to application of polymers.	K1

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COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M
CO4	S	S	L	S	S
CO5	M	S	S	S	S

S- Strong, M- Medium, L- Low

PAPER	XI	COURSE CODE	21UCH6M3B	COURSE NAME	PHARMACEUTICAL CHEMISTRY

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Ability to understand different types of disease.	K1
CO2	Leaner's can able to understand the biological actions of antibiotics.	K2
CO3	Students will be able to understand analgesic and antipyretics**.**	K1
CO4	Ability to distinguish between antiseptics and disinfectants	K1
CO5	Students will be able to understand impacts of poisons	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M
CO4	S	S	S	S	S
CO5	M	S	S	S	S

S- Strong, M- Medium, L- Low

PAPER	XI	COURSE CODE	21UCH6M3	COURSE NAME	PHOTOCHEMISTRY ANDRADIATION

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NAAC	CRITERIA – II	METRIC 2.6.1

COURSE OUT COMES

CO	CO Statement	Knowledge level
CO1	Capacity to explain Laws of photochemistry.	K1
CO2	Students will be able to discuss Fluorescence phosphorescence.	K2
CO3	Ability to understand kinetics of photochemical reactions.	K1
CO4	Learners able to understand chemistry of photosynthesis.	K1
CO5	Able to explain concepts of radiation chemistry	K1

COS/POS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	M
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S- Strong, M- Medium, L- Low

PROGRAMME NAME (UG)	B.Sc., (BACHELOR OF SCIENCE – BIOTECHNOLOGY)

PO1	Apply ethical principles and commit to professional ethics and responsibilities in technology usages.
PO2	Acquire knowledge in domains of biotechnology enabling their applications in industry and research.
PO3	Demonstrate knowledge in various environments with respect to sustainable development.
PO4	Recognize the need for and have the preparation & ability to engage independent and Life
PO5	To equip the students to pursue higher education and research in reputed institutes at national andinternational levels along learning in the broadest context of technological change.

SEMESTER I

PART III - CORE - THEORY

PAPER	I	COURS ECODE	21UBT1C1	COURSE NAME	CELL BIOLOGY

CO1	To learn the history of cytology and basic concept of cell
CO2	To Distinguish the structure of prokaryotic and eukaryotic cell organelles and locate its parts alongwith functions.
CO3	To learn the classification, biological function, structure and interactions of Biomolecules
CO4	Students can understand Organization of chromosomes ,Cell division and cell cycle
CO5	To understand the concept of cell function and major cellular events takes place in our cell

PAPER	II	COURSE CODE	21UBT1C2P	COURSE NAME	Lab in cell biology

CO 1	Describe the sterile techniques involved in Cell Biology
CO 2	To study various parts of compound microscope
CO 3	To prepare the temporary slides and differentiate the plant cells and animal cells in reference to theirphenotypes
CO 4	Learn the use of micrometer to measure the length and breadth of a given cell sample
CO 5	Observe and classify the prokaryotic cells (bacteria) using differential staining.

SEMESTER II

PAPER	I A	COURSE CODE	21UBT1A1	COURSE NAME	BIOCHEMISTRY

CO1	To understand the structure of fundamental monosaccharides and polysaccharides structure andfunctions
CO2	To study the structures of amino acids, their chemical properties and their organization intopolypeptides and proteins
CO3	To learn the structure of different classes of lipids and their roles in biological systems.
CO4	To Learn Basic function of nucleotides structure and function
CO5	To learn the Vitamins and Minerals function in biology

PAPER	II	COURSE CODE	21UBT1A 2P	COURSE NAME	Lab in Biochemistry and Immunology

CO 1	To understand the Demonstration of Use of Volume and Weight Measurements Devices, Quantitativetest for Carbohydrates
CO 2	To learn the various Protein estimation methods
CO 3	To learn separation of amino acids using TLC/Paper Chromatography
CO 4	**To Understanding the antigen-antibody interactions and the mechanism of the immunesystem to protect the body from the pathogens.**
CO 5	To learn the Isolation of Monocyte from Blood.

PAPER	**II A**	**COURSE CODE**	21UBT2C3	**COURSE NAME**	Microbiology

CO1	To learn the Scope of Microbiology and History and Kingdom cocept of living organisms
CO2	To study the various Microsopy and working principles
CO3	Summarize the structural organization of Bacteria, Virus, Protozoa and Actinomycetes and theirreproduction
CO4	Outline the methods involved in media preparation and sterilization.
CO5	To learn the Vitamins and Minerals function in biology

PAPER	**II A**	**COURSE CODE**	21UBT2C4P	**COURSE NAME**	Lab in Microbiology

CO1	Illustrate the techniques involved in sterilization of media and glasswares
CO2	Demonstrate the various pure culture techniques and to measure the bacterial growth.
CO3	Identify the organisms by various staining techniques.
CO4	Apply various biochemical tests to characterize microorganisms.
CO5	T o learn Antibiotic sensitivity test

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT2A3	**COURSE NAME**	Immunology

CO1	To learn the Scope of Microbiology and History and Kingdom cocept of living organisms
CO2	To study the various Microsopy and working principles
CO3	Summarize the structural organization of Bacteria, Virus, Protozoa and Actinomycetes and theirreproduction
CO4	Outline the methods involved in media preparation and sterilization.
CO5	To learn the Vitamins and Minerals function in biology

SEMESTER III

PAPER	**II A**	**COURSE CODE**	21UBT3C5	**COURSE NAME**	Principles of Genetics and MolecularBiology

CO1	To study about the chromosomes, genes and their functions, basic concepts of hereditary andpopulation genetics
CO2	Describe the organisation and development of the genetic makeup on cellular, chromosomal and genelevel.

CO3	To study the Structure of gene and function
CO4	Explain DNA replication and repair mechanism.
CO5	Outline the gene regulatory mechanisms.

PAPER	II A	COURSE CODE	21UBT3 C6P	COURSE NAME	Lab in Genetics and Molecular biology

CO1	clear about the methods and reagents used for DNA and RNA extraction,t
CO2	they also know about how to estimate the extracted DNA and RNA compounds,
CO3	They also know about the Molecular Biological techniques like Transformation, Dialysis processes.
CO4	To study the Replica plate technique.
CO5	clear about the methods and reagents used for DNA and RNA extraction,t

PAPER	II A	COURSE CODE	21UBT3A4	COURSE NAME	Basics of Bioinformatics

CO1	To get introduced to the basic concepts of Bioinformatics
CO2	To understand significance in Biological data analysis,
CO3	To understand the methods to characterise and manage the different types of Biological data.
CO4	Classify different types of Biological Databases,history, scope and importance of Bioinformatics
CO5	T o learn the role of internet in Bioinformatics.

PAPER	II A	COURSE CODE	21UBT3 A5P	COURSE NAME	Lab in Bioinformatics and Biostatistics

CO1	To understand the nucleotide and protein sequence analysis package
CO2	To understand protein and RNA structure analysis tools
CO3	To understand the various tools involved in genome annotation
CO4	CRNA structure analysis tools and importance of Bioinformatics
CO5	T o learn the role of internet in Bioinformatics.

PAPER	II A	COURSE CODE	21UBT3 N1A	COURSE NAME	Basics of Biotechnology

CO1	Students will be able to understand the basic unit of the organisms
CO2	To learn differentiate the organisms by its cell structure
CO3	To learn to Components of the Cell and their division
CO4	Students can gain the enzyme and nucleic acid modification and conjugation
CO5	Students will know the influence of environment on gene expression.

PAPER	**II A**	**COURSE CODE**	21UBT3N1B	**COURSE NAME**	Health care Biotechnology

CO1	To get introduced to the basic concepts of Bioinformatics
CO2	To understand significance in Biological data analysis,
CO3	To understand the methods to characterise and manage the different types of Biological data.
CO4	Classify different types of Biological Databases,history, scope and importance of Bioinformatics
CO5	T o learn the role of internet in Bioinformatics.

PAPER	**II A**	**COURSE CODE**	21UBT3N1C	**COURSE NAME**	Process Instrumentation Dynamic andcontrol

CO1	Students will be able to understand the basic unit of the organisms
CO2	To learn differentiate the organisms by its cell structure
CO3	To learn to Components of the Cell and their division
CO4	Students can gain the enzyme and nucleic acid modification and conjugation
CO5	Students will know the influence of environment on gene expression.

SEMESTER IV

PAPER	II A	COURSE CODE	21UBT4C7	COURSE NAME	Recombinant DNA technology

CO1	To understand the Introduction of rDNA into bacterial cells
CO2	To understand Selection of transformants and recombinants – lac selection
CO3	To Learning tools and techniques in rDNA technology- DNA manipulative enzymes
CO4	Methods for selection of recombinants and analysis of cloned genes by sequencing methods,
CO5	To learn the Expression of recombinant protein in *E. coli* and eukaryotes

PAPER	II A	COURSE CODE	21UBT4C8P	COURSE NAME	Lab in Recombinant DNA technology

CO1	To understand the Isolation of genomic DNA from plant, animal cells & from bacteria
CO2	To understand Selection of transformants and recombinants – lac selection
CO3	To Learning tools and techniques in rDNA technology- DNA manipulative enzymes
CO4	Methods for selection of recombinants and analysis of cloned genes by sequencing methods,
CO5	To learn the Expression of recombinant protein in *E. coli* and eukaryotes

PAPER	II A	COURSECODE	21UBT4N2A	COURSE NAME	Agricultural Biotechnology

CO1	The student will acquire knowledge about the range of approaches to manipulate and improve plants.
CO2	Students will demonstrate the ability to develop, interpret in crop improvement
CO3	critically evaluate modern approaches to scientific investigation in field of agriculture.
CO4	Students can learn the produce transgenics in crop improvement
CO5	Students will know the Economic value of herbals and herbal drugs

PAPER	II A	COURSE CODE	21UBT4N2B	COURSE NAME	Solid Waste Management

CO1	Learn basic concepts of solid waste management

CO2	Beginning from source generation to waste disposal in a system of municipality organizationalstructure
CO3	Develop understanding on various technological applications for processing of waste
CO4	Students can learn the and their disposals in various ways
CO5	Acquire knowledge on waste to energy productions in the perspectives of sustainable development

PAPER	**II A**	**COURSE CODE**	21UBT4N2A	**COURSE NAME**	Industrial waste Management.

CO1	Recognize the properties of the basic industries and the environmental impact of waste generated isable to compare,define the characteristics of industrial waste water
CO2	To study the industrial pollution prevention
CO3	To establish a relationship between the properties of of industrial waste water and principles ofindustrial waste water refining.
CO4	Develop understanding on various technological applications for processing of waste
CO5	Students can learn the and their disposals in various ways

PAPER	**II A**	**COURSE CODE**	21UBT5C9	**COURSE NAME**	Forensic Biotechnology

CO1	Demonstrate competency in the collection, processing, analyses,
CO2	To understand evaluation of evidence, collection, identification, preservation,
CO3	To Learning Identify the role of the forensic scientist and physical evidence within the criminal justicesystem
CO4	To understand physical evidence, and scientific processes.
CO5	To learn the forensic biotechnology policies and law

SEMESTER V

PAPER	**II A**	**COURSE CODE**	21UBT5C9	**COURSE NAME**	Animal Biotechnology

CO1	To learn the Fundamental of Animal cell culture
CO2	learn about the various types of Animal cell culture
CO3	To understand the media involved for growth of Animal cells
CO4	To Learning techniques to transfer the animal cells to recipients
CO5	To understand the transgenic animals production

NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT5C11	**COURSE NAME**	Plant Biotechnology

CO1	To learn the Crop improvement methods
CO2	To study the basic principles and techniques involved in plant tissue cell culture,
CO3	To propagate endangered plants by modifying cell in biotechnology for use in microbiological,medical, and biochemical research
CO4	To provide students with experiences in industry appropriate applications of biotechnology related toplant agriculture
CO5	To Understand the concepts of transformation in Plant systems and achievements of biotechnology in Plant systems**.**

PAPER	**II A**	**COURSE CODE**	21UBT5C12P	**COURSE NAME**	Lab in Forensic Biotechnology, AnimalBiotechnology & Plant Biotecnology

CO1	To explain the basics of the physiological and molecular processes that occur in plants
CO2	To develop knowledge of complex processes that occur in the plants and animals
CO3	basic biotechnological techniques to explore molecular biology of plants and animals
CO4	Outline the methods involved in media preparation and sterilization.
CO5	To develop skills in the animal cell culture techniques. understand explicitly the concepts of plant tissueculture techniques

PAPER	**II A**	**COURSE CODE**	21UBT5M1A	**COURSE NAME**	Bioinstruments

CO1	To learn the basic knowledge about instruments in biological industries such as microscope and itsTypes
CO2	To study the understand the chromatography techniques to separate products

CO3	Tounderstand to analyse the Electrophoresis techniques.
CO4	To learn the Purification echniques
CO5	To Understand the Spectroscopy techniques

PAPER	II A	COURSE CODE	21UBT5M1B	COURSE NAME	Marine Biotechnology

CO1	To learn the principle features of marine ecosystems and the microbial diversity in oceans
CO2	.To study the Marine flora
CO3	Tounderstand to marine fauna such as zooplankton,
CO4	To study the marine microbes in terms of physiological capability and their biogeochemical role
CO5	To learn the Importance of marine ,Various marine organisms and its adaptation,Various marinepollutants and its ecological impacts

PAPER	II A	COURSE CODE	21UBT5S1A	COURSE NAME	Ethonomedicine

CO1	learn about the importance of medicinal plants
CO2	To study the industrial pollution prevention
CO3	They also know about how to form the medicines from herbs
CO4	Understand important interactions between cultural practices, ecosystems, and modern science
CO 5	Learn to commonly used qualitative research methods

PAPER	II A	COURSE CODE	21UBT5S1B	COURSE NAME	Phytochemical Technique

CO1	To learn about the importance of medicinal plants
CO2	By studying of this paper students can learn about the Metabolites produced from Plant
CO3	They also gain the knowledge about the conventional methods in plant analysis
CO4	To learn the Conventional Methods in Plant Analyses
CO 5	They also know about advances in plant analytical advanced techniques

Mapping with programme Outcomes:

COs/Pos	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	S	M	S	M	S
CO 2	S	M	M	S	S
CO 3	S	S	M	M	M
C0 4	S	M	M	S	S
CO 5	L	M	M	S	M

PAPER	**II A**	**COURSE CODE**	21UBT5S1C	**COURSE NAME**	Herbs and Drug action.

CO1	learn about the importance of medicinal plants and Herbs which are used to produce the medicines.
CO2	Students would have understood the pharmacological actions of different categories of drugs
CO3	They would have understood the application of basic pharmacological knowledge in the preventionand treatment of various diseases.
CO4	They also know the Plant drugs for common disease
CO 5	They also know about **drugs** for urinogenital disorders

PAPER	**II A**	**COURSE CODE**	21UBT5S2A	**COURSE NAME**	Pharmacognosy

CO1	learn about the importance of medicinal plants
CO2	They also gain the knowledgeExtraction procedures for natural compounds, their differences and theirapplications the main pathways of aromatic amino acids, alkaloids, phenylpropanoids
CO3	They also gain the knowledge about the preparation of crude and commercial drugs

CO4	To learn the organoleptic study of medicinal plants
CO 5	They also know about advances in plant analytical advanced techniques

PAPER	II A	COURSECODE	21UBT5S2B	COURSE NAME	Plant Hormones and Signal transduction

CO1	learn about the plant products like Auxins,
CO2	They also gain the knowledge Bibberlins
CO3	They also gain the knowledge about the Cytokinins hormones and their role in cell division
CO4	To learn the Structure, biosynthesis and measurement of ethylene,
CO5	They also know about structure and measurement of ABA,

PAPER	II A	COURSECODE	21UBT5S2C	COURSE NAME	Biobusiness

CO1	students towards a fundamental understanding of how scientific advances contribute to, and influence,industrial structures, innovation,
CO 2	By studying this paper students can learn about the business techniques involved in Biotechnology.
CO3	To learn the dynamics of collaboration and competition at the level of the single industrial sector.
CO4	The course is designed to provide students with a comprehensive overview of and the ability to assesshow innovation in the life sciences is changing production methods, business and financial models, markets, society and strategic decision making
CO5	To fully grasp these issues inevitably involves tackling the complex ethical and legal issues thatindividuals and society face as a result of these changes.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SEMESTER VI

PAPER	**II A**	**COURSE CODE**	21UBT6C13	**COURSE NAME**	Industrial Biotechnology

CO1	Increase their understanding that 'industrial biotechnology' is based on using machines to control thegrowth of microorganisms
CO2	To develop knowledge of complex processes that occur in the plants and animals
CO3	Develop knowledge of a variety of fermentation strategies and types of Fermenter
CO4	To learn the Purification process and its applications
CO5	To deleop skills of Biotechnology in specific medical & industrial applications

PAPER	**II A**	**COURSE CODE**	21UBT6C14	**COURSE NAME**	Environmental Biotechnology

CO1	The student will be able to evaluate the potential of biodegradation of organic pollutants
CO2	To study the microbial and physical/chemical environments, ,
CO3	To understand the phenomenon of phytoremediation for the decontamination of soil and water,research
CO4	To learn the wetlands as treatment processes
CO5	To Understand the concepts of biofilms/biofilters for vapor-phase wastes, and composting.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT6C15P	**COURSE NAME**	Lab in Industrial Biotechnology andEnvironmental Biotechnology

CO1	To learn thehow to separate the industrially important microorganisms from various souces
CO2	To study the techniques to produce various products by using Microbes.
CO3	Tounderstand to analyse the quality of water and air.
CO4	To learn the Quantitative analysis of milk.
CO5	To Understand the Measurement of COD, BOD

PAPER	**II A**	**COURSE CODE**	21UBT6M2A	**COURSE NAME**	Industrial Fermentation Technology

CO1	To evaluate factors that contribute in enhancement of cell
CO2	.To study the product formation during fermentation process
CO3	To analyse kinetics of cell and product formation in batch, continuous and fed-batch culture
CO4	To study the differentiate the rheological changes during fermentation process.
CO5	To learn the commercial products production by using fermentation

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT6M2B	**COURSE NAME**	Food and beverage Fermentationtechnology

CO1	This course acquaints students with various aspects of chemistry involved in the food
CO2	This course acquaints students with various types of food contamination and spoilage by differentmicroorganisms and their preservation techniques.
CO3	This course acquaints students with fermentation technology, types of fermentation that can be appliedin Industry
CO 4	They learn various production technologies for various industrial products where microbes areinvolved.
CO 5	To learn the food sanitation principles

PAPER	**II A**	**COURSE CODE**	21UBT6M2C	**COURSE NAME**	Bioresources Technology

CO1	Fundamental understanding of the bioresources and its applications for attainment of social objectives(energy, environment, product, sustainability).
CO2	Acquire knowledge with respect to the properties of the bioresources and the conversion technologies.
CO3	Exhibiting knowledge of the systems used for bioresources and bioresource technology.
CO4	Understanding about analysis of data and their applications in design of the systems and developmentof the bioprocess.
CO5	To learn the Biodiesel productionand applications

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT6M 3A	**COURSE NAME**	Metabolic Biotechnology

CO1	At the end of this course students can learn about the methods used to analyse the metabolisms in cell
CO2	To learn to produce the Primary metabolites
CO3	To learn to produce the secondary metabolites
CO4	Exhibiting knowledge of bioconversions regulation of enzyme production
CO5	To learn the Biodiesel productionand applications

PAPER	**II A**	**COURSE CODE**	21UBT6M3B	**COURSE NAME**	**Pharmaceutical Biotechnology**

CO1	.Students will understand the various techniques used in modern biotechnology
CO2	To learn to produce the Primary metabolites
CO3	To learn to produce the Drug manufacturing process
CO4	Students can demonstrate and Provide examples on how to use microbes and mammalian cells for theproduction of pharmaceutical products
CO5	Students can able to provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, andforensic

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II A**	**COURSE CODE**	21UBT6M3C	**COURS ENAME**	**BIOCONJUGATE TECHNOLOGYAND APPLICATIONS**

CO1	students can gain the knowledge about the functional targets of Amino acids
CO2	To learn Chemistry of active targets
CO3	To learn to produce the Drug manufacturing process
CO4	Students can gain the enzyme and nucleic acid modification and conjugation
CO5	Students can able to conjucative application

BIOCHEMISTRY -COURSE STRUCTURE

PAPER 1	**COURSE CODE**	**20PBC1C1**	**COURSE TITLE**	**CHEMISTRY OF BIOMOLECULES**

Course Outcomes

Co Number	**CO Statement**
CO 1	Students can understand the cell structure and its composition
CO2	Transport mechanism of cell and its mode of transportation.
CO3	Students can understand the Nuclear material and its organization.
CO4	Students can understand Organization of chromosomes ,Cell division andcell cycle
CO5	Students can understand the Cell appendages and cell organization

PAPER 2	**COURSE CODE**	**20PBC1C2**	**COURSE TITLE**	ANALYTICAL TECHNIQUES

Course Outcome

Co Number	**CO Statement**
Col	Students can understand the microbial nutrition and growth
CO2	Techniques in microbiology & microbial diversity
CO3	Students can understand the environmental microbiology.
CO4	Students can understand Plant-microbes interactions, MicrobialBiodeterioration

CO5	Students can understand Diseases causing pathogens

PAPER	**COURSE CODE**	**20PBC1C3**	**COURSE TITLE**	**ADVANCED HUMAN PHYSIOLOGY**

Co Number	**CO Statement**
COl	**Students can understand Carbohydrates and its classification**
CO2	**Classification of proteins, Amino acids and enzyme**
CO3	**Students can understand the Lipids and its types.**
CO4	**Students can understand Nucleic acids structure and its derivatives**
CO5	**Students can understand the Metabolism of macromolecule**

PAPER IV	**COURS ECODE**	**20 PBC1C4P**	**COURSE TITLE**	Lab In CHEMISTRY OF BIOMOLECULES, ANALYTICAL TECHNIQUES **ADVANCED HUMAN PHYSIOLGY**

Co Number	CO Statement
CO l	Students can understand structural organization of cells
CO2	Staining techniques
CO3	Students can understand the sterilization techniques and Biochemical techniques.
CO4	Students can understand growth curve of bacteria
CO5	Students can understand the estimation of macromolecules

PAPER EC-1 (A)	COURS ECODE	20PBC1E1A	COURS ETITLE	ADVANCED MICROBIOLOGY

Co Number	CO Statement
COl	Students can understand History and role of bioinformatics
CO2	Nucleic acid databases and Structural classification databases
CO3	Students can understand the Sequence Annotation and Molecular viewers
CO4	Students can understand Sequence alignment tool
CO5	Students can understand the Concepts in Genomics and Proteomics

PAPER EC I –B	COURS ECODE	20PBC1E1B	COURSE TITLE	ADVANCED HUMAN GENETICS

Co Number	CO Statement
COl	Students can understand the importance of solid waste management
CO2	Organic matter decomposition and Microbes associated with organic matterdecomposition
CO3	Students can understand the Solid waste management- methods
CO4	Vermicomposting and methods of vermiculture
CO5	Students can understand the Mushroom culture

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER AP O - I	**COURS ECODE**	**20PBC1A**	**COURSE TITLE**	**ENVIRONMENTAL TOXICOLOGY**

Co Number	**CO Statement**
COl	Students can understand Characterization and risk analysis of food safty
CO2	Quality assuarance
CO3	Students can understand the sensory evaluation
CO4	Students can understand the clean in place (CIP)
CO5	Students can understand the manufacture of food products

PAPER V	**COURS ECODE**	**20PBC2C5**	**COURSE TITLE**	**ENZYMOLOGY**

Co Number	**CO Statement**
COl	Students can understand Nucleotides- Structure and its composition
CO2	DNA replication ,Recombination and Mutation
CO3	Students can understand the Transcription and Post transcriptional modifications
CO4	Students can understand Protein synthesis and Post-translational modifications
CO5	Students can understand the Gene regulation in eukaryotes and protein-protein interactions

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**COURSE CODE**	**20PBC2C6**	**COURSE TITLE**	**METABOLISMAND REGULATION**

Co Number	CO Statement
COl	Students can understand Enzymes in molecularbiology
CO2	Expression of Viral vectors
CO3	Students can understand the artificial Gene transfer mechanisms
CO4	Students can understand Screening & Selection methods for recombinant DNA
CO5	Students can understand the Molecular Techniques and Applications of genetic engineering

PAPER VII	**COURSE CODE**	**20PBC2C7**	**COURS ETITLE**	**CELL AND MOLECULAR BIOLOGY**

Co Number	**CO Statement**
Col	Students can understand Environment - basic concepts and issues
CO2	Environmental pollution - types of pollution
CO3	Students can understand the Microbiology of waste water treatment
CO4	Students can understand Types of solid waste and its management
CO5	Students can understand the biological process

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER VIII	**COURSE CODE**	**20PBC2C8P**	**COURSE TITLE**	**Lab in ENZYMOLOGY, METABOLISM AND REGULATION, CELL AND MOLECULAR BIOLOGY**

Co Number	CO Statement
COl	Students can understand macromolecule extraction techniques
CO2	Mutagenesis and transformations
CO3	Students can understand the isolation if nucleic acids
CO4	Students can understand amplification techniques
CO5	Students can understand Water Analysis and MPN technique

PAPER 20PBC2E2B	**COURSE CODE**	**20PBC2E2A**	**COURSE TITLE**	BIOSTATISTICS AND BIOINFORMATICS

Co Number	CO Statement
COl	Students can understand Types of IPR- Patents
CO2	Students can understand concepts of prior art and Patent databases
CO3	Students can understand the patent filing and infringement
CO4	Students can understand bioethics

CO5	Students can understand biosafety and guidelines

PAPER	**COURSE CODE**	**20PBC2E2B**	**COURSE TITLE**	**BIOIMEDICAL INSTRUMENTTION**

Co Number	**CO Statement**
COl	Students can understand Types of IPR- Patents
CO2	Students can understand concepts of prior art and Patent databases
CO3	Students can understand the patent filing and infringement
CO4	Students can understand bioethics
CO5	Students can understand biosafety and guidelines

PAPER IX	**COURSE CODE**	**20PBC3C9**	**COURS ETITLE**	ADVANCED IMMUNOLOGY

Co Number	**CO Statement**
COl	Students can understand Animal cell culture, cell lines and Vectors for Animalcell culture
CO2	Students can understand the concept and application of Genetic Engineeringin animals
CO3	Students can understand the pest and animal management
CO4	Students can understand nucleic acid probes and antibodies

CO5	Students can understand the Human gene therapy and patenting

PAPER X	**COURSE CODE**	**20PBC3C10**	**COURSE TITLE**	**CLINICAL BIOCHEMISTRY**

Co Number	**CO Statement**
COl	Students can understand Plant genome organization
CO2	Students can understand the Tissues culture media preparation
CO3	Students can understand the Application of genetic transformation techniques
CO4	Students can understand plant trans formation technology
CO5	Students can understand the Secondary metabolic pathways

PAPER XI	**COURS ECODE**	**20PBC3C11**	**COURSE TITLE**	**PLANT AND ANIMAL BIOTECHNOLOGY**

Co Number	**CO Statement**
COl	Students can understand Principles of Microbial growth
CO2	Students can understand types OF Bioreactor
CO3	Students can understand Upstream processing and Downstream processing
CO4	Students can understand Enzyme technology

CO5	Students can understand the industrial applications of biotechnology

PAPER	**COURSE CODE**	**20PBC3C12P**	**COURSE TITLE**	**Lab in ADVANCED IMMUNOLOGY,CLINICAL BIOCHEMISTRY,PLANT AND ANIMAL BIOTECHNOLOGY**

Co Number	**CO Statement**
COl	Students can understand animal cell culture medium and culturing ofanimal cell
CO2	Students can understand Tissue Culture Techniques
CO3	Students can understand Protoplast isolation and fusion
CO4	Students can understand Isolation of Industrially important Microbes
CO5	Students can understand production of Industrially important products

PAPER EC III A	**COURSE CODE**	**20 PBC3E3A**	**COURSE TITLE**	**ENDOCRINOLOGY**

Co Number	**CO Statement**
COl	Students can understand Immune cells, Haematopoiesis
CO2	Students can understand Immunoglobulins and its types

CO3	Students can understand Multigene organization of immunoglobulin genes
CO4	Students can understand CMI and imaging techniques
CO5	Students can understand the Hypersensitivity, Immunity to Infection

PAPER EC III B	**COURSE CODE**	**20PBC3E3B**	**COURSE TITLE**	MICROBIALAND INDUSTRIAL Biotechnology

Co Number	**CO Statement**
COl	Students can understand Biotechnology in marine science
CO2	Students can understand molecular tools
CO3	Students can understand Bioactive marine natural products
CO4	Students can understand Algal biotechnology
CO5	Students can understand the Biofouling and control technology

PAPER XIII	**COURSE CODE**		**COURSE TITLE**	**GENETIC ENGIEERING**

Co Number	CO Statement
COl	Students can understand Data collection and analysis for research
CO2	Students can understand standard of research journals
CO3	Students can understand selection of research problems
CO4	Students can understand Entrepreneurship
CO5	Students can understand the Project management

MICROBIOLOGY

SEMESTER I

PART III - C O R E COURSE- THEORY /

PAPER	I	COURSE CODE	21UMB1C1	COURSE NAME	FUNDAMENTALS OFMICROBIOLOGY

CO 1	Understand the contributions of eminent scientists in the development of microbiology
CO 2	Understand the Grouping and Classification of Bacteria
CO 3	Understand working and mechanism of different equipments and tools used in microbiology
CO 4	Understand the ultra structure of bacterial cell
CO 5	Understand the Classification of Fungi and Cyanobatceria

PAPER	II	COURSECODE	21UMB1C2P	COURSE NAME	PRACTICAL –I FUNDAMENTALS OF MICROBIOLOGY

CO 1	Recall the safety practice in microbiological laboratory
CO 2	Explain the ubiquitous nature of microorganisms
CO 3	Prepare various culture media, cleaning of glasswares and sterilization of media
CO 4	Understand the Morphology of Microorganisms
CO 5	Compute various pure culture techniques

SEMESTER II

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**III**	**COURSE CODE**	**21UMB2C3**	**COURSE NAME**	**MICROBIAL PHYSIOLOGY**

CO1	State the Nutritional requirements of microorganisms
CO 2	Explain the microbiological media
CO 3	Describe the Metabolic pathway
CO 4	Illustrate the microbial growth
CO 5	Compute the view of Survival of Bacteria under Starvation

PAPER	**IV**	**COURSE CODE**	**21UMB2C4P**	**COURSE NAME**	**PRACTICAL – II MICROBIAL PHYSIOLOGY**

CO 1	Understand and analyses Growth curve and generation time
CO 2	Understand Physiological Characteristics of microbes
CO 3	Outline the Effect of high salt concentration
CO 4	Understand the hydrolysis process
CO 5	Outline the spore staining

PAPER	**IV**	**COURS**	**21UMB3C5**	**COURSE**	**IMMUNOLOGY AND**

PART III - C O R E COURSE- THEORY / PRACTICAL

CO 1	Understand the history and types of immunity
CO 2	Demonstrate the various antigen-antibody techniques

SEMESTER III

CO 3	Explain the knowledge about hypersensitivity reactions
CO 4	Demonstrate the Preparation and Purification of antigens
CO 5	Explain Immunotechniques and its applications

PAPER	**VI**	**COURSE CODE**	**21UMB3C6P**	**COURSE NAME**	**PRACTICAL-III: IMMUNOLOGY AND IMMUNOTECHNOLOGY**

CO 1	Perform ABO blood grouping
CO 2	Understand the Tube agglutination
CO 3	Understand the Differential staining
CO 4	Perform immune electrophoresis.
CO 5	Detection of HCG by Dot ELISA

PART IV – NON MAJOR ELECTIVE I - THEORY

PAPER	**A**	**COURSE CODE**	**21UMB3N1A**	**COURSE NAME**	**VERMI CULTURE**

CO 1	Know the scope and breeding techniques
CO 2	Understand the Taxonomic position and Endogeneic species
CO 3	Outline the Applications of Vermiculture
CO 4	Know Quality control, market research, marketing techniques
CO 5	Understand the Potentials and constraints for vermiculture

PAPER	**B**	**COURSE CODE**	**21UMB3N1B**	**COURSE NAME**	**MUSHROOM TECHNOLOGY**

CO 1	Differentiate edible and Poisonous mushrooms
CO 2	Create an nutrient profile of mushroom
CO 3	Examine cultivation system of mushroom
CO 4	Formulation of mushroom food preparation
CO 5	Determine health benefits of mushroom

PAPER	**C**	**COURSE CODE**	**21UMB3N1C**	**COURSE NAME**	**BIOFERTILIZER TECHNOLOGY**

CO 1	Explain Soil Environment
CO 2	Create Knowledge about Phosphate solubilization and study the mass cultivation methods
CO 3	Analyze Non- Symbiotic Biofertilizers and study the mass cultivation methods, SymbioticBiofertilizers and study the mass cultivation
CO 4	methods
CO 5	Expand view of Major plant disease

PART III - C O R E COURSE- THEORY /

PAPER	**VII**	**COURSECODE**	**21UMB4C7**	**COURSENAME**	**CLINICAL MICROBIOLOGY**

CO 1	Describe and Classify the various pathogens and its Characterization.
CO 2	Measures for prevention of epidemics
CO 3	Diagnose the various bacterial pathogens
CO 4	Analyze various human viral diseases
CO 5	Evaluate and compare the various fungal infections and protozoan diseases

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PAPER	**VIII**	**COURSE CODE**	**21UMB4C8P**	**COURSE NAME**	**PRACTICAL PERTAINING CLINICAL MICROBIOLOGY**

CO 1	Isolation of pathogen
CO 2	Detection of Hbs antigen
CO 3	Perform the Cogulase test
CO 4	Examine the Fungal dermatitis
CO 5	Examine the Germ tube test

PAPER	**A**	**COURSE CODE**	**21UMB4N2A**	**COURSE NAME**	**MICROBIAL METABOLITES**

CO 1	Understand the Microbes metabolites and industrial production
CO 2	Explain the Microbes in Food Processing
CO 3	Role of probiotics
CO 4	Understand the Eco Microbiology
CO 5	Design of bioreactor

PAPER	B	COURSE CODE	21UMB4N2B	COURSE NAME	SOCIAL AND PREVENTIVE MEDICINE

CO 1	Understand and determinants of health
CO 2	Outline the Epidemiology and sources of epidemiological data
CO 3	Know the Important Epidemiological Outbreaks
CO 4	Understand the Pathogenesis and Treatment of some bacteria
CO 5	Understand the Bioethics and Medical ethics

PAPER	C	COURSE CODE	21UMB4N2C	COURSE NAME	MICROBIAL NUTRITION

CO 1	Understand the Nutritional types
CO 2	Know the Media type and Preservation Components
CO 3	Understand the Measurement of cell mass and cell number; Factors affecting microbial growth
CO 4	Outline the Chemical factors
CO 5	Understand the microbial photosynthesis

SEMESTER V

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	IX	COURSE CODE	21UMB5C9	COURSE NAME	AGRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY

CO 1	Define the basic view of soil Microorganisms
CO 2	Understand the production of Biofertilizer
CO 3	Explain the Microbial association in soil & organic forming
CO 4	Discuss about Biogeochemical cycles
CO 5	Discuss about Bioremediation and microbial decomposition

PAPER	X	COURSE CODE	21UMB5C10	COURSE NAME	INDUSTRIAL MICROBIOLOGY

CO 1	Understand Isolation of culture, inoculums development and strain improvement
CO 2	Demonstrate the basic design of a fermenter and its types
CO 3	Discuss the steps in upstream processing
CO 4	Discuss the steps in downstream processing and assess the nature
CO 5	Understand utility of various fermented products

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PAPER	**XI**	**COURSE CODE**	**21UMB5C11**	**COURSE NAME**	**FOOD AND DAIRY MICROBIOLOGY**

CO 1	Outline the sources and components of food and their preservation techniques.
CO 2	Analyze the factors influencing the food spoilage.
CO 3	Outline the food intoxication and infection
CO 4	Design appropriate techniques for the recovery of fermented products
CO 5	Compare the production processes of various fermented foods.

PAPER	**XI**	**COURSE CODE**	**21UMB5C12P**	**COURSE NAME**	**PRACTICAL'S PERTAINING CCIX, CCX &CCXI**

CO 1	Perform Isolation of PGPR Bacteria
CO 2	Isolate the Rhizobium from root nodules
CO 3	Detect indole acetic acid producing bacteria
CO 4	Determine the Nitrogen fixation activity of microorganisms
CO 5	Determine the BOD and COD from sewage

PART III - MAJOR BASED ELECTIVE - THEORY

PAPER	A	COURSE CODE	21UMB5M1A	COURSE NAME	CLINICAL RESEARCH

CO 1	Explain the basic concepts of clinical research
CO 2	Explain Adverse drug reaction and its management
CO 3	Explain the standardization of drugs
CO 4	Describe Pharmacoepidemiology, pharmacoeconomics and safety pharmacology
CO 5	Explain the regulatory requirements for conducting clinical trial

PAPER	B	COURSE CODE	21UMB5M1B	COURSE NAME	MARINE MICROBIOLOGY

CO 1	Understand the Sea-benthic and littoral zone and marine microbial community
CO 2	Know the Methods of studying marine microorganisms
CO 3	Explain the Extremophiles
CO 4	Outline the Role of Microbes in Marine Environments
CO 5	Know more about marine products

PAPER	C	COURSE CODE	21UMB5M1C	COURSE NAME	VIROLOGY

CO 1	Understand the architecture of viruses,their classification and the methods used in their study
CO 2	Discern the replication strategies of representative viruses
CO 3	Outline the Lysogeny and Generation of defective phages
CO 4	Know the Viral Replication Strategies
CO 5	Know how viruses can be used as tools to study biological processes , as cloning vectors and for genetransfer.

PART IV - SKILL BASED ELECTIVE I - THEORY

PAPER	A	COURSE CODE	21UMB5S1A	COURSE NAME	PHARMACOGNOSY

CO 1	Define the History , Scope of Pharmacognosy
CO 2	Understand the Sources of Drugs
CO 3	Know about Classification of Drugs
CO 4	Outline the Formulation of Drugs
CO 5	Understand the Principles of Pharmacodynamics

PAPER	B	COURSE CODE	21UMB5S1B	COURSE NAME	CLINICAL LAB TECHNOLOGY

CO 1	Understand the Managing Clinical Microbiology Laboratory
CO 2	Outline the Examination of Urine
CO 3	Understand blood analysis
CO 4	Know Laboratory Methods in Basic Mycology and Virology
CO 5	Know the Laboratory Methods for Parasitic Infection

PAPER	C	COURSE CODE	21UMB5S1C	COURSE NAME	DIAGNOSTIC MICROBIOLOGY

CO 1	Define the Direct Microscopic examination, culture media and incubation, Serological tests
CO 2	Understand the Laboratory diagnosis methods for parasitic infections
CO 3	Explain the Etiology and laboratory diagnosis of Urinary tract infection
CO 4	Discuss about Viral culture
CO 5	Discuss about Antibiotics and chemotherapeutic agents

PAPER	A	COURSE CODE	21UMB5S2A	COURSE NAME	CELL BIOLOGY

CO 1	Know the History of cell biology, cells and their similarities
CO 2	Outline the cell structure
CO 3	Outline the cell organelles
CO 4	Understand the basal bodies
CO 5	Overview of cell communication

PAPER	B	COURSE CODE	21UMB5S2B	COURSE NAME	ENDOCRINOLOGY

CO 1	Know the Definition, Classification of hormones
CO 2	Outline the Pituitary Gland
CO 3	Understand the Hormonal Regulation of Fuel Metabolism
CO 4	Know Hormonal Control of Pregnancy and Lactation
CO 5	Outline the Reproductive Health

PAPER	C	COURSE CODE	21UMB5S2C	COURSE NAME	BIOINSTRUMENTATION

CO 1	Understand the pH meter, pH electrodes
CO 2	Outline thePrinciple - types of centrifuges
CO 3	Understand the Electrophoresis
CO 4	Know more about Chromatography
CO 5	Outline the Quantification Methods

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	XIII	COURSE CODE	21UMB6C13	COURSE NAME	MICROBIAL GENETICS

SEMESTER VI	
CO 2	Understand the DNA as genetic material
CO 3	Know about Mutation and cause of mutation
CO 4	Outline the Direct Repair of Damaged DNA
CO 5	Understand the genetic exchange

PAPER	XIV	COURSE CODE	21UMB6C14	COURSE NAME	MOLECULAR BIOLOGY

CO 1	Discuss the structure, properties and functions of nucleic acids
CO 2	Compare the mechanisms of DNA replication and repair between prokaryotes and eukaryotes
CO 3	Assess the concept of Enzymes and Factors
CO 4	Explain the process of Prokaryotic Gene Expression
CO 5	Explain the process of Eukaryotic Gene Expression

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PAPER	**XV**	**COURS ECODE**	**21UMB6C15P**	**COURSE NAME**	**PRACTICAL PERTAINING MICROBIAL GENETICS, MOLECULAR BIOLOGY**

CO 1	Perform Scoring of auxotrophic mutant by UV
CO 2	Perform Competent cell preparation
CO 3	Analyze the Gene transformation
CO 4	Protoplast generation
CO 5	Demonstrate Southern blotting

PART III - MAJOR BASED ELECTIVE II - THEORY

PAPER	**A**	**COURSE CODE**	**21UMB6M2A**	**COURSE NAME**	**FORENSIC BIOLOGY**

CO 1	Know more about Composition, functions and forensic significance of blood
CO 2	Understand the Composition, functions and forensic significance of urine
CO 3	Outline Forensic Analysis
CO 4	Understand the Entomology and it's significance in forensics
CO 5	Outline the Forensics microbiology

PAPER	B	COURSE CODE	21UMB6M2B	COURSE NAME	MYCOLOGY

CO 1	Understand the History and significance of mycology
CO 2	Overview of Taxonomy
CO 3	Outline the Nutritional requirement and metabolism of fungi
CO 4	Discuss the Endophytic Fungi
CO 5	Understand Significance of Fungi in Human and Livestock Health

PAPER	C	COURSE CODE	21UMB6M2C	COURSE NAME	RECOMBINANT DNA TECHNOLOGY

CO 1	Define the gene manipulation
CO 2	Outline the gene cloning
CO 3	Understand vectors and their types
CO 4	Know about Gene Transfer Techniques
CO 5	Understand Molecular Techniques

PART III - MAJOR BASED ELECTIVE III - THEORY

PAPER	A	COURSE CODE	21UMB6M3A	COURSE NAME	GENETIC ENGINEERING

CO 1	Explain the Microbial synthesis of commercial products
CO 2	Explain the vaccines and types
CO 3	Outline of transgenic plants
CO 4	Outline the transgenic animals

CO 5	Understand the application of genetic engineering

PAPER	**B**	**COURSE CODE**	**21UMB6M3**	**COURSE NAME**	**MICROBIAL TECHNOLOGY**

CO 1	Understand Chronology and components of fermentation processes
CO 2	Know about Fermentor and Media
CO 3	Outline Food, dairy, Beverages
CO 4	Understand Antibiotics-sources and types
CO 5	Discuss Production of Microbial Products

PAPER	**C**	**COURSE CODE**	**21UMB6M3**	**COURSE NAME**	**MICROBIAL TAXONOMYAND BIOINFORMATICS**

CO 1	Understand the microbial taxonomy
CO 2	Know the Principles and modern approaches of bacterial taxonomy
CO 3	Outline Biodiversity and systematics Modern trends in taxonomy chemotaxonomy
CO 4	Understand the Analytical tools for sequences databanks
CO 5	Know about database

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PROGRAMME NAME (PG)	**M.Sc., MB (MASTER OF SCIENCE IN MICROBIOLOGY**

PAPER	**I**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**GENERAL MICROBIOLOGY**

CO 1	Know the Oparin theory and Evolutionary theory
CO 2	Overview of Microbiology
CO 3	Understand Sterilization and Staining
CO 4	Understand the Kingdom concept
CO 5	Understand the Classification of Fungi and Cyanobatceria

SEMESTER I

PAPER	**II**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**MICROBIAL METABOLISM**

CO 1	Understand the Cell theory
CO 2	Know the Microbial nutrition and Factors influencing microbial growth
CO 3	Outline the Carbon assimilation, Metabolism and catabolism
CO 4	Discuss the Microbial Pigments
CO 5	Understand Extremophiles Physiology

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PAPER	**III**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**MICROBIAL BIOCHEMISTRY**

CO 1	Understand the Propertics and classification of carbohydrates
CO 2	Know more about lipids and nucleic acids
CO 3	Discuss the role and chemistry fat of soluble vitamins
CO 4	Understand classification and specificity of enzymes
CO 5	Outline the bio signaling

PAPER	**IV**	**COURSE CODE**	**20PMB1C4P**	**COURSE NAME**	**PRACTICAL I: GENERAL MICROBIOLOGY, MICROBIAL METABOLISMAND MICROBIAL BIOCHEMISTRY**

CO 1	Enumerate of Bacteria and Fungi
CO 2	Know micrometry method.
CO 3	Perform the Stainingtechniques
CO 4	Understand Measurement of growth curve
CO 5	Estimate the of total Carbohydrate

ELECTIVE COURSE I - THEORY

PAPER	A	COURSE CODE	20PMB1E1A	COURSE NAME	BIOPHARMACEUTICALS

CO 1	Understand the Introduction to drug discovery and development
CO 2	Understand the Biologics and biopharmaceuticals
CO 3	Understand Radio activity, Measurement of radioactivity,
CO 4	Properties of α, β, γ radiations
CO 5	Understand the Spoilage of pharmaceutical products

PAPER	B	COURSE CODE	20PMB1E1B	COURSE NAME	BIOSAFETY, BIOETHICS AND IPR

CO 1	Understand biosafety issues in biotechnology and historical background
CO 2	Understand the Biosafety Guidelines
CO 3	Analyse ethical and professional issues which arise in the intellectual property law context
CO 4	Apply intellectual property law principles (including copyright, patents, designs and trademarks) toreal problems and analyse the social impact of intellectual property law and policy
CO 5	Understand the Patents and Patent Laws

APPLICATION ORIENTED COURSE - THEORY

PAPER	AI	COURSE CODE	20PMB1A1	COURSE NAME	BIOINSTRUMENTATION

CO 1	Understand the Principle of centrifugation
CO 2	Understand the General principles of chromatography
CO 3	Understand Principles, procedure, types and application of electrophoresis
CO 4	Understand the UV Spectrophotometry principle
CO 5	Understand the Detection and measurement of radioactivity

CORE COURSE- THEORY / PRACTICAL

PAPER	V	COURSE CODE	20PMB2C	COURSE NAME	ADVANCED VIROLOGY

CO 1	Outline on discovery of viruses
CO 2	Understand the Principal events involved in replication
CO 3	Understand the Viral vectors
CO 4	Discuss the Bacterial viruses
CO 5	Know the Pathogenicity and Prophylaxis

PAPER	VI	COURSE CODE	20PMB2C	COURSE NAME	MICROBIAL GENETICS

CO 1	Understand the DNA and RNA as genetic material
CO 2	Outline the Replication
CO 3	Understand the Gene Regulation
CO 4	Understand the gene transfer, molecular mechanism. Bacterial transformation
CO 5	Understand the Mutations

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PAPER	**VII**	**COURSE CODE**	**20PMB2C**	**COURSE NAME**	**ENVIRONMENTAL ANDAGRICULTURAL MICROBIOLOGY**

CO 1	Understand the Soil - structure, types, physical and chemical properties
CO 2	Know the Microorganisms responsible for water pollution especially Water-borne pathogenicmicroorganisms
CO 3	Comprehend the various methods to determine the Sanitary quality of water and sewage treatmentmethods employed in waste water treatment
CO 4	Understand the Agro Ecosystem
CO 5	Understand the Bioinoculants

PAPER	**VIII**	**COURSECODE**	**20PMB2CP**	**COURSE NAME**	**PRACTICAL -II ADVANCEDVIROLOGY, MICROBIAL GENETICS, ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY**

CO 1	Isolate of bacteriophage from sewage
CO 2	Isolate of Genomic DNA
CO 3	Isolate of plasmid DNA by alkaline lysis method
CO 4	Understand the Screening of antagonistic fungi against plant pathogen
CO 5	Determine of phosphate solubulizing bacteria

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PAPER	**A**	**COURSE CODE**	**20PMB2E2A**	**COURSE NAME**	**ADVANCED MOLECULAR BIOLOGY**

CO 1	Understand the Eukaroytic genome organization and Proteins involved in the control of transcription
CO 2	Outline the Physical structure and genetic content of Human genome
CO 3	Understand Recent Trends in Molecular biology
CO 4	Understand the Applications of Recombinant DNA
CO**5**	Understand the Social Issues in Molecular Technologies

PAPER	**B**	**COURSECODE**	**20PMB2E2B**	**COURSE NAME**	**NANOTECHNOLOGY**

CO 1	Understand the Basic Concepts in Nanotechnology
CO 2	Outline the Synthesis of Nanoparticles
CO 3	Understand Structural studies of Nanoparticles
CO 4	Outline the Antimicrobial activity of nanoparticles
CO 5	Understand the whole-blood immunoassay facilitated by gold nanoshell

APPLICATION ORIENTED COURSE - THEORY

PAPER	**AII**	**COURSE CODE**	**20PMB2A2**	**COURSE NAME**	**MUSHROOM TECHNOLOGY**

CO 1	Understand the Scope and Development of Mushroom
CO 2	Discuss the Nutritive Value and Spawn Production
CO 3	Outline Cultivation Technology
CO 4	Understand the Pests and Diseases of Edible Mushroom
CO 5	Understand the Economics of Mushroom Cultivation

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C O R E COURSE- THEORY / PRACTICAL

PAPER	IX	COURSE CODE	20PMB3C9	COURSE NAME	IMMUNOLOGY AND MEDICAL MICROBIOLOGY

CO 1	Understand the innate and acquired immunity, Mechanism of cell mediated and humoral immunity
CO 2	Understand the Allergens and Allergic reactions
CO 3	Discuss the Immune Tolerance
CO 4	Understand the Types of infectious diseases
CO 5	Outline the Diagnosis and Control of Microbial Diseases

PAPER	X	COURSE CODE	20PMB3C1	COURSE NAME	FOOD AND DAIRY MICROBIOLOGY

CO 1	Understand the Microbial flora of fresh foods
CO 2	OutlineGeneral principles underlying food spoilage and contamination
CO 3	Understand the Fermented Food and Food Preservation
CO 4	Discuss Microbiology of Milk and Dairy Products
CO 5	Understand the Food Borne Diseases and Sanitation

PAPER	XI	COURSE CODE	20PMB3C1	COURSE NAME	RECOMBINANT DNA TECHNOLOGY

CO 1	Understand the Developments in recombinant DNA technology
CO 2	Discuss the Vectors in Genetic Recombination
CO 3	Understand Cloning strategies
CO 4	Outline the Gene Transfer Techniques
CO 5	Understand the DNA sequencing and method

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PAPER	**XII**	**COURSE CODE**	**20PMB3C12P**	**COURSE NAME**	**PRACTICAL-III IMMUNOLOGY AND MEDICAL MICROBIOLOGY, MICROBIAL FOOD TECHNOLOGY AND RECOMBINANT DNA TECHNOLOGY**

CO 1	Perform the Haem agglutination blood grouping
CO 2	Perform the Antibiotic sensitivity testing – E test
CO 3	Perform Coagulation test for milk
CO 4	Perform Preparation of competent cell
CO 5	Demonstrate the Blotting techniques

ELECTIVE COURSE - THEORY

PAPER	**A**	**COURSECODE**	**20PMB3E3A**	**COURSE NAME**	**FERMENTATION TECHNOLOGY**

CO 1	Understand the Industrially important microorganism
CO 2	Discuss the Media & Sterilization
CO 3	Understand the design of fermentor and its type
CO 4	Outline the Microbial production
CO 5	Understand the Recovery and purification of fermentation products

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PAPER	**B**	**COURSE CODE**	**20PMB3E3B**	**COURSE NAME**	**MARINE MICROBIOLOGY**

CO 1	Discuss Marine microbial habitats and diversity
CO 2	Understand the Cultivation of Marine Microbes and Nutrient Cycling
CO 3	Understand Survival at extreme environments, hyperthermophiles
CO 4	Understand the Resource of seafood and preservation methods
CO 5	Outline the marine microbial products

C O R E COURSE- THEORY / PRACTICAL

PAPER	**XIII**	**COURSE CODE**	**20PMB4C1**	**COURSE NAME**	**RESEARCH METHODOLOGY**

CO 1	Understand the choosing a topic to publication
CO 2	Understand the Research journals
CO 3	Outline tabulation and classification of data
CO 4	Understand the Standard Deviation
CO 5	Discuss the Role and research funding government sectors

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ROGRAMME NAME (M.PHIL)	**M.PHIL., MB (MASTER OF PHILOSOPHY IN MICROBIOLOGY**

C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**20MPMB1C1**	**COURSE NAME**	**RESEARCH METHODOLOGY**

CO 1	Know the Selection of Problem
CO 2	Overview of Planning and Preparation of Thesis
CO 3	Understand the Biostatistics
CO 4	Understand the Standard Deviation
CO 5	Outline the Organisation to Computer

PAPER	**II**	**COURSE CODE**	**20MPMB1C2**	**COURSE NAME**	**MICROBIAL GENOMICS ANDPROTEOMICS**

CO 1	Understand the Bioinformatics and Its Applications
CO 2	Overview Preparation of ordered cosmid libraries
CO 3	Understand Computational methods and homology algorithms
CO 4	Outline the DNA Microarray
CO 5	Understand Proteome Analysis

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PAPER	**IV**	**COURS ECODE**	**20MPMB1C4**	**COURSE NAME**	**TEACHING AND LEARNINGSKILLS**

CO 1	Know the Computer Application Skills
CO 2	Discuss Communication Skills
CO 3	Understand the Communication Technology
CO 4	Overview the Instructional Technology and Lecture Technique
CO 5	Understand the Teaching skill

DEPARTMENT OF COMPUTER APPLICATIONS

CORE COURSE – I

PAPER	**1**	**COURS ECODE**	**21UCA1C1**	**COURSE NAME**	**C programming**

CO1	Identify the basic terminologies of C programming by using different data types, decision structures, loops and functions.
CO2	Demonstrate practical experience in developing solutions using C
CO3	Apply, compile and debug programs in C language
CO4	Design and develop the simple business application.

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PAPER	**1**	**COURS ECODE**	**21UCA1C1**	**COURS ENAME**	**PROGRAMMING IN C++**

CO1	Identify the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable codes.
CO2	Describe classes and objects written by other programmers when constructing their system.
CO3	Classify C++ features to program design and implementation
CO4	Illustrate the object oriented design for small/medium scale problems.

PAPER	**1**	**COURSE CODE**	**21UCA2C4 P**	**COURS ENAME**	**PROGRAMMING IN C++ LAB**

CO1	Identify object oriented programming paradigm and the importance of it in softwaredevelopment.
CO2	Understand algorithmic thinking and apply it to programming.
CO3	Implement Oops concept in developing simple applications using C++
CO4	To use appropriate C programming statements to control flow of execution in a C++programme.

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PAPER	**1**	**COURSE CODE**	**21UCA3C5**	**COURSE NAME**	**JAVA ROGRAMMING**

CO1	Recognize design of java class & solve basic design problems usingobject oriented concepts
CO2	Execute inheritance codes.
CO3	Write java application programs using packages & collection interfaces.
CO4	Implement the robust & multitasking application using exception handling concepts

PAPER	**1**	**COURSE CODE**	**21UCA3C6 P**	**COURSE NAME**	**JAVA ROGRAMMING LAB**

CO1	Identify the logic for the given problem, recognize and understand thesyntax and construction JAVA code
CO2	Understand and design the classes using string functions & methods.
CO3	Develop java application programs using packages & collection interfaces.
CO4	To build software development skills using java programming for real world applications.

PAPER	**1**	**COURSE CODE**	**21UCA3N1A**	**COURSE NAME**	**WORKING PRINCIPLES OF INTERNET**

CO1	Understand internet's underlying architecture
CO2	Explain the different types of connection to internet
CO3	Understand the concepts of how to create webpages and websites
CO4	Explain about multimedia communication on internet
CO5	Explain the process of web browser.

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PAPER	**1**	**COURS ECODE**	**21UCA3N1B**	**COURSE NAME**	**FUNDAMENTALS OF INFORMATION TECHNOLOGY**

CO1	Understand basic concepts and terminology of informationtechnology, digital computers
CO2	Have a basic understanding of personal computers and their operations
CO3	Understand the concepts of how to create webpages and websites
CO4	Explain about on internet email WWW concepts
CO5	Explain the information security virus and worms

PAPER	**1**	**COURS ECODE**	**21UCA3N1C**	**COURSE NAME**	**BASICS OF COMPUTER PROGRAMMING**

CO1	To Familiarize operating systems, programming languages, peripheraldevices, networking, multimedia and internet.
CO2	Develops the use of the C programming language to implement variousalgorithms, and develops the basic concepts and terminology of programming in general.
CO3	Write, compile and debug programs in C language and use different datatypes for writing the programs.
CO4	Understanding the concept of input and output devices of Computersand how it works and recognize the basic terminology used in computer programming.
CO5	Design programs connecting decision structures, loops and functions.

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PAPER	**1**	**COURSE CODE**	**21UCA4C7**	**COURSE NAME**	**PHP**

CO1	Understand basic concepts terminology of php code and produce arraystring
CO2	Have a basic understanding creating and reading webpages
CO3	Understand the object oriented and advanced objectoriented programming
CO4	Explain about data bases cookies
CO5	Explain about php advanced concepts ajax

PAPER	**1**	**COURSE CODE**	**21UCA4C8P**	**COURSE NAME**	**PHP LAB**

CO1	Understand basic concepts math functions string tuples dictionaries inpython
CO2	To express decision making statements and functions
CO3	Understand the object oriented programming
CO4	Explain about string parsing functions
CO5	Explain about Regular expressions HTML functions Hashing functions

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PAPER	**1**	**COURSE CODE**	**21UCA4N2A**	**COURSE NAME**	**PC HARDWARE AND TROUBLE SHOOTING**

CO1	To understand the concept Computer organization or DMA Controller number systems
CO2	To explain peripherals devices, CRT monitors
CO3	To introduce about bios and dos interaction pc family
CO4	To explain about installation and pervasive maintenance
CO5	Trouble shootingtools trouble shooting steps to solve computer faults in a process systems

PAPER	**1**	**COURSE CODE**	**21UCA4N2B**	**COURSE NAME**	**SCRIPTING LANGUAGE**

CO1	To master the theory behind scripting and its relationship to classic programming.Understanding basic in html formatting links frames all inhtmls
CO2	Understand basic concepts style sheet style sheet properties formatting attributesTo gain some fluency programming in Ruby, JavaScript, Perl, Python, and related languages
CO3	To express java scripts javascript syntax ,advantages document object functions
CO4	Explain about objects in html event handling functions
CO5	Explain about DHTML CSS, javascript functions

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PAPER	**1**	**COURSE CODE**	**21UCA4N2C**	**COURSE NAME**	**OFFICE AUTOMATION**

CO1	Understand basic concepts word excel so students would be able to documents,spreadsheets, make small presentations .
CO2	Students would be able to underatand about operating systems.
CO3	Understand the formatting documents printing documents
CO4	Explain about Excel sheet deleting inseting formatting
CO5	Explain about Ms-Access planning database ,reports

PAPER	**1**	**COURSE CODE**	**21UCA5C9**	**COURSE NAME**	**CYBER SECURITY**

CO1	Understand basic concepts math functions string tuples dictionaries in python
CO2	To express decision making statements and functions
CO3	Understand the object oriented programming
CO4	Explain about string parsing functions
CO5	Explain about Regular expressions HTML functions Hashing functions

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PAPER	**1**	**COURSE CODE**	**21UCA5C12P**	**COURSE NAME**	**CYBER SECURITY LAB**

CO1	Analyze and evaluate the cyber security needs of an organization
CO2	Determine and analyze software vulnerabilities and security solutions toreduce the risk of exploitation.
CO3	Measure the performance and troubleshoot cyber securitysystems.
CO4	Determine and analyze the AES and RSA algorithm
CO5	Unserstand Digital Signature standard

PAPER	**1**	**COURSE CODE**	**21UCA5C10**	**COURSE NAME**	**INTERNET OF THINGS**

CO1	Apply the concepts of IOT
CO2	Identify the different technology
CO3	Apply IOT to different applicatiOions
CO4	Explain IOT and M2M
CO5	To understand security management and iot eco system

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PAPER	**1**	**COURSE CODE**	**21UCA5C11**	**COURSE NAME**	**COMPUTER ARCHITECTURE**

CO1	To introduce computer organization and architecture
CO2	To demonstrate knowledge of computer artithmetic signed andunsigned
CO3	To demonstrate knowledge of assembly programming optimization.
CO4	To understand Cpu structure and functions processor and register organization
CO5	To describe about Memory organization input and output

PAPER	**1**	**COURSE CODE**	**21UCA5M1A**	**COURS ENAME**	**E-COMMERCE & M-COMMERCE**

CO1	To Explain the concept of ecommerce and its revolution.
CO2	Explain the infrastructure of the Internet and how the variouselements contribute to the marketing distribution solutions.
CO3	Explain and develop solutions for implementing an ecommerce site.
CO4	M–Commerce In The Automotive Industry
CO5	To explain business to business mobile ecommerce

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PAPER	**1**	**COURSE CODE**	**21UCA5M1B**	**COURSE NAME**	**SYSTEMS ANALYSISAND DESIGN**

CO1	Describe different life cycle models and explain the contribution of thesystem.
CO2	Discuss various approaches to systems analysis and design and explaintheir strengths and weakness.
CO3	Discuss about feasibility study feasibility performance
CO4	Describe the process and stages of system design input output form design
CO5	Explain about File organisation and Database design

PAPER	**1**	**COURSE CODE**	**21UCA5M1C**	**COURSE NAME**	**DATABASE MANAGEMENT**

CO1	Understand database concepts and structures and query language.
CO2	Understand the E R model and relational model.
CO3	Discuss about SQL Queries and SQL Databases
CO4	Describe the Relational languages tuple relational calculus Entity Relationship model and algebra
CO5	Explain about Relation database design normal forms

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PAPER	**1**	**COURSE CODE**	**21UCA5S1A**	**COURSE NAME**	**PAGE MAKER**

CO1	To Design eye-catching flyers and ads
CO2	To Demonstrate marketable desktop publishing skills using multiple pages
CO3	Use white space to create readable and attractive newsletters
CO4	Import, resize, and manipulate both clip-art and photo graphics, mail merge
CO5	Describe aboutWorking with publications

PAPER	**1**	**COURSE CODE**	**21UCA5S1B**	**COURSE NAME**	**COREL DRAW**

CO1	To create vector art and illustrations for logos, web graphics, brochures, and more
CO2	To Explain about drawing and selecting
CO3	To explain working with text with all formatting
CO4	Describe about working with images
CO5	Describe about page layout

PAPER	**1**	**COURSE CODE**	**21UCA5S1C**	**COURS ENAME**	**INTERNET PROGRAMMING**

CO1	To understand html basics tags table formatting style sheet
CO2	To understand table forms frames and java script basics
CO3	To demonstrate java script and xhtml documents
CO4	Explain Handling Events from body elements dom tree
CO5	Explain about xml xml document structure xslt stylesheet

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PAPER	**1**	**COURSE CODE**	**21UCA5S2A**	**COURSE NAME**	**DREAM WEAVER**

CO1	To get knowledge about Design a complete website html table
CO2	To demo about html table frame frameset
CO3	To give introduction cascading stylesheet
CO4	To demonstrate Working with flash contents html forms templates Able to include to audio, video, flash, java applets and images
CO5	To explain java script and giving demo to finalize website

PAPER	**1**	**COURSE CODE**	**21UCA5S2B**	**COURSE NAME**	**COMPUTER APPLICATIONS INBUSINESS**

CO1	To introduce about basics of computer login in windows To Achieve hands-on experience with productivity/application software to enhance business activities.
CO2	To explain about ms word formatting dcumennts
CO3	To explain about excel spreadsheet and prepare chart
CO4	To introduce basics of accounting tally ,journal vouchers
CO5	To introduce inventors stock register creation

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PAPER	**1**	**COURSE CODE**	**21UCA5S2C**	**COURSE NAME**	**INTRODUCTION TO WEB DESIGN**

CO Number	**CO Statement**	**Knowledge Level**
CO1	To explain internet and company in business www To Recognize and understand HTML web page elements.	K2
CO2	To explain internet addressing physical connection.	K3
CO3	To explain html basics link Know how to write HTMLcode.	K2
CO4	Know how to write HTML code using html tags bodyformatting	K3
CO5	Understand and apply effective web design principles	K3

PAPER	**1**	**COURSE CODE**	**21U5SS**	**COURSE NAME**	**SOFT SKILL DEVELOPMENT**

CO1	.Effectively communicate through verbal/oral communication and improve thelistening skills
CO2	Write precise briefs or reports and technical documents
CO3	Actively participate in group discussion / meetings / interviews and prepare & deliver presentations .
CO4	Introduction with coporate skills time management
CO5	Selling self job writeingresume and group discussion

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PAPER	**1**	**COURSE CODE**	**21UCA6C13**	**COURSE NAME**	**PHYTHON APPLICATION PROGRAMMING**

CO1	Understand basic concepts math functions string tuples dictionaries in python
CO2	To express decision making statements and functions
CO3	Understand the object oriented programming
CO4	Explain about string parsing functions
CO5	Explain about Regular expressions HTML functions Hashing functions

PAPER	**1**	**COURSE CODE**	**21UCA6C14**	**COURSE NAME**	**SOFTWARE ENGINEERING**

CO1	How to apply the software engineering lifecycle by demonstratingcompetence in communication, planning, analysis, design, construction, and deployment
CO2	An ability to work in one or more significant application domains.
CO3	To explain designtechniques and design concepts to prepare efficient softwaredesign
CO4	To understand the software quality, yield manangement
CO5	To understand about testing and debugging system testing

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PAPER	**1**	**COURSE CODE**	**21UCA6C15P**	**COURSE NAME**	**PYTHON LAB**

CO Number	CO Statement	Knowledge Level
CO1	Understand basic concepts math functions string tuples dictionaries in python .Student should be able to understandthe basic concepts scripting and the contributions of scripting language 2	K2
CO2	To express decision making statements and functions	K3
CO3	Understand the object oriented programming Ability to explore python especially the object oriented concepts, and the built in objects of Python.	K2
CO4	Explain about string parsing functions	K3
CO5	Explain about Regular expressions HTML functions Hashing functions	K3

PAPER	**1**	**COURSE CODE**	**21UCA6M2A**	**COURSE NAME**	**WEB PROGRAMMING**

CO1	Understanding the html scripting language internet principles
CO2	To understand cgi and browser communications
CO3	To give demo about dhmtl and cascading style sheet
CO4	To acquire knowledge from Server side programming xml dom methods
CO5	Design and deploy web application using JSPs Explain jsp servlets java beans andjsp applications

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PAPER	**1**	**COURSE CODE**	**21UCA6M2B**	**COURSE NAME**	**GIS AND REMOTE SENSING**

CO1	.Analyse the principles and components of photogrammetry and remote sensing.
CO2	Describe the process of data acquisition of satellite images and their characteristics
CO3	Compute an image visually and digitally with digital imageprocessing techniques
CO4	To undertand principles of remote sensing
CO5	To expolain thermal microwave remote sensing

PAPER	**1**	**COURSE CODE**	**21UCA6M2C**	**COURSE NAME**	**MULTIMEDIA AND APPLICATIONS**

CO1	To create interactive media using industry-standard authoring tools.
CO2	To create programming scripts for interactive user interfaces and complex components.
CO3	To understand multimedia applications audio and video
CO4	To explain product authoring and tools
CO5	To understand multimedia and internet html

PAPER	**1**	**COURSE CODE**	**21UCA6M3P1**	**COURSE NAME**	**WEB PROGRAMMINGLAB**

CO Number	CO Statement
CO1	Design console application and windows application.
CO2	Design web application statements and functions
CO3	Understand the object oriented programming using layoutsand applet programming
CO4	Explain about database socket programming parsing functions
CO5	Explain about HTML froms functions style scheets

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PAPER	**1**	**COURSE CODE**	**21UCA6M3P2**	**COURSE NAME**	**MULTIMEDIA LAB**

CO1	Understand basic concepts in photoshop to prepare photo effects and design .To create projects using creativity andorganization to create them.
CO2	To express knowledge about brush multilayers and selection portions from singlephoto
CO3	Understand the basic drawing painting strokes fills in flashprogramming
CO4	Explain about colores gradients to work with graphis
CO5	To develop multimedia skills understanding the principal players of individual players in multimedia teams in developing projects

APER	**1**	**COURSE CODE**	**21U6GS**	**COURSE NAME**	**GENDER STUDIES**

CO1	To acquire awareness of gender based balances gender division of labour
CO2	To understand Women studies and gender studies
CO3	To describe Areas of gender descriminisation gender sex ratio
CO4	To explain women development and gender empowerment
CO5	To explain Womens movements and safeguarding mechanism

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DEPARTMENT OF COMPUTER SCIENCE

PROGRAMME OUTCOMES

- To possess basic knowledge in the discipline of Computer Science and enable students to formulatecomputational solutions to real life problems
- To identify, analyze, design an optimized solution using appropriate algorithms of varying complexityusing technologies
- To develop skills in software and hardware so as to enable the students to establish a productive career inindustry and academia
- To ability to use appropriate techniques, skills and tools necessary for computing practice
- To equip the students to meet the industrial needs by utilizing tools and technologies with the skills tocommunicate effectively among peers

PAPER	**I**	**COURSE CODE**	**21UCS1C1**	**COURSE NAME**	**BASIC COMPUTER CONCEPTS**

CO Number	CO Statement
CO1	Understand the concept of Evolution and Characteristics of computer
CO2	Understand the concept of input ,output and storage devices of Computers
CO3	Acquire the knowledge of Operating system and Database Management system
CO4	Identify the uses of Internet and Multimedia
CO5	Able to do editing works using Photoshop

CORE COURSE - II

PAPER	**II**	**COURSE CODE**	**21UCS1C2P**	**COURSE NAME**	**CORE COURSE II– COMPUTER BASICS ANDANIMATION LAB**

CO Number	CO Statement
CO1	Demonstrate working with selections, layers, and painting tools
CO2	Demonstrate methods for making color corrections
CO3	Demonstrate working with images
CO4	Demonstrate using filter effects and eraser effects
CO5	Demonstrate creating special effects

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SEMESTER -

PAPER	**III**	**COURSE CODE**	**21UCS2C3**	**COURSE NAME**	**CORE COURSE III - PROGRAMMING IN CLANGUAGE**

CO Number	CO Statement
CO1	Knowledge on constructs of C Language
CO2	Skills in writing C programs
CO3	Ability to use the functions efficiently
CO4	Skill on memory management and use of pointers
CO5	Ability to design and use structures

CORE COURSE - IV

PAPER	**I V**	**COURSE CODE**	**21UCS2C4P**	**COURSE NAME**	**CORE COURSE IV - PROGRAMMING IN CLAB**

CO Number	CO Statement
CO1	Develop good understanding of the C language and the art of development in an environment

CORE COURSE - V

PAPER	**V**	**COURSE CODE**	**21UCS3C5**	**COURSE NAME**	**CORE COURSE V - PROGRAMMING IN C++**

CO Number	CO Statement
CO1	Learn the basic concepts in C++ Programming
CO2	Understand the principles of Object Oriented Concepts
CO3	Be skillful in writing C++ code using classes objects and functions
CO4	Know the Core concepts of OOPS such as Constructors and Inheritance
CO5	Understand the concept of streams and file management in C++

CORE COURSE - VI

PAPER	VI	COURSE CODE	21UCS3C6P	COURSE NAME	CORE COURSE VI -PROGRAMMING INC++ LAB

CO Number	CO Statement
CO1	Provide a sound understanding of the basic concepts of OOPs
CO2	Equip the students with the knowledge of classes and objects

SEMESTER - IV

CORE COURSE - VII

PAPER	VII	COURSE CODE	21UCS4C7	COURSE NAME	CORE COURSE VII - JAVA PROGRAMMING

CO Number	CO Statement
CO1	Gain ability to develop basic programming skills in Java
CO2	Acquire fundamental knowledge in Object Oriented Programming
CO3	Ability to generate simple packages and to design Thread
CO4	Attain knowledge in various File Handling Techniques.
CO5	Acquire ability to design and execute simple Applets.

CORE COURSE - VIII

PAPER	VIII	COURSE CODE	21UCS4C8P	COURSE NAME	CORE COURSE VIII - JAVA PROGRAMMING LAB

CO Number	CO Statement
CO1	Generate ability to generate simple packages and to design Thread
CO2	Acquire skills and knowledge in various File Handling Techniques

SEMESTER - V

CORE COURSE - XI

PAPER	IX	COURSE CODE	21UCS5C9	COURSE NAME	CORE COURSE IX– DATA BASE MANAGEMENT SYSTEM

CO Number	CO Statement
CO1	Understand the fundamental concepts of database systems & use the features available in a DBMS package
CO2	Know the organization of File and its addressing schemes
CO3	Acquire knowledge on Normalization
CO4	Develop the logical design of the database using data modeling concepts such as Entity Relationship diagrams
CO5	Familiarity on SQL queries, functions, cursors and triggers

CORE COURSE - X

PAPER	X	COURSE CODE	21UCS5C10P	COURSE NAME	CORE COURSE X - RDBMS LAB

CO Number	CO Statement
CO1	Apply PL/SQL for query processing
CO2	Use PL/SQL stored procedure, stored functions, cursors and packages to query the database

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CORE COURSE - XI

PAPER	XI	COURSE CODE	21UCS5C11	COURSE NAME	CORE COURSE XI – OPERATING SYSTEM

CO Number	CO Statement
CO1	Understand the services provided by the OS and the design of an operating system
CO2	Understand the structure and organization of the file system
CO3	Understand what a process is and how processes are synchronized and scheduled
CO4	Understand the different approaches to memory management
CO5	Demonstrate an understanding of different I/O techniques in operating system

PAPER	XII	COURSE CODE	21UCS5C12	COURSE NAME	CORE COURSE XII – DATA STRUCTURE AND ALGORITHM

CO1	Have fundamental knowledge on data structures
CO2	Perform various operations on stack
CO3	Represent queue and its structures
CO4	Work with Trees and Tree Traversals
CO5	Work with various standard algorithms

MAJOR BASED ELECTIVE I

PAPER	MBE - I	COURSE CODE	JCS5M1A	COURSE NAME	MAJOR BASED ELECTIVE I - CRYPTOGRAPHY

CO Number	CO Statement
CO1	Discuss how cryptography helps to achieve common security goals
CO2	Explain the notions of symmetric encryption, hash functions, and message authentication, and sketch their formal security definitions
CO3	Describe and implement the specifics of some of the prominent techniquesfor encryption, hashing, and message authentication
CO4	Explain the notions of public-key encryption and digital signatures, andsketch their formal security definitions
CO5	Work with various standard algorithms

MAJOR BASED ELECTIVE I

PAPER	MBE -I	COURSE CODE	JCS5M1B	COURSE NAME	MAJOR BASED ELECTIVE I – COMPUTER GRAPHICS AND MULTIMEDIA

CO Number	CO Statement
CO1	Formulate the design process and principles
CO2	Assimilate the graphics and their transformations
CO3	Generate primitives, interactive graphics and raster graphics
CO4	Work with the concepts of Graphic packages and Geometric models
CO5	Create applications for interactive multimedia tools

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PAPER	**MBE-I**	**COURSE CODE**	**JCS5M1C**	**COURSE NAME**	**MAJOR BASED ELECTIVE I– SOFTWARE ENGINEERING**

CO Number	CO Statement
CO1	How to apply the software engineering life cycle by demonstrating competence in communication, planning, analysis, design, construction,and deployment
CO2	An ability to work in one or more significant application domains
CO3	Work as an individual and as part of a multidisciplinary team to developand deliver quality software
CO4	Demonstrate an understanding of and apply current theories, models, andtechniques that provide a basis for the software lifecycle
CO5	Demonstrate an ability to use the techniques and tools necessary forengineering practice

SSEMESTER VI

PAPER	**XIII**	**COURSE CODE**	**21UCS6C13**	**COURSENAME**

CO Number	CO Statement
CO1	**Introduce the creation of static webpage using HTML**
CO2	**Describe the importance of functions in web development**
CO3	**Describe the importance of XML in web development**
CO4	**Outline the principles behind using MySQL as a backend DBMS withPHP**
CO5	**Describe fundamentals of web**

CORE COURSE XIV

PAPER	XIV	COURSE CODE	21UCS6C14P	COURSE NAME	CORE COURSE XIV -PHP LAB

CO Number	CO Statement
CO1	Get hands on experience on various techniques of web development andwill be able to design and develop a complete website

CORE COURSE XV

PAPER	XV	COURSE CODE	21UCS6C15	COURSE NAME	CORE COURSE XV - NETWORKING

CO Number	CO Statement
CO1	Independently understand basic computer network technology
CO2	Understand and explain Data Communications System and its components
CO3	Identify the different types of network topologies and protocols
CO4	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer
CO5	Identify the different types of network devices and their functions within a network

MAJOR BASED ELECTIVE II

PAPE	MB	COURSE	21UCS6M2	COURSE	MAJOR BASED

PAPER	EII	CODE	A	NAME	ELECTIVE II– DIGITAL COMPUTER FUNDAMENTALS & MICROPROCESSOR

CO Number	CO Statement
CO1	Analyzing problems, and designing and implementing algorithmic solutions.
CO2	Solving problems properly, achieving an implementation that is correct,effective and efficient
CO3	Using computers at user level, including operative systems and programming environments
CO4	Knowledge of computer equipment, including both hardware and software
CO5	Identifying information needs to solve problems, recovering informationand applying it to the resolution

MAJOR BASED ELECTIVE II

PAPER	MBE - II	COURSE CODE	21UCS6M2 B	COURSE NAME	MAJOR BASED ELECTIVE II–DOTNET CONCEPTS

CO Number	CO Statement
CO1	Understand the ASP.NET Runtime Environment and ASP.NET page structure.
CO2	Design web application with variety of controls
CO3	Access the data using inbuilt data access tools
CO4	Use Microsoft ADO.NET to access data in web Application & Configureand deploy Web Application
CO5	Develop secured web application & understands the ASP.NET security

MAJOR BASED ELECTIVE II

PAPER	MBE -II	COURSE CODE	21UCS6M2C	COURSE NAME	MAJOR BASED ELECTIVE II -LINUX ADMINISTRATION

CO Number	CO Statement
CO1	Understand the basic set of commands and editors in Linux operating system.
CO2	Discuss file systems in Linux operating system
CO3	Demonstrate the role and responsibilities of a Linux system administrator
CO4	Understand the network administration of TCP/IP protocol
CO5	Using the Internet in Linux operating system

MAJOR BASED ELECTIVE III

PAPER	MBE -III	COURSECODE	21UCS6M3P1	COURSE NAME	MAJOR BASED ELECTIVE III - LINUX LAB

CO Number	CO Statement
CO1	Understand the basic commands of Linux operating system and can writeshell scripts.
CO2	Create file systems and directories and operate them
CO3	Create processes background and fore ground etc.. by fork() system calls

MAJOR BASED ELECTIVE III

PAPER	MBE -III	COURSECODE	21UCS6M3P2	COURSE NAME	MAJOR BASED ELECTIVE III– MULTIMEDIA LAB

CO Number	CO Statement
CO1	Achieve a basic understanding of multimedia systems. With such background equipment, students would be able to evaluate more advancedor future multimedia systems

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

NON MAJOR ELECTIVE I

PAPER	NME -I	COURSECODE	21UCS3N1C	COURSE NAME	NON MAJOR ELECTIVE 1- OFFICE AUTOMATION

CO Number	CO Statement
CO1	Understand basic components of computer and devices
CO2	Able to perform documentation
CO3	Able to perform accounting operations
CO4	Able to perform presentation skills
CO5	Apply the knowledge on various subjects

NON MAJOR ELECTIVE II

PAPER	NME - II	COURSECODE	21UCS4N2A	COURSE NAME	NON MAJOR ELECTIVE II - RECENT TRENDS IN ENTERPRISE INFORMATION TECHNOLOGY

CO Number	CO Statement
CO1	Apply the knowledge of mathematics, science, engineering fundamentalsand an engineering specialization
CO2	Identity, formulates, review research literature, and analyze complex engineering problems reaching substantiated conclusions
CO3	Create, select and apply appropriate techniques, resources, and modern engineering and IT tools
CO4	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
CO5	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**NME -II**	**COURSE CODE**	**21UCS4N2C**	**COURSE NAME**	**NON MAJOR ELECTIVE II - WORKING PRINCIPLES OF INTERNET**

CO Number	CO Statement
CO1	Distinguish, identify and relate between the principal layers of a complex communication system
CO2	Have the skills required to install, administer and manage a Local Area Network (LAN) and be able to network that LAN to other network segments over wide area links
CO3	Communicate effectively with associates in written, oral or schematic form
CO4	Know and be able to apply basic management principles such as project and time management, break-even analysis, planning and control
CO5	Schedule or supervise telecommunications projects and follow up with written reports in accordance with established formats and procedures

SKILL BASED ELECTIVE I

PAPER	**SBE - I**	**COURSE CODE**	**21UCS5S1A**	**COURSE NAME**	**SKILL BASED ELECTIVE I – PAGE MAKER**

CO Number	CO Statement
CO1	Basic features of page maker
CO2	Work with various tools
CO3	Work with platters and various templates
CO4	Positioning ruler, typing text, basic formatting
CO5	Work with various graphics, positioning, and logo

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SKILL BASED ELECTIVE I

PAPER	SBE - I	COURSE CODE	21UCS5S1B	COURSE NAME	SKILL BASED ELECTIVE I – CORELDRAW

CO Number	CO Statement
CO1	Various page setup concepts
CO2	Use of various tools
CO3	Set up drawing pages using ruler, grid and gridlines
CO4	Drawing and shaping object, drawing lines, curves, dimension Lines
CO5	Work with style & templates

SKILL BASED ELECTIVE I

PAPER	SBE -I	COURSE CODE	21UCS5S1C	COURSE NAME	SKILL BASED ELECTIVE I – FLASH

CO Number	CO Statement
CO1	Understand the basic concepts of Flash
CO2	Utilize several Flash tools and tactics
CO3	Produce an interactive Flash based website
CO4	Demonstrate the ability to effectively utilize the timeline
CO5	Produce animation motion tween affects

SKILL BASED ELECTIVE II

PAPER	SBE - II	COURSE CODE	21UCS5S2A	COURSE NAME	SKILL BASED ELECTIVE II – DREAM WEAVER

CO Number	CO Statement
CO1	Understand the concepts of Dreamweaver
CO2	Utilize several Flash tools and tactics
CO3	Use critical thinking skills to design and create basic web sites
CO4	Use Adobe Dreamweaver and a stand-alone FTP program to upload filesto a web server
CO5	Use critical thinking skills to design and create a multi-page website

SKILL BASED ELECTIVE II

PAPER	SBE-II	COURSE CODE	21UCS5S2B	COURSE NAME	SKILL BASED ELECTIVE II – ILLUSTRATOR

CO Number	CO Statement
CO1	Understand the fundamental concepts of Illustrator
CO2	Apply critical thinking skills to solve visual problems using Adobe Illustrator CS6
CO3	Demonstrate knowledge of Adobe Illustrator by selecting and applying appropriate tools to complete a variety of specific graphic design exercises
CO4	Demonstrate knowledge of specific technical issues relative to the of vector files including resolution, prep for internet use, convert to bitmap,and output (print issues)
CO5	Demonstrate knowledge of how Adobe Illustrator is used by designers fora variety of production processes including WEB, Multimedia and Print

SKILL BASED ELECTIVE II

PAPER	SBE - II	COURSE CODE	21UCS5S2C	COURSE NAME	SKILL BASED ELECTIVE II – INDESIGN

CO Number	CO Statement
CO1	Describe what Adobe InDesign is and how it can be used
CO2	Demonstrate creating and viewing documents
CO3	Navigate their workspace
CO4	Demonstrate page creation and working with type
CO5	Demonstrate working with graphics and formatting objects

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PROGRAMMENAME(UG)	**BCom CA (BACHELOROFCOMMERCE COMPUTER APPLICATION)**

COURSE CODE: 21UCOA1C1 COURSE NAME : PRINCIPLES OF ACCOUNTANCY	
CO NUMBER	**CO STATEMENT**
CO1	Understand the Basics Of Accounting.
CO2	Identify the Rules of Debit and Credit
CO3	Distinguish the Posting of Journal Entries to the Ledger.
CO4	Preparation of Ledger and its Subdivisions.
CO5	Recognize the Summary of Accounting Entries.

SE CODE: 21UCOA1C2 COURSE NAME : COMPUTER FUNDAMENTALS & OFFICE AUTOMATION	
CO NUMBER	**CO STATEMENT**
CO1	Understand Computer Fundamentals – hardware and Software
CO2	Understand computer networks o Study Office automation tools
CO3	Email and search engines
CO4	Basic Programming Concepts o Introduction to programming inPython

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA1A1	**COURSE NAME : BUSINESS ECONOMICS**
CO NUMBER	**CO STATEMENT**
CO1	**To understand the concepts of cost, nature of production and its relationship to Business operations.**
CO2	**To apply marginal analysis to the "firm" under different market conditions.**
CO3	**To analyse the causes and consequences of different market conditions.**
CO4	**To integrate the concept of price and output decisions of firms under various market structure.**
CO5	**To analyze the national income, concepts and measure the national income.**

COURSE CODE: 21UCOA1A2	**COURSE NAME : OFFICEMANAGEMENT**
CO NUMBER	**CO STATEMENT**
CO1	To make them understand office management and duties of an office manager
CO2	To give an idea about proper filing and indexing of office documents
CO3	To understand the principles of record management and different types of records in Business organisation
CO4	To enable them to aware about safety hazardous and steps to improve office safety.
CO5	To introduce different measures of office work

COURSE CODE: 21UCOA2C3 COURSE NAME : BUSINESS TOOLS FOR DECISIONMAKING	
CO NUMBER NT	
CO1	To familiarizes the concept of statistics
CO2	To provide practical exposure on calculation of measures of average
CO3	To provide practical exposure on calculation of measures of correlation and Irrigation.
CO4	To introduce the students about the concept of provability
CO5	To provide practical exposure on calculation of trend analysis

COURSE CODE: 21UCOA2C4 COURSE NAME : INFORMATION SECURITY	
CO NUMBER	**CO STATEMENT**
CO1	Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer
CO2	Networks in an Organization.

COURSE CODE: 21UCOA3C5	**COURSE NAME : BUSINESS ACCOUNTING**
CO NUMBER	**ENT**
CO1	To familiarize the concept of Branch account and its system
CO2	To understand the Scope of departmental accounting
CO3	To introduce the system of Hire Purchasing
CO4	To enable the students to understand royalty account and insolvency accounts.
COURSE CODE: 21UCOA3C6T & 21UCOA3C6P COURSE NAME : PROGRAMMING IN C (WITH PRACTICAL)	
CO NUMBER	**CO STATEMENT**
CO1	Demonstrate an understanding of C computer programming language concepts.
CO2	Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and theirusage

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA3A4 COURSE NAME : BUSINESS COMMUNICATION

CO NUMBER	CO STATEMENT
CO1	Upon completion of the course, students are able to demonstrate agood understandingof effective business writing and effective business communications
CO2	Students can able developing and delivering effective presentations
CO3	To understand effective interpersonal communications skills thatmaximise team effectiveness.

COURSE CODE: 21UCOA3A5 COURSE NAME : E-COMMERCE

CO NUMBER	CO STATEMENT
CO1	Analyze the impact of E
CO2	Describe the major types of E
CO3	Explain the process that should be followed in building an E
CO4	Identify the key security threats in the E
CO5	Describe how procurement and supply chains relate to B2B E

COURSE CODE: 21UCOA3N1A COURSE NAME : PRINCIPLES OF MARKETING	
CO NUMBER	**CO STATEMENT**
CO1	Define the marketing concepts and list out the functions of marketing.
CO2	Explain the product planning and policies and demonstrate the market segmentation.
CO3	Interpret the various pricing policies followed by the organizations.
CO4	Selection of media for Advertisement and also analyze the role of salesman in promotion
CO5	Compare the various channels of distribution

COURSE CODE: 21UCOA3N1B COURSE NAME : PRINCIPLES OF MANAGEMENT	
O NUMBER	**CO STATEMENT**
CO1	To understand the basic knowledge on Principles of management
CO2	To understand the planning process in the organization
CO3	To understand the concept of organization
CO4	Demonstrate the ability to directing, leadership and communicate effectively
CO5	To analysis isolate issues and formulate best control methods.

COURSE CODE: 21UCOA3N1C COURSE NAME : INTRODUCTION TO BANKING	
CO NUMBER	**CO STATEMENT**
CO1	Understand the evolution of banks
CO2	Understand the role of RBI
CO3	Understand the idea of credit creation
CO4	To study the reforms in banking

COURSE CODE: 21UCOA4C7 COURSE NAME : COST ACCOUNTING	
CO NUMBER	**CO STATEMENT**
CO1	Aimed to familiarize the concept of cost accounting
CO2	Helps to gather knowledge on preparation of cost sheet in its practical point of view
CO3	To facilitate the idea and meaning of material control with pricing methods
CO4	Develop the knowledge about remuneration and incentives
CO5	To introduce the concept of overhead cost

COURSECODE: 21UCOA4C8T & 21UCOA4C8P COURSE NAME : PROGRAMMING IN C++ (WITH PRACTICAL)	
CO NUMBER	**CO STATEMENT**
CO1	To understand how C++ improves C with object-oriented features.
CO2	To learn how to write inline functions for efficiency and performance.

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA4A6 COURSE NAME: BANK MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To understand the concepts of application of technology inbanking sector
CO2	To learn the role of technology in banking sector
CO3	To disseminate knowledge among the students inculcate withtheoretical structures about banking and insurance.
CO4	To train and equip the students with the skills of modern bankingis run

COURSE CODE: 21UCOA4N2A COURSE NAME : FOUNDAMENTALSOFACCOUNTING	
CO NUMBER	**CO STATEMENT**
CO1	Understand the basics of Accounting.
CO2	Distinguish the different concepts and Conventions of Accounting
CO3	Provide Knowledge on Double Entry System of Book Keeping.
CO4	Identify the rules of Debit and Credit
CO5	Understand the preparation of Journal.

COURSE CODE: 21UCOA4N2B COURSE NAME : ORGANISATIONAL BEHAVIOUR	
CO NUMBER	**CO STATEMENT**
CO1	To equip the students with the basic idea and introduction on organizational
CO2	Behavior as a concept
CO3	To give a light on the concept and difference theories on motivation
CO4	To introduce the concept of leadership
CO5	Understand the concept of conflict management

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA4N2C COURSE NAME : CONSUMER BEHAVIOUR

CO NUMBER	CO STATEMENT
CO1	Explain the fundamental concepts of consumer behavior
CO2	Discuss the concepts of consumer decision making process
CO3	Analyze the psychological influences on consumer decision making process
CO4	Evaluate the sociological influences in consumer behavior
CO5	Describe the new diffusion of innovation in consumer behavior

COURSE CODE: 21UCOA5C9 COURSE NAME : COMPANY ACCOUNTING

CO NUMBER	CO STATEMENT
CO1	Enabling the students to understand the features of Shares and Debentures
CO2	Develop an understanding about redemption of Shares and Debenture and its Types.
CO3	To give an exposure to the company final accounts
CO4	To provide knowledge on Goodwill
CO5	Students can get an idea about internal reconstruction

COURSE CODE: 21UCOA5C10 COURSE NAME : AUDITING

CO NUMBER	CO STATEMENT
CO1	To understand the concept of auditing
CO2	Difference between accounting and auditing
CO3	To understand the concept of audit planning and audit evidence
CO4	To get an awareness on internal control measures

COURSE CODE: 21UCOA5C11T & 21UCOA5C11P COURSE NAME : MULTIMEDIA(WITH PRACTICAL)	
CO NUMBER	**CO STATEMENT**
CO1	Demonstrate the use of layers to effectively manipulate an image.
CO2	Demonstrate an ability to use a range of tools and filters in Photoshop.
CO3	Acquire the knowledge on animation.

: 21UCOA5C12T & 21UCOA5C12P COURSE NAME : DATABASEMANAGEMENT SYSTEM (WITH PRACTICL)	
CO NUMBER	**CO STATEMENT**
CO1	Be familiar with basic database storage structures and access techniques.
CO2	Master the basic concepts and appreciate the applications of database systems.

COURSE CODE: 21UCOA5M1A COURSE NAME : HUMAN RESOURCEMANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To aiming to enable the students in Human Resources Management
CO2	To introduce the students about placement and training
CO3	To facilitate the knowledge about performance appraisal and different methods
CO4	To provide an idea about different compensation policies

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA5M1B COURSE NAME : RETAIL MARKETING

CO NUMBER	ENT
CO1	To apply the principles, practices, and concepts used in retail marketing management.
CO2	To describe the complex nature and environment of retail marketing management together with the buying and selling ofgoods, services, andideas to the final consumer.
CO3	To understand the conceptual and organizational aspects of theretail sector,including strategic planning and management in the retail industry.
CO4	To understand the key elem ents in planning, managing, and executing the retail marketing mix as they relate to the product,price, distribution,and promotion.
CO5	ntify the approaches to and guidelines used to analyze andsolve retailers' problems and make decisions in retail organizations.

SE NAME : COMPUTER FUNDAMENTALS & OFFICEAUTOMATION

CO NUMBER	CO STATEMENT
CO1	Understand Computer Fundamentals – hardware and Software
CO2	Understand computer networks o Study Office automation tools
CO3	Email and search engines
CO4	Basic Programming Concepts o Introduction to programming inPython

	DHANALAKSHMI SRINIVASAN COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS) Affiliated to Bharathidasan University, Tiruchirappalli (Nationally Re-Accredited with 'A' Grade by NAAC) Perambalur – 621212	
NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA1A1	**COURSE NAME : BUSINESS ECONOMICS**
CO NUMBER	**CO STATEMENT**
CO1	To understand the concepts of cost, nature of production and its relationship to Business operations.
CO2	To apply marginal analysis to the "firm" under different market conditions.
CO3	To analyse the causes and consequences of different market conditions.
CO4	To integrate the concept of price and output decisions of firms under various market structure.
CO5	To analyze the national income, concepts and measure the national income.

COURSE CODE: 21UCOA1A2	**COURSE NAME : OFFICE MANAGEMENT**
CO NUMBER	**CO STATEMENT**
CO1	To make them understand office management and duties of an office manager
CO2	To give an idea about proper filing and indexing of office documents
CO3	To understand the principles of record management and different types of records in Business organisation
CO4	To enable them to aware about safety hazardous and steps to improve office safety.
CO5	To introduce different measures of office work

RSE NAME : BUSINESS TOOLS FOR DECISIONMAKING	
CO NUMBER	**CO STATEMENT**
CO1	To familiarizes the concept of statistics
CO2	To provide practical exposure on calculation of measures of average
CO3	To provide practical exposure on calculation of measures of correlation and Irrigation.
CO4	To introduce the students about the concept of provability
CO5	To provide practical exposure on calculation of trend analysis

COURSE CODE: 21UCOA2C4	**COURSE NAME : INFORMATION SECURITY**
CO NUMBER	**CO STATEMENT**
CO1	Exhibit knowledge to secure corrupted systems, protect personal data, and secure computer
CO2	Networks in an Organization.

COURSE CODE: 21UCOA3C5	**COURSE NAME : BUSINESS ACCOUNTING**
CO NUMBER	**CO STATEMENT**
CO1	To familiarize the concept of Branch account and its system
CO2	To understand the Scope of departmental accounting
CO3	To introduce the system of Hire Purchasing
CO4	To enable the students to understand royalty account and insolvency accounts.

C6T & 21UCOA3C6P COURSE NAME : **PROGRAMMINGIN C (WITH PRACTICAL)**	
CO NUMBER	**CO STATEMENT**
CO1	Demonstrate an understanding of C computer programming language concepts.
CO2	Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and theirusage

cOURSE CODE: 21UCOA3A4 COURSE NAME : BUSINESS COMMUNICATION	
CO NUMBER	**CO STATEMENT**
CO1	Upon completion of the course, students are able to demonstrate agood understandingof effective business writing and effective business communications
CO2	Students can able developing and delivering effective presentations
CO3	To understand effective interpersonal communications skills thatmaximise team effectiveness.

COURSE CODE: 21UCOA3A5 COURSE NAME : E-COMMERCE	
CO NUMBER	**CO STATEMENT**
CO1	Analyze the impact of E
CO2	Describe the major types of E
CO3	Explain the process that should be followed in building an E
CO4	Identify the key security threats in the E
CO5	Describe how procurement and supply chains relate to B2B E

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA3N1A COURSE NAME : PRINCIPLES OF MARKETING	
CO NUMBER	**CO STATEMENT**
CO1	Define the marketing concepts and list out the functions of marketing.
CO2	Explain the product planning and policies and demonstrate the market segmentation.
CO3	Interpret the various pricing policies followed by the organizations.
CO4	Selection of media for Advertisement and also analyze the role of salesman in promotion
CO5	Compare the various channels of distribution

COURSE CODE: 21UCOA3N1B COURSE NAME : PRINCIPLES OFMANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To understand the basic knowledge on Principles of management
CO2	To understand the planning process in the organization
CO3	To understand the concept of organization
CO4	Demonstrate the ability to directing, leadership and communicate effectively
CO5	To analysis isolate issues and formulate best control methods.

COURSE Code: 21UCOA3N1C COURSE NAME : INTRODUCTION TO BANKING	
CO NUMBER	**CO STATEMENT**
CO1	Understand the evolution of banks
CO2	Understand the role of RBI
CO3	Understand the idea of credit creation
CO4	To study the reforms in banking

COURSE CODE: 21UCOA4C7	**COURSE NAME : COST ACCOUNTING**
CO NUMBER	**CO STATEMENT**
CO1	Aimed to familiarize the concept of cost accounting
CO2	Helps to gather knowledge on preparation of cost sheet in its practical point of view
CO3	To facilitate the idea and meaning of material control with pricing methods
CO4	Develop the knowledge about remuneration and incentives
CO5	To introduce the concept of overhead cost

COURSECODE: 21UCOA4C8T & 21UCOA4C8P COURSE NAME : PROGRAMMING IN C++ (WITH PRACTICAL)	
CO NUMBER	**CO STATEMENT**
CO1	To understand how C++ improves C with object-oriented features.
CO2	To learn how to write inline functions for efficiency and performance.

COURSE CODE: 21UCOA4A6	**COURSE NAME : BANK MANAGEMENT**
CO NUMBER	**CO STATEMENT**
CO1	To understand the concepts of application of technology inbanking sector
CO2	To learn the role of technology in banking sector
CO3	To disseminate knowledge among the students inculcate withtheoretical structures about banking and insurance.
CO4	To train and equip the students with the skills of modern bankingis run

N2A COURSE NAME : FOUNDAMENTALS OFACCOUNTING	
CO NUMBER	**CO STATEMENT**
CO1	Understand the basics of Accounting.
CO2	Distinguish the different concepts and Conventions of Accounting
CO3	Provide Knowledge on Double Entry System of Book Keeping.
CO4	Identify the rules of Debit and Credit
CO5	Understand the preparation of Journal.

COURSE CODE: 21UCOA4N2B COURSE NAME : ORGANISATIONAL BEHAVIOUR	
CO NUMBER	**CO STATEMENT**
CO1	To equip the students with the basic idea and introduction on organizational
CO2	Behavior as a concept
CO3	To give a light on the concept and difference theories on motivation
CO4	To introduce the concept of leadership
CO5	Understand the concept of conflict management

COURSE Code: 21UCOA4N2C COURSE NAME : CONSUMER BEHAVIOUR	
CO NUMBER	**CO STATEMENT**
CO1	Explain the fundamental concepts of consumer behavior
CO2	Discuss the concepts of consumer decision making process
CO3	Analyze the psychological influences on consumer decision making process
CO4	Evaluate the sociological influences in consumer behavior
CO5	Describe the new diffusion of innovation in consumer behavior

COURSE CODE: 21UCOA5C9 COURSE NAME : COMPANY ACCOUNTING	
CO NUMBER	**CO STATEMENT**
CO1	Enabling the students to understand the features of Shares and Debentures
CO2	Develop an understanding about redemption of Shares and Debenture and its Types.
CO3	To give an exposure to the company final accounts
CO4	To provide knowledge on Goodwill
CO5	Students can get an idea about internal reconstruction

COURSE CODE: 21UCOA5C10 COURSE NAME : AUDITING	
CO NUMBER	**CO STATEMENT**
CO1	To understand the concept of auditing
CO2	Difference between accounting and auditing
CO3	To understand the concept of audit planning and audit evidence
CO4	To get an awareness on internal control measures

COURSE **Code: 21UCOA5C11T & 21UCOA5C11P** COURSE NAME : **MULTIMEDIA (WITH PRACTICAL)**	
CO NUMBER	**CO STATEMENT**
CO1	Demonstrate the use of layers to effectively manipulate an image.
CO2	Demonstrate an ability to use a range of tools and filters in Photoshop.
CO3	Acquire the knowledge on animation.

COURSE CODE: 21UCOA5C12T & 21UCOA5C12P COURSE NAME : DATABASE MANAGEMENT SYSTEM(WITH PRACTICL)	
CO NUMBER	**CO STATEMENT**
CO1	Be familiar with basic database storage structures and access techniques.
CO2	Master the basic concepts and appreciate the applications of database systems.

COURSE CODE: 21UCOA5M1A COURSE NAME : HUMAN RESOURCE MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To aiming to enable the students in Human Resources Management
CO2	To introduce the students about placement and training
CO3	To facilitate the knowledge about performance appraisal and different methods
CO4	To provide an idea about different compensation policies

COURSE CODE: 21UCOA5M1B COURSE NAME : RETAIL MARKETING	
CO NUMBER	**CO STATEMENT**
CO1	To apply the principles, practices, and concepts used in retail marketing management.
CO2	To describe the complex nature and environment of retail marketing management together with the buying and selling ofgoods, services, andideas to the final consumer.
CO3	To understand the conceptual and organizational aspects of theretail sector,including strategic planning and management in the retail industry.
CO4	To understand the key elements in planning, managing, and executing the retail marketing mix as they relate to the product,price, distribution,and promotion.
CO5	entify the approaches to and guidelines used to analyze andsolve retailers' problems and make decisions in retail organizations.

COURSE CODE:21UCOA5M1C COURSE NAME : INVESTMENT MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To provide an idea about investments and its various alternatives
CO2	To enable the students to understand Shares and Debentures
CO3	To create an awareness regarding investment Risk and return
CO4	To make them understand about securities analysis and management
CO5	To provide knowledge about portfolio investment and various theories in Portfolio management

COURSE CODE:21UCOA5S1A	**COURSE NAME : INSURANCE MANAGEMENT**
CO NUMBER	**CO STATEMENT**
CO1	Familiarize students about the terms, and concepts of insurance
CO2	Awareness about life insurance policy and its types
CO3	Familiarize Policy conditions and clauses of fire insurance.
CO4	Understanding the perils which are covered under marine insurance..
CO5	Awareness about IRDA rules for accounting in insurance

COURSE CODE:21UCOA5S1B	**COURSE NAME : SERVICES MARKETING**
CO NUMBER	**CO STATEMENT**
CO1	Understand the basic concepts of service
CO2	Deals with Concept like marketing mix in service marketing
CO3	Understand the terms segmentation, positioning, , differentiation and retention strategies applicable to service marketing
CO4	Explanation regarding marketing of services in financial services is possible
CO5	Explanation regarding marketing of services in health is possible

COURSE CODE:21UCOA5S1C COURSE NAME : INTERNET	
CO NUMBER	**CO STATEMENT**
CO1	To able to understand the application areas of IOT ·
CO2	To able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks ·
CO3	To able to understand the mail, voice mail.

COURSE CODE:21UCOA5S2A COURSE NAME : ADVERTISING MANAGEMENT	
CO NUMBER	**ENT**
CO1	Understand the meaning of advertising.
CO2	Understand the methods to develop an advertising programme.
CO3	Describe advertisement appeal, media planning and strategy.
CO4	Identify the methods of selecting advertisement media.
CO5	Identify the social, economic and legal aspects of advertisement.

COURSE CODE:21UCOA5S2B COURSE NAME : SALES MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	Explain the basic principles of sales management;
CO2	Demonstrate an understanding of the role of the sales force as a part of the marketing mix;
CO3	Apply in a competent manner sales management tools such as sales forecasting, salescompensation methods, sales budgeting, sales reports, routings, quotas, sales analysis,and evaluation of performance by means of a team project that creates a sales force plan.
CO4	Understand the role of the function of sales management in the corporate structure.
CO5	Explain the basic principles of sales management;

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE:21UCOA5S2C COURSE NAME : RETAIL MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	Analyze retailing problems, factors, issues and challenges at global market level.
CO2	Evaluate traditional retail formats
CO3	Classify modern retail formats in current scenario
CO4	Discuss the retail strategic planning, location, factors and planning policies
CO5	Describe the retail marketing strategy, store loyalty, franchising and CRM.

COURSE CODE: 21UCOA6C13 COURSE NAME : FINANCIAL MANAGEMENT	
CO NUMBER	**CO STATEMENT**
CO1	To provide introduction to Financial Management
CO2	To create an awareness about capital structure and theories of capital structure
CO3	To make them understand the cost of capital in wide aspects
CO4	To provide knowledge about dividend policies and various dividend models.
CO5	To enable them to understand working capital management

URSE NAME : INCOME TAX THEORY, LAW &PRACTICE	
CO NUMBER	**CO STATEMENT**
CO1	To introduce the basic concept of Income Tax
CO2	In order to familiarize the different know-how and heads of income with its components
CO3	It helps to build an idea about income from house property as a concept
CO4	It give more idea about the income from business or profession
CO5	Make the students familiarizes with the concept of depreciation and its provisions

COURSE CODE: 21UCOA6C15T& 21UCOA6C15P COURSE NAME : COMPUTERISED ACCOUNTING (WITH PRACTICAL)	
CO NUMBER	**CO STATEMENT**
CO1	To introduce the students about basics of MS-Office
CO2	To provide practical knowledge exposure to MS- Word
CO3	To provide practical knowledge exposure MS-Excel
CO4	To introduce the practical knowledge about tally.

COURSE CODE: 21UCOA6M2A COURSE NAME : GOODS AND SERVICES TAX	
CO NUMBER	**CO STATEMENT**
CO1	Understand the concept of GST, CGST, SGST
CO2	To make an awareness on the procedure of tax collection
CO3	Understand the levy of tax on different assesses
CO4	To understand the registration process
CO5	To determine the type of assessments

COURSE CODE: 21UCOA6M2B COURSE NAME : BUSINESSENVIRONMENT

CO NUMBER	CO STATEMENT
CO1	Evaluate Concepts of business environment.
CO2	Evaluate Concepts of economic factors that influence the economic environment.
CO3	Determine Political stability and the policies of the government.
CO4	Appraise the social and cultural environment of the business.
CO5	Appraise philosophies of global approaches to managing a business successfully in a global environment.

COURSE CODE: 21UCOA6M2C COURSE NAME : E-BANKING

CO NUMBER	CO STATEMENT
CO1	Explain electronic banking and commerce and what goes into electronic banking and commerce
CO2	Explain the fundamental changes in banking and financial markets as financial institutions and brokers have extended to electronicplatform.
CO3	Apply cash management, decision-making, and controlling techniques in an electronic interface.

COURSE CODE: 21UCOA6M3A COURSE NAME : FINANCIAL SERVICE IN INDIA

CO NUMBER	CO STATEMENT	KNOWLEDGE LEVEL
CO1	To give an idea about fundamentals of financial services and players in financial sectors	K2
CO2	To create awareness about merchant banking, issue management, capital markets and role of SEBI	K3
CO3	To provide knowledge about leasing and hire purchase concepts	K3
CO4	To make them understand about different types of insurance and IRDA Act.	K2

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

COURSE CODE: 21UCOA6M3B COURSE NAME : FINANCIAL MARKETING OPERATION		
CO NUMBER	**CO STATEMENT**	**KNOWLEDGE LEVEL**
CO1	Understand the role and function of the financial system in reference to the macro economy.	K2
CO2	Demonstrate an awareness of the current structure and regulation of the Indian financial services sector	K2
CO3	Evaluate and create strategies to promote financial products and services.	K2

COURSE CODE: 21UCOA6M3C COURSE NAME : INDIAN BANKING SYSTEM	
CO NUMBER	**CO STATEMENT**
CO1	Understand the Origin and the growth of the Indian Banking System.
CO2	Remember broad functions of RBI.
CO3	Analyze the functions of e-service in Modern Banking.
CO4	Classify the different types of Bank Accounts.
CO5	To Understand the concept and banking regulation act.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PROGRAMME NAME (UG)	**B Com (BACHELOR OFCOMMERCE)**

SEMESTER I

PART III - CORE -

PAPER	**I**	**COURSE CODE**	**21UCO1C1**	**COURSE NAME**	**PRINCIPLES OF ACCOUNTING**

CO1	Understand the Basics of Accounting.
CO2	Identify the Rules of Debit and Credit
CO3	Distinguish the Posting of Journal Entries to the Ledger.
CO4	Preparation of Ledger and its Subdivisions.
CO5	Recognize the Summary of Accounting Entries.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**M**	**S**
CO4	**S**	**M**	**S**	**S**	**S**
CO5	**M**	**S**	**L**	**S**	**M**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PROGRAMME NAME (UG)	**B.Sc., MB (BACHELOR OF SCIENCEIN MICROBIOLOGY**

PROGRAMME OUTCOMES

1. Enable students to acquire expertise in the use and application of various methods used in microbiology
2. Provide learning opportunity to be reflective about their role as are searcher
3. Handle and independently work on lab protocols involving molecular techniques
4. Awareness of ethical issues in Microbiology research and career options.
5. Production of substantial original research of significance and quality sufficient for publications. The course is reasoning and application based, making the students eligible for higher studies, jobs in various sectors and Entrepreneurship abilities. Applied papers are advanced, making the students updated in the field. More number of practical is there in the course making the students well worse with the subject.

SEMESTER I

PART III - C O R E COURSE- THEORY /

PAPER	**I**	**COURSE CODE**	**21UMB1C1**	**COURSE NAME**	**FUNDAMENTALS OF MICROBIOLOGY**

CO 1	Understand the contributions of eminent scientists in the development of microbiology
CO 2	Understand the Grouping and Classification of Bacteria
CO 3	Understand working and mechanism of different equipments and tools used in microbiology
CO 4	Understand the ultra structure of bacterial cell
CO 5	Understand the Classification of Fungi and Cyanobatceria

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**21UMB1C2P**	**COURSE NAME**	**PRACTICAL –I FUNDAMENTALS OFMICROBIOLOGY**

CO 1	Recall the safety practice in microbiological laboratory
CO 2	Explain the ubiquitous nature of microorganisms
CO 3	Prepare various culture media, cleaning of glasswares and sterilization of media
CO 4	Understand the Morphology of Microorganisms
CO 5	Compute various pure culture techniques

SEMESTER II

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**III**	**COURSE CODE**	**21UMB2C3**	**COURSE NAME**	**MICROBIAL PHYSIOLOGY**

CO 1	State the Nutritional requirements of microorganisms
CO 2	Explain the microbiological media
CO 3	Describe the Metabolic pathway
CO 4	Illustrate the microbial growth
CO 5	Compute the view of Survival of Bacteria under Starvation

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**IV**	**COURSE CODE**	**21UMB2C4P**	**COURSE NAME**	**PRACTICAL – II MICROBIAL PHYSIOLOGY**

CO 1	Understand and analyses Growth curve and generation time
CO 2	Understand Physiological Characteristics of microbes
CO 3	Outline the Effect of high salt concentration
CO 4	Understand the hydrolysis process
CO 5	Outline the spore staining

SEMESTER III

PART III - CORE COURSE- THEORY / PRACTICAL

PAPER	**IV**	**COURSE CODE**	**21UMB3C5**	**COURSE NAME**	**IMMUNOLOGY AND IMMUNOTECHNOLOGY**

CO 1	Understand the history and types of immunity
CO 2	Demonstrate the various antigen-antibody techniques.
CO 3	Explain the knowledge about hypersensitivity reactions
CO 4	Demonstrate the Preparation and Purification of antigens
CO 5	Explain Immunotechniques and its applications

PAPER	VI	COURSE CODE	21UMB3C6P	COURSE NAME	PRACTICAL-III: IMMUNOLOGY AND IMMUNOTECHNOLOGY

CO 1	Perform ABO blood grouping
CO 2	Understand the Tube agglutination
CO 3	Understand the Differential staining
CO 4	Perform immune electrophoresis.
CO 5	Detection of HCG by Dot ELISA

PART IV – NON MAJOR ELECTIVE I - THEORY

PAPER	A	COURSE CODE	21UMB3NA	COURSE NAME	VERMI CULTURE

CO 1	Know the scope and breeding techniques
CO 2	Understand the Taxonomic position and Endogeneic species
CO 3	Outline the Applications of Vermiculture
CO 4	Know Quality control, market research, marketing techniques
CO 5	Understand the Potentials and constraints for vermiculture

PAPER	B	COURSE CODE	21UMB3N1B	COURSE NAME	MUSHROOM TECHNOLOGY

CO 1	Differentiate edible and Poisonous mushrooms
CO 2	Create an nutrient profile of mushroom
CO 3	Examine cultivation system of mushroom
CO 4	Formulation of mushroom food preparation
CO 5	Determine health benefits of mushroom

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	C	COURSE CODE	21UMB3NC	COURSE NAME	BIOFERTILIZER TECHNOLOGY

CO 1	Explain Soil Environment
CO 2	Create Knowledge about Phosphate solubilization and study the mass cultivation methods
CO 3	Analyze Non- Symbiotic Biofertilizers and study the mass cultivation methods, SymbioticBiofertilizers and study the mass cultivation
CO 4	methods
CO 5	Expand view of Major plant disease

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	VII	COURSE CODE	21UMB4C7	COURSE NAME	CLINICAL MICROBIOLOGY
CO 1	Describe and Classify the various pathogens and its Characterization.				
CO 2	Measures for prevention of epidemics				
CO 3	Diagnose the various bacterial pathogens				
CO 4	Analyze various human viral diseases				
CO 5	Evaluate and compare the various fungal infections and protozoan diseases				

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**VIII**	**COURSE CODE**	**21UMB4C8P**	**COURSE NAME**	**PRACTICAL PERTAINING CLINICAL MICROBIOLOGY**

CO 1	Isolation of pathogen
CO 2	Detection of Hbs antigen
CO 3	Perform the Cogulase test
CO 4	Examine the Fungal dermatitis
CO 5	Examine the Germ tube test

PART IV – NON MAJOR ELECTIVE-II - THEORY

PAPER	**A**	**COURSE CODE**	**21UMB4N2A**	**COURSE NAME**	**MICROBIAL METABOLITES**

CO 1	Understand the Microbes metabolites and industrial production
CO 2	Explain the Microbes in Food Processing
CO 3	Role of probiotics
CO 4	Understand the Eco Microbiology
CO 5	Design of bioreactor

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**B**	**COURSE CODE**	**21UMB4N2B**	**COURSE NAME**	**SOCIAL AND PREVENTIVE MEDICINE**

CO 1	Understand and determinants of health
CO 2	Outline the Epidemiology and sources of epidemiological data
CO 3	Know the Important Epidemiological Outbreaks
CO 4	Understand the Pathogenesis and Treatment of some bacteria
CO 5	Understand the Bioethics and Medical ethics

PAPER	**C**	**COURSE CODE**	**21UMB4N2C**	**COURSE NAME**	**MICROBIAL NUTRITION**

CO 1	Understand the Nutritional types
CO 2	Know the Media type and Preservation Components
CO 3	Understand the Measurement of cell mass and cell number; Factors affecting microbial growth
CO 4	Outline the Chemical factors
CO 5	Understand the microbial photosynthesis

SEMESTER V

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	**IX**	**COURSE CODE**	**21UMB5C9**	**COURSE NAME**	**AGRICULTURAL AND ENVIRONMENTAL MICROBIOLOGY**

CO 1	Define the basic view of soil Microorganisms
CO 2	Understand the production of Biofertilizer
CO 3	Explain the Microbial association in soil & organic forming
CO 4	Discuss about Biogeochemical cycles
CO 5	Discuss about Bioremediation and microbial decomposition

PAPER	**X**	**COURSE CODE**	**21UMB5C10**	**COURSE NAME**	**INDUSTRIAL MICROBIOLOGY**

CO 1	Understand Isolation of culture, inoculums development and strain improvement
CO 2	Demonstrate the basic design of a fermenter and its types
CO 3	Discuss the steps in upstream processing
CO 4	Discuss the steps in downstream processing and assess the nature
CO 5	Understand utility of various fermented products

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	XI	COURSE CODE	21UMB5C11	COURSE NAME	FOOD AND DAIRY MICROBIOLOGY

CO 1	Outline the sources and components of food and their preservation techniques.
CO 2	Analyze the factors influencing the food spoilage.
CO 3	Outline the food intoxication and infection
CO 4	Design appropriate techniques for the recovery of fermented products
CO 5	Compare the production processes of various fermented foods.

PAPER	XI	COURSE CODE	21UMB5C12P	COURSE NAME	PRACTICAL'S PERTAINING CCIX, CCX & CCXI

CO 1	Perform Isolation of PGPR Bacteria
CO 2	Isolate the Rhizobium from root nodules
CO 3	Detect indole acetic acid producing bacteria
CO 4	Determine the Nitrogen fixation activity of microorganisms
CO 5	Determine the BOD and COD from sewage

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART III - MAJOR BASED ELECTIVE - THEORY

APER	**A**	**COURSE CODE**	**21UMB5M1A**	**COURSE NAME**	**CLINICAL RESEARCH**

CO 1	Explain the basic concepts of clinical research
CO 2	Explain Adverse drug reaction and its management
CO 3	Explain the standardization of drugs
CO 4	Describe Pharmacoepidemiology, pharmacoeconomics and safety pharmacology
CO 5	Explain the regulatory requirements for conducting clinical trial

PAPER	**B**	**COURSE CODE**	**21UMB5M1B**	**COURSE NAME**	**MARINE MICROBIOLOGY**

CO 1	Understand the Sea-benthic and littoral zone and marine microbial community
CO 2	Know the Methods of studying marine microorganisms
CO 3	Explain the Extremophiles
CO 4	Outline the Role of Microbes in Marine Environments
CO 5	Know more about marine products

PAPER	**C**	**COURSE CODE**	**21UMB5M1C**	**COURSE NAME**	**VIROLOGY**

CO 1	Understand the architecture of viruses,their classification and the methods used in their study
CO 2	Discern the replication strategies of representative viruses
CO 3	Outline the Lysogeny and Generation of defective phages
CO 4	Know the Viral Replication Strategies
CO 5	Know how viruses can be used as tools to study biological processes , as cloning vectors and for genetransfer.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART IV - SKILL BASED ELECTIVE I - THEORY

PAPER	A	COURSE CODE	21UMB5S1A	COURSE NAME	PHARMACOGNOSY

CO 1	Define the History , Scope of Pharmacognosy
CO 2	Understand the Sources of Drugs
CO 3	Know about Classification of Drugs
CO 4	Outline the Formulation of Drugs
CO 5	Understand the Principles of Pharmacodynamics

PAPER	B	COURSE CODE	21UMB5S1B	COURSE NAME	CLINICAL LAB TECHNOLOGY

CO 1	Understand the Managing Clinical Microbiology Laboratory
CO 2	Outline the Examination of Urine
CO 3	Understand blood analysis
CO 4	Know Laboratory Methods in Basic Mycology and Virology
CO 5	Know the Laboratory Methods for Parasitic Infection

PAPER	C	COURSE CODE	21UMB5S1C	COURSE NAME	DIAGNOSTIC MICROBIOLOGY

CO 1	Define the Direct Microscopic examination, culture media and incubation, Serological tests
CO 2	Understand the Laboratory diagnosis methods for parasitic infections
CO 3	Explain the Etiology and laboratory diagnosis of Urinary tract infection
CO 4	Discuss about Viral culture
CO 5	Discuss about Antibiotics and chemotherapeutic agents

PART IV - SKILL BASED ELECTIVE II - THEORY

PAPER	A	COURSE CODE	21UMB5S2A	COURSE NAME	CELL BIOLOGY

CO 1	Know the History of cell biology, cells and their similarities
CO 2	Outline the cell structure
CO 3	Outline the cell organelles
CO 4	Understand the basal bodies
CO 5	Overview of cell communication

PAPER	B	COURSE CODE	21UMB5S2B	COURSE NAME	ENDOCRINOLOGY

CO 1	Know the Definition, Classification of hormones
CO 2	Outline the Pituitary Gland
CO 3	Understand the Hormonal Regulation of Fuel Metabolism
CO 4	Know Hormonal Control of Pregnancy and Lactation
CO 5	Outline the Reproductive Health

PAPER	C	COURSE CODE	21UMB5S2C	COURSE NAME	BIOINSTRUMENTATION

CO 1	Understand the pH meter, pH electrodes
CO 2	Outline thePrinciple - types of centrifuges
CO 3	Understand the Electrophoresis
CO 4	Know more about Chromatography
CO 5	Outline the Quantification Methods

SEMESTER VI

PART III - C O R E COURSE- THEORY / PRACTICAL

PAPER	XIII	COURSE CODE	21UMB6C13	COURSE NAME	MICROBIAL GENETICS

CO 1	Outline the history of history of genetics
CO 2	Understand the DNA as genetic material
CO 3	Know about Mutation and cause of mutation
CO 4	Outline the Direct Repair of Damaged DNA
CO 5	Understand the genetic exchange

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XIV**	**COURSE CODE**	**21UMB6C14**	**COURSE NAME**	**MOLECULAR BIOLOGY**

CO 1	Discuss the structure, properties and functions of nucleic acids
CO 2	Compare the mechanisms of DNA replication and repair between prokaryotes and eukaryotes
CO 3	Assess the concept of Enzymes and Factors
CO 4	Explain the process of Prokaryotic Gene Expression
CO 5	Explain the process of Eukaryotic Gene Expression

PAPER	**XV**	**COURSE CODE**	**21UMB6C15P**	**COURSE NAME**	**PRACTICAL PERTAINING MICROBIAL GENETICS, MOLECULAR BIOLOGY**

CO 1	Perform Scoring of auxotrophic mutant by UV
CO 2	Perform Competent cell preparation
CO 3	Analyze the Gene transformation
CO 4	Protoplast generation
CO 5	Demonstrate Southern blotting

PART III - MAJOR BASED ELECTIVE II - THEORY

PAPER	A	COURSE CODE	21UMB6M2A	COURSE NAME	FORENSIC BIOLOGY

CO 1	Know more about Composition, functions and forensic significance of blood
CO 2	Understand the Composition, functions and forensic significance of urine
CO 3	Outline Forensic Analysis
CO 4	Understand the Entomology and it's significance in forensics
CO 5	Outline the Forensics microbiology

PAPER	B	COURSE CODE	21UMB6M2B	COURSE NAME	MYCOLOGY

CO 1	Understand the History and significance of mycology
CO 2	Overview of Taxonomy
CO 3	Outline the Nutritional requirement and metabolism of fungi
CO 4	Discuss the Endophytic Fungi
CO 5	Understand Significance of Fungi in Human and Livestock Health

PAPER	C	COURSE CODE	21UMB6M2C	COURSE NAME	RECOMBINANT DNA TECHNOLOGY

CO 1	Define the gene manipulation
CO 2	Outline the gene cloning
CO 3	Understand vectors and their types
CO 4	Know about Gene Transfer Techniques
CO 5	Understand Molecular Techniques

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PART III - MAJOR BASED ELECTIVE III - THEORY

PAPER	A	COURSE CODE	21UMB6M3A	COURSE NAME	GENETIC ENGINEERING

CO 1	Explain the Microbial synthesis of commercial products
CO 2	Explain the vaccines and types
CO 3	Outline of transgenic plants
CO 4	Outline the transgenic animals
CO 5	Understand the application of genetic engineering

PAPER	B	COURSE CODE	21UMB6M3	COURSENAME	MICROBIAL TECHNOLOGY

CO 1	Understand Chronology and components of fermentation processes
CO 2	Know about Fermentor and Media
CO 3	Outline Food, dairy, Beverages
CO 4	Understand Antibiotics-sources and types
CO 5	Discuss Production of Microbial Products

PAPER	C	COURSE CODE	21UMB6M3	COURSE NAME	MICROBIAL TAXONOMYAND BIOINFORMATICS

CO 1	Understand the microbial taxonomy
CO 2	Know the Principles and modern approaches of bacterial taxonomy
CO 3	Outline Biodiversity and systematics Modern trends in taxonomy chemotaxonomy
CO 4	Understand the Analytical tools for sequences databanks
CO 5	Know about database

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PROGRAMME NAME (PG)	**M.Sc., MB (MASTER OF SCIENCE INMICROBIOLOGY**

PROGRAMME OUTCOMES

1. Students will be able to acquire, articulate, retain and apply specialized language and knowledge relevant tomicrobiology
2. Students will acquire and demonstrate competency in laboratory safety including accurately reportingobservations and analysis
3. Students will communicate scientific concepts, experimental results and analytical arguments clearly andconcisely
4. Students will inculcate involvement in Research and internship activity
5. Graduates develop a broad range of scientific knowledge to meet the current and future expectation ofindustries at the national and global level

SEMESTER I

C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**GENERAL MICROBIOLOGY**
CO 1	Know the Oparin theory and Evolutionary theory			
CO 2	Overview of Microbiology			
CO 3	Understand Sterilization and Staining			
CO 4	Understand the Kingdom concept			
CO 5	Understand the Classification of Fungi and Cyanobatceria			

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**III**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**MICROBIAL METABOLISM**

CO 1	Understand the Cell theory
CO 2	Know the Microbial nutrition and Factors influencing microbial growth
CO 3	Outline the Carbon assimilation, Metabolism and catabolism
CO 4	Discuss the Microbial Pigments
CO 5	Understand Extremophiles Physiology

PAPER	**III**	**COURSE CODE**	**20PMB1C**	**COURSE NAME**	**MICROBIAL BIOCHEMISTRY**

CO 1	Understand the Propertics and classification of carbohydrates
CO 2	Know more about lipids and nucleic acids
CO 3	Discuss the role and chemistry fat of soluble vitamins
CO 4	Understand classification and specificity of enzymes
CO 5	Outline the bio signaling

PAPER	**IV**	**COURSE CODE**	**20PMB1C4P**	**COURSE NAME**	**PRACTICAL I: GENERAL MICROBIOLOGY, MICROBIAL METABOLISM AND MICROBIAL BIOCHEMISTRY**

CO 1	Enumerate of Bacteria and Fungi
CO 2	Know micrometry method.
CO 3	Perform the Stainingtechniques
CO 4	Understand Measurement of growth curve
CO 5	Estimate the of total Carbohydrate

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PAPER	**A**	**COURSE CODE**	**20PMB1E1A**	**COURSE NAME**	**BIOPHARMACEUTICALS**

CO 1	Understand the Introduction to drug discovery and development
CO 2	Understand the Biologics and biopharmaceuticals
CO 3	Understand Radio activity, Measurement of radioactivity,
CO 4	Properties of α, β, γ radiations
CO 5	Understand the Spoilage of pharmaceutical products

PAPER	**B**	**COURSE CODE**	**20PMB1E1B**	**COURSE NAME**	**BIOSAFETY, BIOETHICSAND IPR**

CO 1	Understand biosafety issues in biotechnology and historical background
CO 2	Understand the Biosafety Guidelines
CO 3	Analyse ethical and professional issues which arise in the intellectual property law context
CO 4	Apply intellectual property law principles (including copyright, patents, designs and trademarks) toreal problems and analyse the social impact of intellectual property law and policy
CO 5	Understand the Patents and Patent Laws

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APPLICATION ORIENTED COURSE - THEORY

PAPER	AI	COURSE CODE	20PMB1A1	COURSE NAME	BIOINSTRUMENTATION

CO 1	Understand the Principle of centrifugation
CO 2	Understand the General principles of chromatography
CO 3	Understand Principles, procedure, types and application of electrophoresis
CO 4	Understand the UV Spectrophotometry principle
CO 5	Understand the Detection and measurement of radioactivity

PAPER	V	COURSE CODE	20PMB2C	COURSE NAME	ADVANCED VIROLOGY

CO 1	Outline on discovery of viruses
CO 2	Understand the Principal events involved in replication
CO 3	Understand the Viral vectors
CO 4	Discuss the Bacterial viruses
CO 5	Know the Pathogenicity and Prophylaxis

PAPER	VI	COURSE CODE	20PMB2C	COURSE NAME	MICROBIAL GENETICS

CO 1	Understand the DNA and RNA as genetic material
CO 2	Outline the Replication
CO 3	Understand the Gene Regulation
CO 4	Understand the gene transfer, molecular mechanism. Bacterial transformation
CO 5	Understand the Mutations

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PAPER	VII	COURSE CODE	20PMB2C	COURSE NAME	ENVIRONMENTAL AND AGRICULTURAL MICROBIOLOGY

CO 1	Understand the Soil - structure, types, physical and chemical properties
CO 2	Know the Microorganisms responsible for water pollution especially Water-borne pathogenicmicroorganisms
CO 3	Comprehend the various methods to determine the Sanitary quality of water and sewage treatmentmethods employed in waste water treatment
CO 4	Understand the Agro Ecosystem
CO 5	Understand the Bioinoculants

PAPER	VIII	COURSE CODE	20PMB2CP	COURSE NAME	PRACTICAL -II ADVANCED VIROLOGY, MICROBIAL GENETICS,

CO 1	Isolate of bacteriophage from sewage
CO 2	Isolate of Genomic DNA
CO 3	Isolate of plasmid DNA by alkaline lysis method
CO 4	Understand the Screening of antagonistic fungi against plant pathogen
CO 5	Determine of phosphate solubulizing bacteria

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	A	COURSE CODE	20PMB2E2A	COURSE NAME	ADVANCED MOLECULAR BIOLOGY
CO 1	Understand the Eukaroytic genome organization and Proteins involved in the control of transcription				
CO 2	Outline the Physical structure and genetic content of Human genome				
CO 3	Understand Recent Trends in Molecular biology				
CO 4	Understand the Applications of Recombinant DNA				
CO 5	Understand the Social Issues in Molecular Technologies				

PAPER	B	COURSE CODE	20PMB2E2B	COURSE NAME	NANOTECHNOLOGY
CO 1	Understand the Basic Concepts in Nanotechnology				
CO 2	Outline the Synthesis of Nanoparticles				
CO 3	Understand Structural studies of Nanoparticles				
CO 4	Outline the Antimicrobial activity of nanoparticles				
CO 5	Understand the whole-blood immunoassay facilitated by gold nanoshell				

APPLICATION ORIENTED COURSE - THEORY

PAPER	AII	COURSE CODE	20PMB2A2	COURSE NAME	MUSHROOM TECHNOLOGY
CO 1	Understand the Scope and Development of Mushroom				
CO 2	Discuss the Nutritive Value and Spawn Production				
CO 3	Outline Cultivation Technology				
O 4	Understand the Pests and Diseases of Edible Mushroom				
CO 5	Understand the Economics of Mushroom Cultivation				

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

C O R E COURSE- THEORY / PRACTICAL

PAPER	IX	COURSE CODE	20PMB3C9	COURSE NAME	IMMUNOLOGY AND MEDICAL MICROBIOLOGY

CO 1	Understand the innate and acquired immunity, Mechanism of cell mediated and humoral immunity
CO 2	Understand the Allergens and Allergic reactions
CO 3	Discuss the Immune Tolerance
CO 4	Understand the Types of infectious diseases
CO 5	Outline the Diagnosis and Control of Microbial Diseases

PAPER	X	COURSE CODE	20PMB3C1	COURSENAME	FOOD AND DAIRY MICROBIOLOGY

CO 1	Understand the Microbial flora of fresh foods
CO 2	OutlineGeneral principles underlying food spoilage and contamination
CO 3	Understand the Fermented Food and Food Preservation
CO 4	Discuss Microbiology of Milk and Dairy Products
CO 5	Understand the Food Borne Diseases and Sanitation

PAPER	XI	COURSE CODE	20PMB3C1	COURSE NAME	RECOMBINANT DNA TECHNOLOGY

CO 1	Understand the Developments in recombinant DNA technology
CO 2	Discuss the Vectors in Genetic Recombination
CO 3	Understand Cloning strategies
CO 4	Outline the Gene Transfer Techniques
CO 5	Understand the DNA sequencing and method

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XII**	**COURSE CODE**	**20PMB3C12P**	**COURSE NAME**	**PRACTICAL-III IMMUNOLOGY ANDMEDICAL MICROBIOLOGY,**

CO 1	Perform the Haem agglutination blood grouping
CO 2	Perform the Antibiotic sensitivity testing – E test
CO 3	Perform Coagulation test for milk
CO 4	Perform Preparation of competent cell
CO 5	Demonstrate the Blotting techniques

ELECTIVE COURSE - THEORY

PAPER	**A**	**COURSE CODE**	**20PMB3E3A**	**COURSE NAME**	**FERMENTATION TECHNOLOGY**

CO 1	Understand the Industrially important microorganism
CO 2	Discuss the Media & Sterilization
CO 3	Understand the design of fermentor and its type
CO 4	Outline the Microbial production
CO 5	Understand the Recovery and purification of fermentation products

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**B**	**COURSE CODE**	**20PMB3E3B**	**COURSE NAME**	**MARINE MICROBIOLOGY**

CO 1	Discuss Marine microbial habitats and diversity
CO 2	Understand the Cultivation of Marine Microbes and Nutrient Cycling
CO 3	Understand Survival at extreme environments, hyperthermophiles
CO 4	Understand the Resource of seafood and preservation methods
CO 5	Outline the marine microbial products

C O R E COURSE- THEORY / PRACTICAL

PAPER	**XIII**	**COURSE CODE**	**20PMB4C1**	**COURSE NAME**	**RESEARCH METHODOLOGY**

CO 1	Understand the choosing a topic to publication
CO 2	Understand the Research journals
CO 3	Outline tabulation and classification of data
CO 4	Understand the Standard Deviation
CO 5	Discuss the Role and research funding government sectors

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PROGRAMME NAME (M.PHIL)	**M.PHIL., MB (MASTER OF PHILOSOPHY IN MICROBIOLOGY**

PROGRAMME OUTCOMES

1. The students will understand how to prepare a research project.
2. The students will be able to write research articles, review articles and book chapters.
3. The students would acquire basic knowledge of research data collection, processing and presentation of dataand application of bioinformatics, biostatistics tools.
4. The students will be able to demonstrate understanding of basic and advanced kowledge in microbiologydisciplines.

C O R E COURSE- THEORY / PRACTICAL

PAPER	**I**	**COURSE CODE**	**20MPMB1C1**	**COURSE NAME**	**RESEARCH METHODOLOGY**

CO 1	Know the Selection of Problem
CO 2	Overview of Planning and Preparation of Thesis
CO 3	Understand the Biostatistics
CO 4	Understand the Standard Deviation
CO 5	Outline the Organisation to Computer

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**II**	**COURSE CODE**	**20MPMB1C2**	**COURSE NAME**	**MICROBIAL GENOMICS AND PROTEOMICS**

CO 1	Understand the Bioinformatics and Its Applications
CO 2	Overview Preparation of ordered cosmid libraries
CO 3	Understand Computational methods and homology algorithms
CO 4	Outline the DNA Microarray
CO 5	Understand Proteome Analysis

PAPER	**IV**	**COURSE CODE**	**20MPMB1C4**	**COURSE NAME**	**TEACHING AND LEARNINGSKILLS**

CO 1	Know the Computer Application Skills
CO 2	Discuss Communication Skills
CO 3	Understand the Communication Technology
CO 4	Overview the Instructional Technology and Lecture Technique
CO 5	Understand the Teaching skill

PAPER	**I1**	**COURSECODE**	**21UCO1C2**	**COURSE NAME**	**CONTOMPORARY MANAGEMENT**

CO1	Acquire knowledge about the various functions of Management.
CO2	Understand the various concepts of management.
CO3	Analyze the importance of planning.
CO4	Identifies the principles of organizing.
CO5	Gain idea about the process of selection and recruitment.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	M	S	S	S	S
CO5	S	L	S	M	M

S- STRONG M-MEDIUM L-LOW

ALLIED PAPER	I	COURSE CODE	21UCO1A1	COURSE NAME	BUSINESS ECONOMICS

CO1	To understand the concepts of cost, nature of production and its relationship toBusiness operations.
CO2	To apply marginal analysis to the "firm" under different market conditions.
CO3	To analysis the causes and consequences of different market conditions.
CO4	To integrate the concept of price and output decisions of firms under variousmarket structure.
CO5	To analyze the national income, concepts and measure the national income.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	M	S	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	M	L

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

ALLIED PAPER	**II**	**COURSE CODE**	**21UCO1A2**	**COURSE NAME**	**OFFICE MANAGEMENT**

CO1	To make them understand office management and duties of an office manager
CO2	To give an idea about proper filing and indexing of office documents
CO3	To understand the principles of record management and different types of recordsin Business organization
CO4	To enable them to aware about safety hazardous and steps to improve office safety.
CO5	To introduce different measures of office work.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S
CO4	S	S	M	S	M
CO5	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

PAPER	**III**	**COURSECODE**	**21UCO2C3**	**COURSE NAME**	**BUSINESS TOOLS FORDECISION MAKING**

CO1	To familiarizes the concept of statistics
CO2	To provide practical exposure on calculation of measures of average
CO3	To provide practical exposure on calculation of measures of correlation and Irrigation.
CO4	To introduce the students about the concept of provability
CO5	To provide practical exposure on calculation of trend analysis

Mapping with program outcome

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	M
CO3	M	S	S	S	S
CO4	S	M	S	M	S
CO5	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

PAPER	I V	COURSECODE	21UCO2C4	COURSE NAME	BUSINESS REGULATORY FRAMEWORK

CO1	Create awareness on the nature and importance of offers and acceptances.
CO2	Familiarize the students about the contract act.
CO3	Understanding the duties and powers of bailor and bailee.
CO4	Creating an insight into the sale of goods act.
CO5	Develop adequate knowledge about contract of indemnity and guarantee

Mapping with program outcome

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	S	S	M	S	L
CO5	S	S	S	M	S

S- STRONG M-MEDIUM L-LOW

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ALLIED PAPER	**III**	**COURSE CODE**	**21UCO2A3**	**COURSE NAME**	**MODERN MAEKETING**

CO1	To develop an idea about marketing and its functions
CO2	To enhance the students on price policy
CO3	To familiarize students about product and its classifications
CO4	To make them understand pricing policies
CO5	To introduce the concept of retail marketing.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**M**	**S**
CO4	**S**	**M**	**S**	**S**	**S**
CO5	**S**	**S**	**M**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**V**	**COURSE CODE**	**21UCO3C5**	**COURSE NAME**	**BUSINESS ACCOUNTING**

CO1	To familiarize the concept of Branch account and its system
CO2	To understand the Scope of departmental accounting
CO3	To introduce the system of Hire Purchasing
CO4	To enable the students to understand royalty account and insolvency accounts.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**M**
CO4	**S**	**S**	**S**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

PAPER	**VI**	**COURSE CODE**	**21UCO3C6**	**COURSE NAME**	**BUSINESS COMMUNICATION**

CO1	Upon completion of the course, students are able to demonstrate a good understanding of effective businesswriting and effective business communications
CO2	Students can able developing and delivering effective presentations
CO3	To understand effective interpersonal communications skills that maximize teameffectiveness

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	M	S	M	S	S
CO3	S	L	S	S	M

S- STRONG M-MEDIUM L-LOW

ALLIED PAPER	**IV**	**COURSE CODE**	**21UCO3A4**	**COURS ENAME**	**BANKING THEORY LAWAND PRACTICE**

CO1	To elucidate the broad functions of banks
CO2	To understand the working of the Reserve Bank of India
CO3	To grasp the conduct of monetary policy and its effect onthe interest rate, credit availability, prices, and the inflation rate
CO4	To express opinions about banking in written and oral form, based on the basicknowledge and skills acquired
CO5	To learn the importance to be updated on the developments of the banking sector andpractice the same.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	M	S	S	S	S
CO4	S	M	S	M	L
CO5	S	S	M	S	S

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

ALLIED PAPER	**V**	**COURSE CODE**	**21UCO3A5**	**COURSE NAME**	**BUSINESS ENVIRONMENT**

CO1	Evaluate Concepts of business environment.
CO2	Evaluate Concepts of economic factors that influence the economic environment.
CO3	Determine Political stability and the policies of the government.
CO4	Appraise the social and cultural environment of the business.
CO5	Appraise philosophies of global approaches to managing a business successfullyin a global environment.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**L**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**M**	**S**	**S**	**S**
CO5	**S**	**S**	**M**	**M**	**S**

S- STRONG M-MEDIUM L-LOW

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NME PAPER	**IA**	**COURSE CODE**	**21UCO3NIA**	**COURSE NAME**	**PRINCIPLES OF MARKETING**

CO1	Define the marketing concepts and list out the functions of marketing.
CO2	Explain the product planning and policies and demonstrate the market segmentation.
CO3	Interpret the various pricing policies followed by the organizations.
CO4	Selection of media for Advertisement and also analyze the role of salesman inpromotion
CO5	Compare the various channels of distribution

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**S**
CO4	**S**	**S**	**S**	**M**	**M**
CO5	**S**	**S**	**S**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

NME PAPER	**IB**	**COURSE CODE**	**21UCO3 NIB**	**COURSE NAME**	**PRINCIPLES OF MANAGEMENT**

CO1	To understand the basic knowledge on Principles of management
CO2	To understand the planning process in the organization
CO3	To understand the concept of organization
CO4	Demonstrate the ability to directing, leadership and communicate effectively
CO5	To analysis isolate issues and formulate best control methods.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	M	S	S	M	S
CO5	S	S	M	S	L

S- STRONG M-MEDIUM L-LOW

NME PAPER	IC	COURSE CODE	21UCO3 NIC	COURSE NAME	INTRODUCTION OFBANKING

CO1	Understand the evolution of banks
CO2	Understand the role of RBI
CO3	Understand the idea of credit creation
CO4	To study the reforms in banking

Mapping with program outcomes

COUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	M	S	S	M	S
CO3	S	M	S	S	S
CO4	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**VII**	**COURSE CODE**	**21UCO4C7**	**COURSE NAME**	**COST ACCOUNTING**

CO1	Aimed to familiarize the concept of cost accounting
CO2	Helps to gather knowledge on preparation of cost sheet in its practical point of view
CO3	To facilitate the idea and meaning of material control with pricing methods
CO4	Develop the knowledge about remuneration and incentives
CO5	To introduce the concept of overhead cost

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**M**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**M**	**S**	**M**	**S**
CO5	**S**	**S**	**L**	**S**	**M**

S- STRONG M-MEDIUM L-LOW

PAPER	**VIII**	**COURSE CODE**	**21UCO4C8**	**COURSE NAME**	**COMPANY LAW**

CO1	Recall the concepts of company and classify its types of Companies.
CO2	Remember the procedure of incorporation of company.
CO3	Explain the important statutory documents of a Company.
CO4	Discuss the legal provisions relating to alter the contents of the statutory documents ofa company.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	M	S	S	M	S
CO4	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

ALLIED PAPER	VI	COURSE CODE	21UCO4A6	COURS ENAME	BANK MANAGEMENT

CO1	To understand the concepts of application of technology in banking sector
CO2	To learn the role of technology in banking sector
CO3	To disseminate knowledge among the students, inculcate with theoretical structuresabout banking and insurance.
CO4	To train and equip the students with the skills of modern banking is run

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	M	M	S
CO4	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

NME PAPER	**II A**	**COURSE CODE**	**21UCO4N2A**	**COURSE NAME**	**FUNDAMENTALS OF ACCOUNTING**

CO1	Understand the basics of Accounting.
CO2	Distinguish the different concepts and Conventions of Accounting
CO3	Provide Knowledge on Double Entry System of Book Keeping.
CO4	Identify the rules of Debit and Credit
CO5	Understand the preparation of Journal.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**M**	**S**	**S**	**M**	**S**
CO5	**S**	**S**	**M**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

NME PAPER	**II B**	**COURSE CODE**	**21UCO4N2B**	**COURSE NAME**	**ORGANISATIONAL BEHAVIOUR**

CO1	To equip the students with the basic idea and introduction on organizational
CO2	Behavior as a concept
CO3	To give a light on the concept and difference theories on motivation
CO4	To introduce the concept of leadership
CO5	Understand the concept of conflict management

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	S	M	S
CO4	S	S	M	S	S
CO5	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

NME PAPER	II C	COURSE CODE	21UCO4N2C	COURSE NAME	CONSUMER BEHAVIOUR

CO1	Explain the fundamental concepts of consumer behavior
CO2	Discuss the concepts of consumer decision making process
CO3	Analyze the psychological influences on consumer decision making process
CO4	Evaluate the sociological influences in consumer behavior
CO5	Describe the new diffusion of innovation in consumer behavior

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	M	S	S
CO4	M	S	S	S	L
CO5	S	M	S	S	S

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**IX**	**COURSE CODE**	**21UCO5C9**	**COURSE NAME**	**COMPANY ACCOUNTING**

CO1	Enabling the students to understand the features of Shares and Debentures
CO2	Develop an understanding about redemption of Shares and Debenture and its Types.
CO3	To give an exposure to the company final accounts
CO4	To provide knowledge on Goodwill
CO5	Students can get an idea about internal reconstruction

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**M**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**M**	**S**	**S**	**S**
CO5	**S**	**S**	**M**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

PAPER	**X**	**COURSE CODE**	**21UCO5C10**	**COURSE NAME**	**AUDITING**

CO1	To understand the concept of auditing
CO2	Difference between accounting and auditing
CO3	To understand the concept of audit planning and audit evidence
CO4	To get an awareness on internal control measures

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	M	S	M	S	S
CO4	S	M	S	S	L

S- STRONG M-MEDIUM L-LOW

PAPER	XI	COURSE CODE	21UCO5C11T 21UCO5C11P	COURS ENAME	COMPUTER APPLICATIONS IN BUSINESS (WITH PRACTICAL)

CO1	To introduce the students about basics of MS-Office
CO2	To provide practical knowledge exposure to MS- Word
CO3	To provide practical knowledge exposure MS-Excel
CO4	To introduce the practical knowledge about tally

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	M	S	S	S	L
CO3	S	M	S	S	S
CO4	S	S	S	M	S

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XII**	**COURSECODE**	**21UCO5C12**	**COURSE NAME**	**FINANCIAL MANAGEMENT**

CO1	To provide introduction to Financial Management
CO2	To create an awareness about capital structure and theories of capital structure
CO3	To make them understand the cost of capital in wide aspects
CO4	To provide knowledge about dividend policies and various dividend models.
CO5	To enable them to understand working capital management

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**M**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**M**	**S**
CO5	**S**	**S**	**M**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

MBE PAPER	**IA**	**COURSECODE**	**21UCO5M1A**	**COURSE NAME**	**HUMAN RESOURSE MANAGEMENT**

CO1	To aiming to enable the students in Human Resources Management
CO2	To introduce the students about placement and training
CO3	To facilitate the knowledge about performance appraisal and different methods
CO4	To provide an idea about different compensation policies

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	M	S	S	S	L
CO4	S	M	S	S	S

S- STRONG M-MEDIUM L-LOW

BE PAPER	**I B**	**COURS ECODE**	**21UCO5M1B**	**COURSE NAME**	**RETAIL MARKETING**

CO1	To apply the principles, practices, and concepts used in retail marketing management.
CO2	To describe the complex nature and environment of retail marketing managementtogether with the buying and sellingof goods, services, and ideas to the final consumer.
CO3	To understand the conceptual and organizational aspects of the retail sector includingstrategic planning and management in the retail industry.
CO4	To understand the key elements in planning, managing, and executing the retailmarketing mix as they relate to theproduct, price, distribution, and promotion.
CO5	To identify the approaches to and guidelines used to analyze and solve retailers'problems and make decisions inretail organizations.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S
CO4	S	M	S	S	S
CO5	S	S	S	M	L

S- STRONG M-MEDIUM L-LOW

MBE PAPER	I C	COURS ECODE	21UCO5M1C	COURSE NAME	INVESTMENT MANAGEMENT

CO1	To provide an idea about investments and its various alternatives
CO2	To enable the students to understand Shares and Debentures
CO3	To create an awareness regarding investment Risk and return
CO4	To make them understand about securities analysis and management
CO5	To provide knowledge about portfolio investment and various theories in Portfolio management

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	S	M	S
CO4	S	S	M	S	S
CO5	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SBE PAPER	**I A**	**COURS ECODE**	**21UCO5S1A**	**COURSE NAME**	**INSURANCE MANAGEMENT**

CO1	Familiarize students about the terms, and concepts of insurance
CO2	Awareness about life insurance policy and its types
CO3	Familiarize Policy conditions and clauses of fire insurance.
CO4	Understanding the perils which are covered under marine insurance.
CO5	Awareness about IRDA rules for accounting in insurance

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**S**
CO4	**S**	**S**	**M**	**S**	**S**
CO5	**S**	**M**	**S**	**L**	**S**

S- STRONG M-MEDIUM L-LOW

SBE PAPER	**I B**	**COURS ECODE**	**21UCO5S1B**	**COURSE NAME**	**SERVICE MAKETING**

CO1	Understand the basic concepts of service
CO2	Deals with Concept like marketing mix in service marketing
CO3	Understand the terms segmentation, positioning, ,differentiation and retention strategies applicable to service marketing
CO4	Explanation regarding marketing of services in financial services is possible
CO5	Explanation regarding marketing of services in health is possible

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	S	S	L
CO4	M	S	S	M	S
CO5	S	S	S	S	S

S- STRONG M-MEDIUM L-LOW

SBE PAPER	I C	COURSE CODE	21UCO5S1C	COURSE NAME	INTERNET

CO1	To able to understand the application areas of IOT ·
CO2	To able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks ·
CO3	To able to understand the mail, voice mail.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	M	S	S
CO3	S	S	S	S	L

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SBE PAPER	**II A**	**COURS ECODE**	**21UCO5S2A**	**COURSE NAME**	**ADVERTISING MANAGEMENT**

CO1	Understand the meaning of advertising.
CO2	Understand the methods to develop an advertising programmer.
CO3	Describe advertisement appeal, media planning and strategy.
CO4	Identify the methods of selecting advertisement media.
CO5	Identify the social, economic and legal aspects of advertisement.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**L**
CO2	**S**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**M**	**M**	**S**
CO5	**S**	**S**	**S**	**S**	**S**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SBE PAPER	**II B**	**COURS ECODE**	**21UCO5S2B**	**COURSE NAME**	**SALES MANAGEMENT**

CO1	Explain the basic principles of sales management;
CO2	Demonstrate an understanding of the role of the sales force as a part of the marketingmix;
CO3	Apply in a competent manner sales management tools such as sales forecasting, sales compensation methods, sales budgeting, sales reports, routings, quotas, sales analysis, and evaluation of performance by means of a team project that creates a sales force plan.
CO4	Understand the role of the function of sales management in the corporate structure.
CO5	Explain the basic principles of sales management;

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**M**
CO2	**M**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**L**	**S**
CO5	**S**	**S**	**S**	**S**	**S**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

SBE PAPER	**II C**	**COURS ECODE**	**21UCO5S2C**	**COURSE NAME**	**RETAIL MANAGEMENT**

CO1	Analyze retailing problems, factors, issues and challenges at global market level.
CO2	Evaluate traditional retail formats
CO3	Classify modern retail formats in current scenario
CO4	Discuss the retail strategic planning, location, factors and planning policies
CO5	Describe the retail marketing strategy, store loyalty, franchising and CRM.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**M**	**S**	**S**	**L**	**S**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**M**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**M**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XII I**	**COURS ECODE**	**21UCO6C13**	**COURSE NAME**	**MANAGEMENT ACCOUNTING**

CO1	To enlighten the students thought and knowledge on management Accounting
CO2	Helps to give proper idea on financial statement analysis in practical point of view
CO3	To introduce the concept of fund flow and cash flow statement
CO4	To provide knowledge about budget control keeping in mind the scope of theconcept
CO5	To develop the know-how and concept of budget and budgetary control.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**M**	**S**	**S**	**M**
CO3	**S**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**M**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

PAPER	**XIV**	**COURSE CODE**	**21UCO6C14**	**COURSE NAME**	**INCOME TAX THEORYLAW & PRACTICE**

CO1	To introduce the basic concept of Income Tax
CO2	In order to familiarize the different know-how and heads of income with itscomponents
CO3	It helps to build an idea about income from house property as a concept
CO4	It gives more idea about the income from business or profession
CO5	Make the students familiarizes with the concept of depreciation and its provisions

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**S**	**M**	**S**	**S**
CO3	**M**	**S**	**S**	**S**	**S**
CO4	**S**	**S**	**S**	**M**	**S**
CO5	**S**	**S**	**S**	**S**	**L**

S- STRONG M-MEDIUM L-LOW

PAPER	**XV**	**COURSECODE**	**21UCO6C15**	**COURSE NAME**	**ENTREPRENEURIAL LEADERSHIP**

CO1	To aiming to develop students about Entrepreneurship development
CO2	To create an awareness on various Entrepreneurship Development Programmer.
CO3	To enable them to understand project formulation
CO4	To familiarize the students with EDP schemes
CO5	To give an introduction about MSME, EDI and other training institutes in Entrepreneurship

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	M	S	M	S	L
CO4	S	S	S	S	S
CO5	S	S	S	S	M

S- STRONG M-MEDIUM L-LOW

MBE PAPER	**II A**	**COURS ECODE**	**21UCO6M2A**	**COURSE NAME**	**GOODS AND SERVICE TAX**

CO1	Understand the concept of GST, CGST, SGST
CO2	To make an awareness on the procedure of tax collection
CO3	Understand the levy of tax on different assesses
CO4	To understand the registration process
CO5	To determine the type of assessments

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	L
CO2	S	S	M	S	S
CO3	M	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	M

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

MBE PAPER	**II B**	**COURS ECODE**	**21UCO6M2B**	**COURSE NAME**	**INTRODUCTION OF E-COMMERCE**

CO1	Analyze the impact of E-Commerce
CO2	Describe the major types of E-Commerce
CO3	Explain the process that should be followed in building an E-Commerce
CO4	Identify the key security threats in the E-Commerce
CO5	Describe how procurement and supply chains relate to B2B E-Commerce

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**L**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**S**
CO4	**M**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**S**	**S**	**M**

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

MBE PAPER	**II C**	**COURS ECODE**	**21UCO6M2C**	**COURSE NAME**	**E-BANKING**

CO1	Explain electronic banking and commerce and what goes into electronic bankingand commerce
CO2	Explain the fundamental changes in banking and financialmarkets as financial institutions and brokers have extended to electronic platform.
CO3	Apply cash management, decision-making, and controlling techniques in anelectronic interface.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**M**	**S**	**S**
CO2	**S**	**S**	**S**	**M**	**M**
CO3	**S**	**L**	**S**	**S**	**S**

S- STRONG M-MEDIUM L-LOW

MBE PAPER	**III A**	**COURS ECODE**	**21UCO6M3A**	**COURSE NAME**	**FINANCIAL SERVICE ININDIA**

CO1	To give an idea about fundamentals of financial services and players in financialsectors
CO2	To create awareness about merchant banking, issue management, capitalmarkets and role of SEBI
CO3	To provide knowledge about leasing and hire purchase concepts
CO4	To make them understand about different types of insurance and IRDA Act.

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	M	S	S
CO4	S	S	S	M	L

S- STRONG M-MEDIUM L-LOW

MBE PAPER	**III B**	**COURSE CODE**	**21UCO6M3B**	**COURSE NAME**	**FINANCIAL MARKETING OPERATION**

CO1	Understand the role and function of the financial system in reference to the macroeconomy.
CO2	Demonstrate an awareness of the current structure and regulation of the Indian financial services sector
CO3	Evaluate and create strategies to promote financial products and services.

Mapping with program outcomes

OUTCOMES	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	M	S
CO3	M	L	S	S	S

S- STRONG M-MEDIUM L-LOW

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NAAC	**CRITERIA – II**	**METRIC 2.6.1**

MBE PAPER	**III C**	**COURSE CODE**	**21UCO6M3C**	**COURSE NAME**	**INDIAN BANKING SYSTEM**

CO1	Understand the Origin and the growth of the Indian Banking System.
CO2	Remember broad functions of RBI.
CO3	Analyze the functions of e-service in Modern Banking.
CO4	Classify the different types of Bank Accounts.
CO5	To Understand the concept and banking regulation act.

Mapping with program outcomes

OUTCOMES	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**
CO1	**S**	**S**	**S**	**S**	**S**
CO2	**S**	**M**	**S**	**S**	**S**
CO3	**S**	**S**	**M**	**S**	**M**
CO4	**S**	**S**	**S**	**S**	**S**
CO5	**S**	**S**	**L**	**S**	**M**

S- STRONG M-MEDIUM L-LOW

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