

Course Outcomes COs from Academics Year 2021-22

Class	Course	Course Outcomes
		students will be able to...
M.Sc. I Microbiology	MB - 101: Microbial Taxonomy and Diversity	• Differentiate various groups of microbes and microbial taxonomy
		• Acquire knowledge on adaptability of extremophiles and microbial diversity
		• Acquaint with the scope of microbiology in different diversified areas.
	MB-102: Microbial Physiology and Biochemistry	• Acquire knowledge on metabolism of biomolecules
		• Familiarise with amino acids, proteins, lipids, nucleic acids and enzymes
		• Understand biochemical reactions in microbial cells and metabolic pathway diversity
	MB-103: Methods in Microbiology	• Develop expertise in basic analytical techniques of microbiology.
		• Get knowledge in the analysis of biomolecules
		• Carry out microbial techniques related to isolation, identification of algae, fungi, archea
	MB - 104: Methods in Microbial Chemistry	• Acquire expertise in basic biochemical techniques
		• Get knowledge in the analysis and estimation of biomolecules
		• Carry out biochemical analysis
	MB - 105: Bioinstrumentation	• Acquire knowledge on basic biophysical and biochemical aspects.
		• Learn purification of molecules, analytical tools, electrophoretic separation
		• Learn how to interpret protein mobility on page under native and SDS
		• Basic bioinformatics softwares"
	AC-101: Practicing Cleanliness	• Identify need at of cleanliness at home/office and other public places.
		• Plan and observe cleanliness programs at home and other places.
		• Practice Japanese 5-S practices in regular life.
	MB – 201: Molecular Biology and Bioinformatics	• Receive elaborate knowledge on nucleic acids and molecular mechanisms in bacteria
• Understand gene expressions and signal sequences in bacteria		
• Get thorough knowledge about fundamental aspects on bioinformatics		

	MB - 202: Microbial Enzymology	<ul style="list-style-type: none"> • Understand fundamental as well as kinetics of enzyme catalysed reactions • Apply the knowledge to explore applications of various enzymes • Identify how extremophiles act as a source of extremozyme. 	
	MB - 203: Immunology	<ul style="list-style-type: none"> • Understand fundamental basis of immune system and immune response • Apply host defence, allergy, organ transplant and immunological diseases • Use various immunochemical techniques for diagnosis of diseases. 	
	MB - 204: Methods in Molecular Biology and Immunology	<ul style="list-style-type: none"> • Undertake gene transfer in different bacteria and make use of PCR amplification of DNA. • Apply molecular diagnostic and immunodiagnostic techniques. 	
	MB - 205: Methods in Enzymology	<ul style="list-style-type: none"> • Isolate, purify enzyme of interest from microbial system, characterize the enzyme and trace out application(s) of that enzyme • Use the technique of enzyme assay to determine its specific activity, pH and temperature optima, Km, Vmax, Kcat of enzyme and activation energy using Arrhenius plot. • Immobilize enzyme for particular application and familiarize with algorithm for protein 	
	AC-201(A): Soft Skills	<ul style="list-style-type: none"> • Identify their lacunas about some soft skills and try to overcome the same. • Practice learned soft skills in real life and do their jobs more effectively. 	
	AC-201(B): Practicing Sports Activities	<ul style="list-style-type: none"> • Identify one or more sports of their choice and develop more interest to participate at University/National level sport events. • Practice the learned sports activities regularly in real life. 	
	AC-201(C): Practicing Yoga	<ul style="list-style-type: none"> • Identify and practice some Yoga asanas regularly in their life to remain healthy. • Provide guidance and practice about Yoga to their friends, parents and relatives. 	
	AC-201(D): Introduction to Indian Music	<ul style="list-style-type: none"> • Identify different types of Indian music. • Develop more interest to learn and practice Indian music. 	
	M.Sc-II Microbiology	MB 303: Applied and Environmental Microbiology	<ul style="list-style-type: none"> • Understand significance of microbes in food, wastewater treatment and clean-up • Describe use of microbes in solid and liquid waste treatment as well as bioremediation of toxicant thereby acquire knowledge about microbial potential. • Understand the relevance of microbial standards for food quality assurance.
		AC-301(A): Computer Skills	<ul style="list-style-type: none"> • Identify their lacunas about some computer skills and try to overcome the same.

	<ul style="list-style-type: none"> • Practice the learned computer skills in real life and do their jobs more effectively.
AC-301(B): Cyber Security	<ul style="list-style-type: none"> • Practice learned cyber security skills/rules in real life. • Provide guidance about cyber security skills/rules to their friends, parents and relatives.
AC-301(C): Seminar + Review Writing	<ul style="list-style-type: none"> • Retrieve, analyse, comprehend the scientific information on a given topic and derive logical inferences. • Compile the scientific information on a topic, verify for similarity index or plagiarism. • Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.
AC-301(D): Biostatistics	<ul style="list-style-type: none"> • Describe and identify data generated from biological processes and experiments. • Use summary statistics: measures of central tendency, measures of dispersion with their interpretations for explain the data more effectively through graphical tools. • Apply knowledge of correlation, regression analysis and testing of hypothesis to real life data and understand their interpretation
MB – 401: Fermentation Technology	<ul style="list-style-type: none"> • Learn industrially relevant microbial products and their production process • Get knowledge about bioreactor configuration, recovery of fermentation products • Understand IPR and regulatory procedures required for final product.
MB - 402: Microbial Genetics	<ul style="list-style-type: none"> • Receive elaborate knowledge on mutation analysis, genome and its replication • Understand about gene regulation and repair mechanisms in DNA damage • Get in-depth knowledge on gene transfer mechanisms in microbes and able to explain how plasmid copy number is regulated.
MB - 404: Methods in Biotechnology	<ul style="list-style-type: none"> • Perform gene transfer, GFP gene cloning and carry out southern blotting • Understand plant microbe relations
MB – 405: Laboratory course (Project Dissertation)	<ul style="list-style-type: none"> • Conceive a problem based on published research and carry out comprehensive survey of literature • Plan and carry out task in given framework of dissertation and present the work in written and viva • Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues. • Learn handling of instruments, use of chemicals and how to conduct the experiments

		<ul style="list-style-type: none"> • Learn how to present the project in power point and answer the queries to examiners as well as science of writing
	MB – 403: Agricultural Microbiology	<ul style="list-style-type: none"> • Understand ecology and how plant microbe interaction occurs • Describe pathogenic interactions with plant and how biocontrol arrest pathogens • Gain insight into genetics of host pathogen relation, plant resistance to pathogens.
	AC-401(A): Human Rights	<ul style="list-style-type: none"> • Practice the learned issues under human rights and human values in real life. • Provide social justices to people around them and provide guidance about human rights to their friends, parents and relatives
	AC-401(B): Current Affairs	<ul style="list-style-type: none"> • Identify important issues currently/ recently happening in India or world. • Summarize current affairs regularly.
	AC-401(C): Seminar + Review Writing	<ul style="list-style-type: none"> • Retrieve, analyse, comprehend the scientific information on a given topic and derive logical inferences. • Compile the scientific information on a topic, verify for similarity index or plagiarism. • Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.
	AC-401(D): Intellectual Property Rights (IPR)	<ul style="list-style-type: none"> • Understand to classify, identify advantages of intellectual property and IPR • Understand the need to protect biological diversity and follow bioethical practices in research work, awareness to protect intellectual property relevant to biology
M.Sc-I Organic Chemistry and Analytical Chemistry	CH-110: Physical Chemistry - I	<ul style="list-style-type: none"> • Apply the quantum mechanical principles to simple systems of chemical interests
		<ul style="list-style-type: none"> • Differentiate between the nature of chemical bond concept from MOT and VBT
		<ul style="list-style-type: none"> • To identify and write the different types of equilibriums in a given nuclear decay process
		<ul style="list-style-type: none"> • To explain the concept of Radiation dose measurement and its practical applications
		<ul style="list-style-type: none"> • To be able to calculate the ionic strength and activity coefficients by using the basic concepts underlying.
	CH-130: Inorganic Chemistry - I	<ul style="list-style-type: none"> • Apply the fundamental knowledge about the synthesis, structure, bonding and properties of some selected main group elements which are very important in different

	fields.
	<ul style="list-style-type: none"> • Apply the fundamental knowledge about the synthesis, structure, bonding and organometallic compounds, ionic solids and bioinorganic compounds. • Explain various concepts and theories of various topics from inorganic chemistry.
CH-150: Organic Chemistry – I	<ul style="list-style-type: none"> • Apply the fundamental concepts of organic reaction mechanism in theoretical and practical work, may be in academic, research laboratories, and industries. • Understand the importance and types of organic reactions and their applications. • Acquire knowledge of important characteristics of organic compounds.
CH-190: Industrial Safety and Good Laboratory Practices	<ul style="list-style-type: none"> • Understand the importance of laboratory safety. • Aware and follow healthy laboratory practices. • Acquire the knowledge about personal protective equipment.
AC-101: Practicing Cleanliness	<ul style="list-style-type: none"> • Identify need at of cleanliness at home/office and other public places. • Plan and observe cleanliness programs at home and other places. • Practice cleanliness practices in day-to-day life.
CH - 210: Physical Chemistry - II	<ul style="list-style-type: none"> • Students will gain an understanding of Joule-Thomson effect, third law of thermodynamics, absolute entropy, standard entropy and residual entropy and partial molar quantity and its significance. • Students should understand the importance of statistical thermodynamics and concept of partition functions. • Students should able to understand core study of chemical kinetics and spectroscopy.
CH - 230: Inorganic Chemistry - II	<ul style="list-style-type: none"> • Understand the concept of microstates, spectroscopic terms and Orgel diagram of inorganic compounds. • Gain knowledge about magnetic properties and charge transfer spectra of transition metal complexes. • Students are able to analyze structure reactivity and reaction mechanisms of metal complexes.
CH - 250: Organic Chemistry - II	<ul style="list-style-type: none"> • Students will learn the basic name reactions and rearrangement reactions. • Students will understand the applications of reagents in organic synthesis. • Students will apply the basic knowledge about core study of spectroscopy and stereochemistry

CH - 290: Instrumentation and Analysis	• Explain various theoretical concepts of analytical chemistry.
	• Build up ability to solve the numerical problems.
	• Apply theoretical principles, working of various classical and modern instrumentation techniques.
AC-201(A): Soft Skills	• Grasp soft skills and communication skills.
	• Apply life skills to manage the situations.
CH-P-1: Physical Chemistry Practical-I	• Students will understand the preparation for each experiment.
	• Setup and standardize the potentiometer, P ^H meter and conductometer.
	• Identify thermodynamics and kinetics of simple systems.
	• To know Safety requirements and lab skills to perform physico-chemical experiments.
	• To apply the principles and techniques to different systems.
CH-I-1: Inorganic Chemistry Practical-I	• Students will understand the process of ore analysis.
	• Students able to apply their knowledge for binary mixture separation of inorganic compounds using quantitative analysis
	• Students can analyze contents present in drug
	• Students able to evaluate the lattice energy of binary salt
	• Students are able to synthesize and evaluate the complex and also able to determination of complex purity.
	• Students understand the techniques of chromatography and its application in analysis.
	• Students able to handle and perform the instrumental analysis techniques.
CH-O-1: Organic Chemistry Practical-I	• Students understand the important of safety techniques and handling of chemicals.
	• Students are made aware of carrying out different types of reactions and their workup methods.
	• Students able to perform purification techniques in organic chemistry like recrystallization, distillation, steam distillation and extraction.
	• This practical course is designed to make student aware of green chemistry and role of green chemistry in pollution reduction.
	• Students are able to apply their knowledge for development of experiment involve

		green chemistry.	
	AC-201(B): Practicing Sports Activities	<ul style="list-style-type: none"> • Play any sports on the ground. • Become healthier and fit. 	
	AC-201(C): Practicing Yoga	<ul style="list-style-type: none"> • Perform different yoga. • Perform different asanas. 	
	AC-201(D): Introduction to Indian Music	<ul style="list-style-type: none"> • Identify different types of Indian music. • Develop more interest to learn and practice Indian music. 	
M.Sc II Analytical Chemistry	CH – 391: Concept of Analytical Chemistry	<ul style="list-style-type: none"> • Analyze fundamentals of analytical or applied chemistry. • Develop independent learning skill as well as experience of working in analytical laboratory. • Create the students with knowledge and generic skill for the employment in various sectors such as R and D, academics as well as professionals 	
	CH – 392 :Modern Separation Science	<ul style="list-style-type: none"> • The course offers the basic concepts of Modern Separation Science. • The course helps to build up a conceptual framework for understanding the principles and theories for GC, HPLC and Membrane-Based Methods. • The course furnishes detail knowledge about Calibration and validation etc 	
	CH – 393: Instrumental Methods of Analysis	<ul style="list-style-type: none"> • This course offers to create awareness about Electrochemical Sensor, Karl Fisher Apparatus, HFT and polarimetry • This course offers to detail mechanism of electrochemical sensor and KF Apparatus. 	
	CH – 380 :Pharmaceutical and Cosmetic Analysis	<ul style="list-style-type: none"> • The course offers the basic concepts of Pharmaceutical and Cosmetic Analysis. • The course helps to build up a conceptual framework for understanding the principles and theories for Official Methods of Standardization and Quality Control and Assay and Tests for Drugs. 	
	CH – 381: Analysis of Organics and Medicinal	<ul style="list-style-type: none"> • To learn the principles and Analysis of Organics and Medicinal • To learn the basic concepts about the Analysis of Drug and Medicine • To acquire knowledge about the petroleum products, Polymers and Plastics 	

CH – 491: Spectroscopic Methods of Analysis	• This course also offers to learn about Spectroscopic Methods of Analysis Chemistry
	• The course offers to study the importance of UV, FTIR, NMR, AMS, Fluorescence in industrial applications
	• This course helps to understand the principles behind UV, FTIR, ¹ HNMR, ¹³ CNMR and Mass spectroscopy
CH – 492: Special Analytical Methods & Analysis of Complex Materials	• To develop an understanding of the range and uses of analytical methods in chemistry
	• To establish an appreciation of the role of chemistry in quantitative analysis
	• To develop an understanding of the broad role of the chemist in measurement and problem solving for analytical tasks
CH –480: Environmental Analysis	• The students learn about different types of Soil, Sediment, Hazardous Waste, air, and Analysis
	• The students will be skilled in handling the different types of instruments
CH – 481: Bio – Analysis & Analysis of Food	• This course covers Analysis & Analysis of Food
	• The student will learn about food preservatives and forensic analysis
AC-301(A): Computer Skills	• Student will be able to understand various types of literature resources, technical reports
	• Student will be able to make a technically sound presentation
	• To learn the Ethics and plagiarism precautions to be taken while doing research
	• To understand the process of writing research project report and research proposal
	• At the end of this course, Student will be able to write a technically effective report
AC-301(B): Cyber Security	• Student will be able to understand different types of networks
	• Student will be able to understand security concepts
	• Student will learn about cyber crimes
AC-301 (C): Molecular Docking	• Student will be able to know about natural products.
	• Students will understand structure based drug design
	• Student will learn about the docking method
AC-301 (D): Seminar on Review of Research Paper	• students will learn how to do the referencing.
	• students will understand how to write the review of literature

	AC-401 (A): Human Rights	• Understand the importance and different approaches to Human rights.
		• Understand the different Constitutional provisions and legislation to protect Human rights in India.
		• Examine the challenges to Human Rights of different vulnerable sections.
		• Understand the issues concerning the rights of citizens in general.
	AC-401 (B): Technical Report Writing	• To be able to write comprehensive literature review, project or scientific reports on a given research topic.
		• To follow the ethical guidelines while doing research avoid plagiarism in thesis and research publications.
		• To be able to present and communicate their scientific work as well as ideas to scientific community.
		• To utilize the gained knowledge or skills in the scientific research and build his/her career in chemistry research field
	AC-401 (C): Current Affairs	• Understand effect of green house gases
		• To understand the reasons of Crisis and the solutions.
	AC-401 (D): Intellectual Property Rights	• to understand the concept of intellectual property Rights, its protection.
		• To know the latest changes made in Intellectual Property Rights.
M.Sc II Organic Chemistry	CH-350: Organic Reaction Mechanism	• Understand basic concepts of strength of acids and bases, factors affecting the strength of acid and bases
		• Acquire the skills to identify the pathway of reaction.
		• Formulate his/her own reasoned opinions in the mechanistic side of organic reactions.
		• Predict the major and minor products of a variety of organic reactions with appropriate stereochemistry.
	CH-351: Spectroscopic Methods in Structure Determination	• Interpret the spectral graphs.
		• Determine molecular structure by using UV, IR, NMR and Mass.
• Learn the structure determination of organic molecules by spectroscopic methods and by using the applications of IR spectroscopy for functional group determination.		
• Determine the complete structure of compounds using UV, IR, PMR, CMR and Mass spectroscopic methods		

CH-352: Organic Stereochemistry	• Differentiate stereoisomers
	• Understood stereochemical aspects of organic reactions
	• Understood the concept of asymmetric synthesis and resolution
	• Understood different types of pericyclic reactions
	• Understood stereochemical equivalence and nonequivalence
CH-353 A: Heterocyclic Chemistry	• Understood various methods of synthesis of heterocyclic compounds.
	• Acquire skill to predict reactivity of heterocyclic compounds.
	• To predict the product and suggest the mechanism.
	• Understand the importance of heterocycles in industry as well as in drug discovery.
CH-353 B: Green Chemistry	• Familiar with the Principles of green chemistry in detail
	• Learn how to develop a green and sustainable protocol for organic synthesis
	• Explore green and sustainable practices beyond organic synthesis
CH-450: Chemistry of Natural Products	• Learn the chemistry of terpenoids.
	• Learn the chemistry of Alkaloids derived from Amino acids.
	• Learn the structure, biogenesis of some natural products.
	• Utilized the knowledge of reagents in multi-step synthesis of biologically active members.
	• Explain the classification of vitamins and their biological importance.
CH-451: Synthetic Methods in Organic Chemistry	• Understand and apply the specific protecting groups for the reactant to react the desirable functional group.
	• Design the synthetic pathway from target molecule by applying the retrosynthesis, disconnection approach.
	• Understand various synthetic methods in organic synthesis.
	• Understand advanced organic reactions.
CH-452: Drug Chemistry	• Acquire knowledge on metabolism of biomolecules
	• Familiarise with amino acids, proteins, lipids, nucleic acids and enzymes
	• Understand biochemical reactions in microbial cells and metabolic pathway diversity
CH-O-2: Organic Chemistry Practical Course-II	• Separate the ternary mixture with proper technique and identification of the type of given compound.
	• Isolate and separate the organic compounds from natural products

	<ul style="list-style-type: none"> • Collect the data and solve the structure by given spectral data.
CH-O-3: Organic Chemistry Practical Course-III	<ul style="list-style-type: none"> • The students will be able to Understand the organic synthesis techniques.
CH-O-4: A Short Research Project	<ul style="list-style-type: none"> • To generate new research ideas based on the comprehensive literature survey • To acquire skill to execute the research project independently • To expertise in synthesis techniques and execution of research ideas would make the student quickly employable; either in industries or in academia for pursuing higher studies
AC-301(A): Computer Skills	<ul style="list-style-type: none"> • To create new document,work with existing documents. • To acquire skill to insert and resize tables. • To make power point presentation, auto content vizards.
AC-301(B): Cyber Security	<ul style="list-style-type: none"> • To understand different types of networks • To acquire skill to use Hash function, digital signature
AC-301 (C): Molecular Docking	<ul style="list-style-type: none"> • To understand the principle of drug development. • To identify target and its validation, incase of structure based drug design
AC-301 (D): Seminar on Review of Research Paper	<ul style="list-style-type: none"> • To select the topic for research in consultation with guide. • To present the literature review in the form of seminar.
AC-401 (A): Human Rights	<ul style="list-style-type: none"> • Understand the importance and different approaches to Human rights. • Understand the different Constitutional provisions and legislation to protect Human rights in India. • Examine the challenges to Human Rights of different vulnerable sections. • Understand the issues concerning the rights of citizens in general.
AC-401 (B): Technical Report Writing	<ul style="list-style-type: none"> • To be able to write comprehensive literature review, project or scientific reports on a given research topic. • To follow the ethical guidelines while doing research avoid plagiarism in thesis and research publications. • To be able to present and communicate their scientific work as well as ideas to scientific community. • To utilize the gained knowledge or skills in the scientific research and build his/her career in chemistry research field
AC-401 (C): Current Affairs	<ul style="list-style-type: none"> • Understand effect of greenhouse gases.

		<ul style="list-style-type: none"> • To understand the reasons of Crisis and the solutions.
	AC-401 (D): Intellectual Property Rights	<ul style="list-style-type: none"> • To understand the concept of intellectual property Rights, its protection. • To know the latest changes made in Intellectual Property Rights.
M.Sc. I Mathematics	MT-101: Advanced Real Analysis	<ul style="list-style-type: none"> • Acquire fundamentals of Countability, Continuum hypothesis and Zorn's lemma
		<ul style="list-style-type: none"> • Understand and analyze Lebesgue measure, measurable functions and their properties
		<ul style="list-style-type: none"> • Solve integrations of functions not necessarily defined on closed sets and verify their properties.
	MT-102: Topology	<ul style="list-style-type: none"> • understand the definition of topology, examples, basis, order topology.
		<ul style="list-style-type: none"> • understand the subspaces, closed sets, limit points of a set.
		<ul style="list-style-type: none"> • understand continuous functions on topological spaces, product topology, metric topology.
		<ul style="list-style-type: none"> • understand connectedness of a set, compactness and separation axioms.
	MT - 103: Abstract Algebra	<ul style="list-style-type: none"> • Understand class equation for finite groups and its applications.
		<ul style="list-style-type: none"> • Explain Sylow theory and solvable groups.
		<ul style="list-style-type: none"> • Learn Euclidean domains, Principal ideal domains, unique factorization domains, Noetherian rings and the Hilbert Basis Theorem.
	MT - 104: Partial Differential Equations	<ul style="list-style-type: none"> • Find solutions of partial differential equations and determine the existence, uniqueness of solution of partial differential equations.
		<ul style="list-style-type: none"> • Apply the concepts of partial differential equations to solve problems in allied fields.
		<ul style="list-style-type: none"> • Know the important theorems and their applications.
MT 105 Programming in C++	<ul style="list-style-type: none"> • Visualize the features of C++ supporting object-oriented programming. 	
	<ul style="list-style-type: none"> • Construct how to produce object-oriented software using C++ 	
	<ul style="list-style-type: none"> • Survey the major object-oriented concepts to implement object-oriented programs in C++, encapsulation, inheritance and polymorphism 	
AC-101: Practicing Cleanliness	<ul style="list-style-type: none"> • Identify need at of cleanliness at home/office and other public places. 	
	<ul style="list-style-type: none"> • Plan and observe cleanliness programs at home and other places. 	
	<ul style="list-style-type: none"> • Practice Japanese 5-S practices in regular life. 	
MT - 201: Number Theory	<ul style="list-style-type: none"> • Understand the concept of Mobius function $m(n)$, The Euler totient function $f(n)$, Mangolt function $\Lambda(n)$, Liouvilles function $\lambda(n)$, The divisor function $\sigma(n)$, Bell series. 	

	<ul style="list-style-type: none"> • Explain Residue classes, Lagrange's theorem and its applications, Polynomial congruences with prime power moduli.
	<ul style="list-style-type: none"> • Learn Quadratic residues, existence and non-existence of primitive roots.
MT - 202: Complex Analysis	<ul style="list-style-type: none"> • Acquire useful knowledge of complex analysis • understand the concept of power series about complex analysis • solve the complex integration in various forms • gain the knowledge of singularities • prepare themselves for competitive examinations:SET, NET, GATE etc.
MT - 203: Linear Algebra	<ul style="list-style-type: none"> • Understand and interpret the concepts of modules and submodules, Homomorphism and isomorphism in modules, types of modules and group theorem. • Understand the concepts of Jordan and Rational canonical forms and use them to solve problems involved in matrix theory and computer algebra. • Understand the concepts of Local rings and modules, Noetherian modules, Primary decomposition for modules.
MT - 204: Classical Mechanics	<ul style="list-style-type: none"> • Define and understand basic mechanical concepts related to advanced problems of classical mechanical systems and application of Lagrangian formation • Derived the Lagrange's equation and Hamilton principle. • Demonstrate knowledge and understanding of fundamental concept-- the Cayley-Klein parameters, linear & angular momentum, Tensors and dyadic, and Principle axis transformations. • Understand the concept of Legendre's transformation and apply to derived the Hamilton's Equation • Understand the concept of canonical transformation and apply to derived Poisson's Identity & Poisson's Bracket's
MT - 205: Python Programming	<ul style="list-style-type: none"> • Acquire skill in Python package particularly basics of Python • Represents data with the help of plotting in Python • Understand symbolic mathematics and solve system of equations with Python programming.
AC-201(A): Soft Skills	<ul style="list-style-type: none"> • Improve communication skill • Take self assessment and think of SWOT analysis

		<ul style="list-style-type: none"> • Able to face interviews and do presentations with confidence.
	AC-201(B): Practicing Sports Activities	<ul style="list-style-type: none"> • Acquire sport skill among them self • Keep them self physical and mentally fine.
	AC-201(C): Practicing Yoga	<ul style="list-style-type: none"> • Acquire Yoga skills for mental and physical health • Develop self confidence for problems arise in their real life.
	AC-201(D): Introduction to Indian Music	<ul style="list-style-type: none"> • Identify different types of Indian music. • Develop more interest to learn and practice Indian music.
M.Sc. II Mathematics	MT-301: Topics in Functional Analysis	<ul style="list-style-type: none"> • Know how functional analysis uses and unifies idea from vector spaces
		<ul style="list-style-type: none"> • apply fundamental theorem from theory of normed and Banach space
		<ul style="list-style-type: none"> • Understand and apply from theory of Hilbert spaces to others areas
	MT - 302: Numerical Analysis	<ul style="list-style-type: none"> • Acquire techniques of numerical methods
		<ul style="list-style-type: none"> • Solve system of equations with the help of numerical techniques
		<ul style="list-style-type: none"> • Find solutions of differential equations numerically
	MT - 303: Topics in Field Theory	<ul style="list-style-type: none"> • Understand extensions on fields, Eisenstein criterion, reducible and irreducible polynomials, algebraically closed field.
		<ul style="list-style-type: none"> • understanding fundamentals of Normal extensions, Separable and Inseparable extensions.
		<ul style="list-style-type: none"> • understand the applicability of Galois theory and Roots of Unity, Solve the problems on solvability by radicals, basic knowledge of Transcendental extensions
	MT - 304: Fluid Dynamics	<ul style="list-style-type: none"> • understand the concept of fluid & their types, lines to study of fluid flow.
		<ul style="list-style-type: none"> • understand the equation of motion of fluid.
		<ul style="list-style-type: none"> • understand the information regarding three-dimensional flows.
		<ul style="list-style-type: none"> • understand the concept of two-dimensional flows.
		<ul style="list-style-type: none"> • understand various models in viscous flows.
	MT 305-Statistical Techniques	<ul style="list-style-type: none"> • Solving examples based on Sample space, discrete probability, Mathematical theory of probability, independent events, Addition and Multiplication theorems of probability, conditional probability and Baye's theorem.

	<ul style="list-style-type: none"> ● Making applications Theoretical distributions: Random variable, probability distribution of a discrete and continuous random variable. Probability density function, mathematical expectation. Binomial, Poisson and Normal distributions and their properties. ● Analyzing statistical data to study Correlation, scatter diagram method, Karl Pearson's method, Probable error, Standard error and Rank correlation and concurrent deviations.
MT-306: Lattice Theory	<ul style="list-style-type: none"> ● Understand Lattice and Lattice as an algebraic structures ● Explain Homomorphism between two Lattices, Boolean algebra ● understand neutral elements, structure theorem
AC-301(A): Computer Skills	<ul style="list-style-type: none"> ● Identify their lacunas about some computer skills and try to overcome the same. ● Practice the learned computer skills in real life and do their jobs more effectively.
AC-301(B): Cyber Security	<ul style="list-style-type: none"> ● Practice learned cyber security skills/rules in real life. ● Provide guidance about cyber security skills/rules to their friends, parents and relatives.
AC-301(C): Typesetting with Latex	<ul style="list-style-type: none"> ● Acquire skill of mathematical typing Using Latex ● Write communication letters, mathematical note, research articles using Latex typesetting ● Type Books, Research thesis with figure, cross referencing and Bibliography
AC-301(D): Project on Topics in Mathematics	<ul style="list-style-type: none"> ● Analyze material available at different sources ● Write articles/research notes/review on particular topic of interest ● develop research skills
MT-401: Linear Integral Equations	<ul style="list-style-type: none"> ● Know the relation between differential and integral equations, and how to change from one to another. ● Understand different kinds of kernels and use techniques for solving problems on each kind. ● Use Laplace transform, Fourier transform for solving a wide range of differential and integral equations.
MT-402: Operations Research	<ul style="list-style-type: none"> ● analyze the results and propose solutions to the decision-making processes in Management and Engineering. ● describe mathematical tools needed to evaluate decision problems

	<ul style="list-style-type: none"> ● develop technical knowledge for replacement and inventory models to solve problem arises in allied fields.
MT - 403: Commutative Algebra	<ul style="list-style-type: none"> ● Understand the concept of exact sequences, projective and flat modules. ● Explain the concepts of Artinian module and Artinian rings. ● Learn the Valuation rings and Discrete valuation rings.
MT - 404: Advanced Abstract Algebra	<ul style="list-style-type: none"> ● Know the different types of ideals and their importance ● Know Jacobson radical and prime radical of a ring with the relative concepts ● Know the direct sum of rings and some advanced results on Noetherian rings
MT 405 Algebraic Topology	<ul style="list-style-type: none"> ● Understand the fundamental concepts and methods in algebraic topology. ● Explain the well known theorems: The Euler-Poincare theorem, Euler's theorem, Brouwer's fixed point theorem. ● Learn the relation between first homology group and fundamental group.
MT – 406: Theory of Special Functions	<ul style="list-style-type: none"> ● list the basic concept of integral calculus and special functions of various engineering problem and to know the application of some basic mathematical methods via all these special functions. ● Explain the applications and the usefulness of these special functions. ● Justify the use of gamma function, beta function special functions, Hypergeometric function and Hypergeometric series to: evaluate different types of integral calculus problems and solve differential equations
MT – 406: Cryptography	<ul style="list-style-type: none"> ● explain symmetric and Asymmetric cryptography ● see how Finite Fields and Number Theory are used to design modern cryptosystems for securing our online communication ● explain how digital signature is used in place of handwritten signature on a document
AC-401(A): Human Rights	<ul style="list-style-type: none"> ● Practice the learned issues under human rights and human values in real life. ● Provide social justices to people around them and provide guidance about human rights to their friends, parents and relatives.
AC-401(B): Current Affairs	<ul style="list-style-type: none"> ● Identify important issues currently/ recently happening in India or world. ● Summarize current affairs regularly.
AC-401(C): Review and Seminar of Research Papers in Mathematics	<ul style="list-style-type: none"> ● Prepare own notes for presentation

		<ul style="list-style-type: none"> ● Cultivate research skill ● Think analytically
	AC-401(D): Vedic Mathematics	<ul style="list-style-type: none"> ● recognize their hidden potential, improve their mathematical abilities ● Enhance academic performance particularly in mathematical calculations ● know the effectiveness of the Vedic mathematics techniques
M.Sc. I Statistics	ST-101: Real Analysis	<ul style="list-style-type: none"> ● Identify Sequence and Series comprising convergence sequences and their upper and lower limits. ● Evaluate the limits of functions, infinite limits and limit at infinity. ● Understand the Continuity, Mean value theorem and Taylor's theorem.
	ST-102: Linear Algebra	<ul style="list-style-type: none"> ● Understand the concept of linear independence, bases and dimension associated with vector spaces, dimensionality theorem etc. ● Determine existence of left, right and proper inverses, rank inequalities under matrix operations, different factorizations and decompositions of a matrix, solve linear systems etc ● Construct the orthogonal matrix associated with a non- singular matrix through a Gram-Schmidt orthogonalization process, diagonalization of a symmetric matrix, the role of eigenvalues, eigenvectors, Cayley Hamilton theorem in theory of matrices etc.
	ST-103: Sampling Theory And Statistics For National Development	<ul style="list-style-type: none"> ● Describe different methods of sampling survey methods and objectives and give examples of situations where these methods are useful. ● Compute different selection or inclusion probabilities under various sampling schemes. ● Analyse survey data by using estimation procedures under different sampling methods. ● Describe estimation of population parameters under different sampling methods. ● Explain different economic indicators and role of statistics in National Developments.
	ST-104: Distribution Theory	<ul style="list-style-type: none"> ● Develop problem-solving technique to real-world events. Identify the features that describes a distribution of data. ● Understand various discrete and continuous probability distributions along with their real-life applications. Interrelation between probability distribution of random variables and decomposition of mixture distributions. ● Understand transformation of random variables concept and related procedures to obtain their distributions. Learn compounding and truncation technique to generate new distributions. ● Apply general distribution theory of order statistics.

ST-105: R Programming And Numerical Methods	<ul style="list-style-type: none"> ● Describe R methods/codes/packages/ Apps in R programming
	<ul style="list-style-type: none"> ● Develop various R Programs for statistical problems, models and methods
	<ul style="list-style-type: none"> ● Construct the different packages and flowcharts useful in Statistics
ST-106: Practicals-I	<ul style="list-style-type: none"> ● Use MATLAB to solve algebraic problems, demonstrate and verify various theorems, Lemmas, results and algebraic concepts.
	<ul style="list-style-type: none"> ● Visualize data and exploratory data analysis using statistical software
	<ul style="list-style-type: none"> ● Apply different estimation tools for estimation of population parameters when real life data sets are given.
	<ul style="list-style-type: none"> ● Compare different estimators or sampling methods when real life data sets are given.
	<ul style="list-style-type: none"> ● Simulate random number from from discrete, continuous and mixture distributions with the help of statistical software
AC-101: Practicing Cleanliness	<ul style="list-style-type: none"> ● Identify need at of cleanliness at home/office and other public places.
	<ul style="list-style-type: none"> ● Plan and observe cleanliness programs at home and other places.
	<ul style="list-style-type: none"> ● Practice Japanese 5-S practices in regular life
ST-201: Probability Theory	<ul style="list-style-type: none"> ● Recall and define some more concepts of set theory.
	<ul style="list-style-type: none"> ● Describe field, -field, measurable space and measure theoretical definition of random variable.
	<ul style="list-style-type: none"> ● Apply different moment inequalities and concept of convergence of sequence of random variables.
	<ul style="list-style-type: none"> ● Apply WLLN and CLT to solve real life problems.
ST-202: Linear Models And Regression Analysis	<ul style="list-style-type: none"> ● Apply theory of Linear models to study various statistical techniques such as Regression analysis, Analysis of Variance, Experimental designs etc.
	<ul style="list-style-type: none"> ● Apply various statistical test to determine the acceptability of a fitted model.
	<ul style="list-style-type: none"> ● Construct best fitted model after applying various remedial measures and checking validation of fitted model
	<ul style="list-style-type: none"> ● Understand the concept of generalized linear models and implementation in real-life situation.
ST-203: Multivariate Analysis	<ul style="list-style-type: none"> ● Understand the link between multivariate techniques and corresponding univariate techniques
	<ul style="list-style-type: none"> ● Apply multivariate techniques appropriately, undertake multivariate hypothesis tests and draw appropriate conclusions

	<ul style="list-style-type: none"> Summarize and interpret multivariate data using appropriate multivariate methods to analyse data with statistical software.
ST-204: Parametric Inference	<ul style="list-style-type: none"> Understand sufficiency principle, Likelihood Principle as principles of data reduction. Apply important properties of statistics such as sufficiency, completeness, ancillarity and its application to inference study and learn families of distributions such as Exponential family, Pitman family. Estimate unknown parameters using different methods of estimation techniques such as method of moments, maximum likelihood method and obtain lower bounds for variance of an unbiased estimators and related concept of MVUE, MVBUE. Construct MP test, UMP test and knowledge of Interval estimation. Understand the concept of Bayesian inference and its applications.
ST-205: Python Programming	<ul style="list-style-type: none"> Design object-oriented programs with Python using functions, loops, list, tuples, dictionaries etc. and classes Build and package Python modules for reusability. Apply the best features statistical thinking and techniques to program real life problems
ST-206: Practicals-II	<ul style="list-style-type: none"> Process and analyse the multivariate data, interpret the results etc. Develop and validate the regression models on the basis of data using R software and interpret the results. Understand concept of sampling distribution of estimators, likelihood functions, power functions. Apply object-oriented programs for solving statistical problems with Python using functions, loops, list, tuples, dictionaries, different packages and modules.
AC-201(A): Soft Skills	<ul style="list-style-type: none"> Identify their lacunas about some soft skills and try to overcome the same Practice learned soft skills in real life and do their jobs more effectively
AC-201(B): Practicing Sports Activities	<ul style="list-style-type: none"> Identify one or more sports of their choice and develop more interest to participate at University/National level sport events. Practice the learned sports activities regularly in real life
AC-201(C): Practicing Yoga	<ul style="list-style-type: none"> Identify and practice some Yoga asanas regularly in their life to remain healthy. Provide guidance and practice about Yoga to their friends, parents and relatives.
AC-201(D): Introduction to Indian Music	<ul style="list-style-type: none"> Identify different types of Indian music

		<ul style="list-style-type: none"> ● Develop more interest to learn and practice Indian music.
M.Sc. II Statistics	ST-301: Asymptotic And Nonparametric Inference	<ul style="list-style-type: none"> ● Apply large sample properties of an estimator such as consistency, CAN estimator and different methods to construct such estimators.
		<ul style="list-style-type: none"> ● Understand large sample properties of MLEs.
		<ul style="list-style-type: none"> ● Construct likelihood ratio test (LRT) for testing of hypothesis with different examples, obtain asymptotic confidence interval (ACI) of a parameter.
		<ul style="list-style-type: none"> ● Understand knowledge about non-parametric method and some important non-parametric tests.
	ST-302: Design, Planning And Analysis Of Experiments	<ul style="list-style-type: none"> ● Understand how to use designed experiments to achieve breakthrough improvements in process efficiency and quality, have a general insight into how data analysis is done in connection to designed experiments
		<ul style="list-style-type: none"> ● Critically review basic concepts and models of experimental design.
		<ul style="list-style-type: none"> ● Analyse the results of a designed experiment in order to conduct the appropriate statistical analysis of the data, interpret statistical results from an experiment and report them in non-technical language.
	ST-303: Total Quality Management (Tqm), Statistical Process Control (Spc) And Reliability	<ul style="list-style-type: none"> ● Describe the concept of variation, Quality, TQM tools and terminologies useful as per standards of ISO.
		<ul style="list-style-type: none"> ● Describe and apply SPC tools useful for Quality control and Quality improvement.
		<ul style="list-style-type: none"> ● Apply different graphical tools useful in SPC and interpret their uses.
		<ul style="list-style-type: none"> ● Describe the role of Process Capability Analysis and its measures useful in SPC
		<ul style="list-style-type: none"> ● Explain and Apply different terminologies useful in mathematical reliability based importance of components under different coherent structures.
	ST-304: Stochastic Processes	<ul style="list-style-type: none"> ● Clarify the power of stochastic processes and their range of applications;
		<ul style="list-style-type: none"> ● Demonstrate essential stochastic modelling tools including Markov chains and queuing theory;
		<ul style="list-style-type: none"> ● Formulate and solve problems which involve setting up stochastic models
	ST-305(A): Design And Analysis Of Clinical Trials	<ul style="list-style-type: none"> ● Reduce the bias and variability involved during conduction of Clinical trials.
		<ul style="list-style-type: none"> ● Estimate the true therapeutic effect of the drug
		<ul style="list-style-type: none"> ● Analyse the outcomes of clinical experiments through various statistical techniques

ST-305(B): Econometrics	<ul style="list-style-type: none"> ● Identify the suitable methods that is relevant for different problems, and advantages and disadvantages of different empirical approaches.
	<ul style="list-style-type: none"> ● Estimate and test in Econometric problems using statistical techniques like multiple regression analysis, multivariate analysis, analysis of variance, correlation analysis, logistic regression analysis and exploratory factor analysis.
	<ul style="list-style-type: none"> ● Interpret results of empirical analyses and draw conclusions based on these and make qualified choices between different models.
ST-306: Practicals - III	<ul style="list-style-type: none"> ● Demonstrate consistency and asymptotic normality of estimators, for testing of hypothesis use of appropriate non-parametric tests using R software
	<ul style="list-style-type: none"> ● Solve objective specific problems through analysis of multivariate data with continuous response and qualitative and/or quantitative predictors.
	<ul style="list-style-type: none"> ● Apply different SPC tools to analyse Industrial production data.
	<ul style="list-style-type: none"> ● Simulate stochastic processes and reliability systems and estimate different parameters of interest.
	<ul style="list-style-type: none"> ● Analyse the outcomes of clinical experiments through various statistical software.
AC-301(A): Computer Skills	<ul style="list-style-type: none"> ● Identify their lacunas about some computer skills and try to overcome the same.
	<ul style="list-style-type: none"> ● Practice the learned computer skills in real life and do their jobs more effectively
AC-301(B): Cyber Security	<ul style="list-style-type: none"> ● Practice learned cyber security skills/rules in real life.
	<ul style="list-style-type: none"> ● Provide guidance about cyber security skills/rules to their friends, parents and relatives.
AC-301(C): Base Statistical Analysis Software (SAS)	<ul style="list-style-type: none"> ● Understand the SAS Studio and Enterprise Guide programming environment
	<ul style="list-style-type: none"> ● Create, Read and combine various types of data into SAS data sets
	<ul style="list-style-type: none"> ● Apply various statistical methods using SAS
	<ul style="list-style-type: none"> ● Create Report and enhance listing and summary reports
AC-301 (D): Review Of Research Paper	<ul style="list-style-type: none"> ● Search scientific research articles.
	<ul style="list-style-type: none"> ● Describe the contents of research paper in summarized form.
	<ul style="list-style-type: none"> ● Apply the techniques learn from research paper in other situations.
ST-401: Optimization Techniques	<ul style="list-style-type: none"> ● Identify the relationship between decision variable and the objective function with respect to the constraints

	<ul style="list-style-type: none"> ● Explain and solve Linear programming problem using simplex method, dual simplex method and carry out sensitivity analysis of LPP. ● Apply the concept of Optimization problem, theory of duality, queuing theory, inventory models and networking models in real world problems
ST-402: Actuarial Statistics	<ul style="list-style-type: none"> ● Identify basic risk available in the problem and formulate suitable loss random variable. ● Summarize different terms of life tables and their applications in Life Insurance. ● Apply tools of Financial Mathematics to solve the real-life problems related to investment, loan repayment and life annuities. ● Simulate data from present value random variables from different life insurances or life annuities to estimate required premium. ● Formulate new need-based life insurance contract.
ST-403: Time Series Analysis	<p>Outline the processes of identification, estimation and diagnosis of a time series, the criteria for choosing between models and the diagnostic tests that might be applied to the residuals of a time series after estimation</p> <ul style="list-style-type: none"> ● Identify the important periodic components of a series through frequency domain analysis
ST-404(A): Data Mining	<ul style="list-style-type: none"> ● Analyze data mining problems and reason about the most appropriate methods to apply to a given dataset and knowledge extraction need. ● Implement basic pre-processing, association mining, classification and clustering algorithms. ● Apply and reflect on advanced pre-processing, association mining, classification and clustering algorithm. ● Work efficiently in groups and Evaluate the algorithms on real-world problems.
ST-404(B): Survival Analysis	<ul style="list-style-type: none"> ● Understand various statistical methods and Data Analysis techniques for Survival models. ● Apply parametric and non-parametric methods for estimation of survival Function. ● Estimate parameters when lifetime data available for censored observations.
ST-405: Technical Communications And Practicals-IV	<ul style="list-style-type: none"> ● Prepare self seminar presentation, CV and write official letters/mails for communication. ● Fit suitable model to time series data and justify its appropriateness through accuracy measures or different criteria such as AIC, AICC or BIC.

		<ul style="list-style-type: none"> ● Apply knowledge of life tables, financial mathematics, human mortality laws to calculate premium of life insurance contracts.
		<ul style="list-style-type: none"> ● Solve different optimization related problems using statistical software.
		<ul style="list-style-type: none"> ● Simulate and Understand queuing and inventory process
	ST-406: Project	<ul style="list-style-type: none"> ● Understand the real-world problems through statistical angle.
		<ul style="list-style-type: none"> ● Design and execute experiments/surveys independently.
		<ul style="list-style-type: none"> ● Analyze, co-relate and interpret the data and build up skills and temperament of scientific writing.
	AC-401(A): Human Rights	<ul style="list-style-type: none"> ● Practice the learned issues under human rights and human values in real life.
		<ul style="list-style-type: none"> ● Provide social justices to people around them and provide guidance about human rights to their friends, parents and relatives.
	AC-401(B): Current Affairs	<ul style="list-style-type: none"> ● Identify important issues currently/ recently happening in India or world.
		<ul style="list-style-type: none"> ● Summarize current affairs regularly.
	AC-401(C): Introduction To Latex	<ul style="list-style-type: none"> ● Apply basic components of LaTeX along with accessing different packages from MikTeX such as package manager, update manager, etc
		<ul style="list-style-type: none"> ● Write Mathematical Articles/Documents Via Latex.
		<ul style="list-style-type: none"> ● Prepare presentation using Seminar and Beamer Package.
	AC-401(D): History Of Statistics	<ul style="list-style-type: none"> ● Describe historical development of statistical theory/concepts.
		<ul style="list-style-type: none"> ● Collect and report contribution of different National/International statisticians.
		<ul style="list-style-type: none"> ● Compare National/International statistical systems.
M. Sc.I Biotechnology	BT- 101 : Microbial Diversity And Physiology	<ul style="list-style-type: none"> ● differentiate various groups of microbes and microbial taxonomy
		<ul style="list-style-type: none"> ● acquire knowledge on adaptability of extremophiles and microbial diversity
		<ul style="list-style-type: none"> ● acquaint with the scope of microbiology in different diversified areas
	BT-102: Biomolecules And Molecular Enzymology	<ul style="list-style-type: none"> ● acquire knowledge on metabolism of biomolecules and to apply the knowledge to explore applications of various enzymes
		<ul style="list-style-type: none"> ● familiar with amino acids, proteins, lipids, nucleic acids and enzymes and kinetics of enzyme
	BT-103: Immunology	<ul style="list-style-type: none"> ● understand fundamental basis of immune system and immune response
		<ul style="list-style-type: none"> ● apply host defence, allergy, organ transplant and immunological diseases
		<ul style="list-style-type: none"> ● use various immunochemical techniques for diagnosis of diseases

BT-104 Laboratory Course – I	● acquire expertise in basic biochemical techniques.
	● get knowledge in the analysis and estimation of biomolecules
	● develop expertise in basic analytical techniques of microbiology.
BT-105 Laboratory Course - II	● apply molecular diagnostic and immunodiagnostic techniques.
	● undertake enzyme kinetics in industrial application
AC-101: Practicing Cleanliness	● Identify need at of cleanliness at home/office and other public places.
	● Plan and observe cleanliness programs at home and other places.
	● Practice Japanese 5-S practices in regular life.
BT-201: Molecular Biology	● receive elaborate knowledge on nucleic acids and molecular mechanisms in Prokaryotes and Eukaryotes
	● understand gene expressions and signal sequences in Prokaryotes and Eukaryotes
BT-202: Bioinstrumentation And Biostatistics	● acquire knowledge on basic biophysical and biochemical aspects and Biostatistics
	● learn purification of molecules, analytical tools, electrophoretic separation
	● learn how to interpret protein mobility on PAGE under native and SDS
BT-203 Bioprocess Engineering And Technology	● Describe the design and operation of various types of fermenters.
	● Elaborate the theoretical aspects and practical requirements for the growth of microorganisms in industries and R and D organizations
	● Describe the theoretical basis of fermentation technology for industrial applications.
	● Understand and conduct fermentation process kinetics.
AC-201(A): Soft Skills	● Identify their lacunas about some soft skills and try to overcome the same.
	● Practice learned soft skills in real life and do their jobs more effectively.
AC-201(B): Practicing Sports Activities	● Identify one or more sports of their choice and develop more interest to participate at University/National level sport events.
	● Practice the learned sports activities regularly in real life.
AC-201(C): Practicing Yoga	● Identify and practice some Yoga asanas regularly in their life to remain healthy.
	● Provide guidance and practice about Yoga to their friends, parents and relatives.
AC-201(D): Introduction to Indian Music	● Identify different types of Indian music.
	● Develop more interest to learn and practice Indian music.

M. Sc.II Biotechnology	BT-301 Genetic Engineering	● learn basic ideas on cloning vehicle
		● know more about cDNA and amplification products
		● Understand the construction of recombinant DNA and molecular biology tools.
	BT-302 Plant Biotechnology	● to gain fundamental knowledge in plant biotechnology and their applications.
	BT-303 Advanced Environmental Biotechnology	● Understand significance of microbes in food, wastewater treatment and clean-up
		● Describe use of microbes in solid and liquid waste treatment as well as bioremediation of toxicants, thereby acquire knowledge about microbial potentials
		● Understand the relevance of microbial standards for food quality assurance.
	BT-304 Laboratory Course –V	● acquire knowledge on basic plant biotechnology aspects
		● learn purification of organism/molecules, transformation tools, electrophoretic separation
		● learn how to interpret DNA/ protein mobility on various techniques
	BT-305 Laboratory Course –VI	● understand significance of microbes in food, wastewater treatment and clean-up
		● describe use of microbes in solid and liquid waste treatment as well as bioremediation of toxicants, thereby acquire knowledge about microbial potentials
		● understand the relevance of Production of bioenergy
	AC-301(A): Computer Skills	● Identify their lacunas about some computer skills and try to overcome the same.
		● Practice the learned computer skills in real life and do their jobs more effectively.
	AC-301(B): Cyber Security	● Practice learned cyber security skills/rules in real life.
		● Provide guidance about cyber security skills/rules to their friends, parents and relatives.
	AC-301(C): Seminar + Review Writing	● Retrieve, analyse, comprehend the scientific information on a given topic and derive logical inferences.
		● Compile the scientific information on a topic, verify for similarity index or plagiarism.
● Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.		
AC-301(D): Biostatistics	● Describe and identify data generated from biological processes and experiments	
	● Use summary statistics: measures of central tendency, measures of dispersion with their interpretations for explain the data more effectively through graphical tools.	

	<ul style="list-style-type: none"> ● Apply knowledge of correlation, regression analysis and testing of hypothesis to real life data and understand their interpretation.
BT- 401 Industrial And Business Biotechnology	<ul style="list-style-type: none"> ● to gain entrepreneurial skills, understand the various operations involved in venture creation ● to identify scope for entrepreneurship in biosciences ● to utilize the schemes promoted through knowledge centres and various agencies.
BT-402 Bioinformatics	<ul style="list-style-type: none"> ● access information from databases and interpret phylogenetic tree to gain insight into evolutionary path ● understand various algorithms ● practice biostatistics for interpretation of experimental data.
BT-403 Pharmaceutical Biotechnology	<ul style="list-style-type: none"> ● To get in-depth knowledge on different categories of antibiotics and biopharmaceuticals ● To understand drug design quality control and regulatory elements of pharmaceuticals ● To discriminate conventional and combinatorial tools used in drug discovery
BT-405 Lab Course–VIII (Project)	<ul style="list-style-type: none"> ● Conceive a problem based on published research and carry out comprehensive survey of literature ● Plan and carry out task in given framework of dissertation and present the work in written and viva ● Use a holistic view to critically, independently and creatively identify, formulate and deal with complex issues. ● Learn handling of instruments, use of chemicals and how to conduct the experiments ● Learn how to present the project in power point and answer the queries to examiners as well as science of writing
AC-401(A): Human Rights	<ul style="list-style-type: none"> ● Practice the learned issues under human rights and human values in real life. ● Provide social justices to people around them and provide guidance about human rights to their friends, parents and relatives.
AC-401(B): Current Affairs	<ul style="list-style-type: none"> ● Identify important issues currently/ recently happening in India or world. ● Summarize current affairs regularly.
AC-401(C): Seminar + Review Writing	<ul style="list-style-type: none"> ● Retrieve, analyse, comprehend the scientific information on a given topic and derive logical inferences. ● Compile the scientific information on a topic, verify for similarity index or plagiarism.

		<ul style="list-style-type: none"> ● Deliver the interactive presentation of scientific data before audience and participate in open discussion with confidence.
	AC-401(D): Intellectual Property Rights (IPR)	<ul style="list-style-type: none"> ● Understand to classify, identify advantages of intellectual property and IPR ● Understand the need to protect biological diversity and follow bioethical practices in research work, awareness to protect intellectual property relevant to biology
M.Com. I	101 – Economics Of Industries-I	<ul style="list-style-type: none"> ● To obtain knowledge of need and significance of the study of Industrial Economics
		<ul style="list-style-type: none"> ● To obtain practical knowledge about Industrial Locations
		<ul style="list-style-type: none"> ● To Obtain an understanding of various types market combinations such as Cartel, Take Over, Mergers & Acquisition
		<ul style="list-style-type: none"> ● To Obtain an understanding of various types pricing methods and procedures
		<ul style="list-style-type: none"> ● To Understand the preparation of the profile of a project.
		<ul style="list-style-type: none"> ● To obtain knowledge on Innovation, Research and Development, Rationalization & Automation
		<ul style="list-style-type: none"> ● To Obtain a theoretical understanding of Price Wars and Non-price competition, Industrial finance and productivity
	103 – Research Methodology	<ul style="list-style-type: none"> ● Research: Meaning, Objectives, Qualities of Good Research
		<ul style="list-style-type: none"> ● Importance & Need of Research in Business
		<ul style="list-style-type: none"> ● Classification of Research: Basic research, Pure and Applied Research, descriptive Research,
		<ul style="list-style-type: none"> ● Diagnostic Research, Analytical and Empirical Research.
		<ul style="list-style-type: none"> ● Issues and Problems in Research
		<ul style="list-style-type: none"> ● Research through cyber way, Plagiarism in Research
	104 A – Advanced Accountancy	<ul style="list-style-type: none"> ● To obtain knowledge about Disclosure requirements of AS 20,21,22 and 23.
		<ul style="list-style-type: none"> ● Apply the Consolidation Procedures for Consolidation of financial statements of single as well
		<ul style="list-style-type: none"> ● as multiple subsidiaries and prepare consolidated financial statements.
		<ul style="list-style-type: none"> ● Prepare Statement of Affairs, Draw Deficiency Account and prepare liquidators final statement of account.
		<ul style="list-style-type: none"> ● Understand the provisions of Insurance Act requiring preparation of financial statements for the insurance business and maintenance of records of policies.
<ul style="list-style-type: none"> ● To obtain knowledge on International Financial Reporting Standards and need to converge to IFRS from Ind-AS 		

	104 B – Advanced Cost Accountancy	<ul style="list-style-type: none"> ● Compute the elements of cost. ● Apply Cost Accounting Standards to Cost Accounting. ● Allocate overheads and indirect costs to products and services. ● Calculate transfer prices. 		
	201 – Economics Of Industries-II	<ul style="list-style-type: none"> ● Student will be able to understand Industrialization and Industrial sector in India ● Students will understand Problems in Industrial Development in India ● Students will understand role of globalization and its impact on Indian industry ● Students will understand role of Industrial Labor Policy and Social Security 		
	204 A – Advanced Accountancy	<ul style="list-style-type: none"> ● To obtain knowledge about Disclosure requirements of AS 7,11,16 & 17. ● Journalise the hire purchase entries in books of both parties as well as learn about various methods of accounting for hire purchase transactions ● Prepare Contract Account and carry out Accounting for Construction businesses ● Learn the techniques of foreign currency translation for foreign branches and incorporate foreign branch balances in head office books. ● Obtain theoretical understanding of Environmental accounting and Forensic Accounting 		
	204 B – Advanced Cost Accountancy	<ul style="list-style-type: none"> ● Maintain cost accounting records of manufacturing companies. ● Reconcile Cost and Financial Accounts. ● Present cost data to management. ● Maintain cost records as per legal requirements and will be able to help in cost audit. 		
	M.Com. II	301 – Management Accounting	<ul style="list-style-type: none"> ● Get the insight of the philosophy and framework of financial analysis. ● Know the important inter-linkages among the items in the financial statements ● Get equipped with the tools used in analysis, interpretation, and evaluation of performance, profitability and efficiency of the business entities ● Make an in-depth analysis of the financial performance and financial position of business entities, and get hands-on experience in financial analysis ● Equip them with the ability to apply their skills and knowledge effectively in future while dealing with real life business situation. ● Pursue their career in the arena of accounting information system 	
			302 – Entrepreneurship Management	<ul style="list-style-type: none"> ● Entrepreneurship: Meaning ● Concept and Definition – Nature ● Entrepreneur: Concept and Definition – Functions - Pros and cons of being

	entrepreneur
	<ul style="list-style-type: none"> ● Entrepreneurial Competencies, Objectives of a modern entrepreneur ● Entrepreneur's Risks- Entrepreneurial Motivation
304 A – Advanced Accountancy	<ul style="list-style-type: none"> ● To obtain knowledge about Disclosure requirements of AS 19,22,24 & 25. ● To Carry out Inflation Accounting Using CPP/ CPA Methods. ● Obtain an understanding of various types of leases and perform accounting treatment for Operating and Finance Leases ● Prepare Final Statements of Cooperative Credit Societies taking into consideration various accounting adjustments applicable to Cooperative Credit Societies. ● Obtain Understanding of special accounting procedures to be followed while accounting for service sector entities like Hotels, Hospitals and transporters ● Obtain a theoretical understanding of Government Accounting System and Role, Power and functions of Comptroller and Auditor General of India.
304 B – Advanced Cost Accountancy	<ul style="list-style-type: none"> ● Find out the cost of manufacturing goods by the manufacturing organisations and of providing services by the service organisations. ● Know the nature of process costing and the role of spoilage/scrap and rework and apply these concepts in practice. ● Compare and apply cost allocation methods. ● Know about cost control and reduction.
401 – Management Accounting	<ul style="list-style-type: none"> ● Get the insight of the philosophy and techniques of cost control and decision making. ● Get equipped with the techniques of budgetary control and standard costing, and to familiarize with the macro as well as micro level techniques of cost control. ● Make an in-depth analysis of causes of variation in actual cost from the standard cost, and to decide on the necessary action so as to increase the efficacy of the business entities ● Get equipped with the ability to make managerial decision by applying the principles of marginal costing. ● Know the important inter-linkages among the components of working capital essential for smooth running of a business organization. ● Get the insight of an integrated approach to capital expenditure decision process and to apply their skills and knowledge effectively in future while dealing with the issues relating to capital expenditure.

	<ul style="list-style-type: none"> ● Prepare them with the ability to face intricacies in real life and to apply their skills and knowledge while dealing with real life business situation using the techniques of management accounting. ● Pursue their career in the field of managerial decision making and control.
403 A – Information Systems For Business	<ul style="list-style-type: none"> ● Analyze and model the flow of information through business processes. ● Formulate plans and architectures for the capture, storage and retrieval of data ● Develop computer programs to support or automate business processes. ● Apply networking concepts and technologies to support business needs ● Align information systems and services with business strategy and formulate plans for the retrieval and analysis of supporting data ● Document, monitor and assess the effectiveness of IT controls ● Clearly understand application of Data Science in Business ● Use various Data Analytics tools
404 A – Advanced Accountancy	<ul style="list-style-type: none"> ● To Understand the legal framework of Bank Audit and to gain knowledge of financial statements of banks in brief. ● To Understand the audit procedures to be followed at the time of audit of Cooperative Societies ● To Understand the special considerations and audit procedures to be followed while conducting Audit of Hospitals, Hotels, Cinema Halls and Hire Purchase and Leasing Companies ● To Learn how to perform an understanding of Computerized environment and documenting the same. To Identify various risks involved in Information System and controls to be used to overcome such risks ● To Obtain the Theoretical Understanding of Management Audit, difference between management audit and statutory audit and role played by the management auditor. ● To Understand different types of Audit reports and identify different aspects of reporting as per Standards of Auditing
404 B – Advanced Cost Accountancy	<ul style="list-style-type: none"> ● Prepare budgets for various functional areas of the business activities of the manufacturing organisations.

		<ul style="list-style-type: none">● Exercise control over the various elements of cost at macro level and micro level with the help of the techniques of budgetary control.
		<ul style="list-style-type: none">● Project the required level of business activities to be achieved for earning the desired level of profits.