		automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.
AUPHDCSE-105	**Seminar and Presentation**	Student will able to enhance their presentation, discussion, learning & listening skills. Will able to learn argument and questioning techniques etc.
PhD CIVIL ENGINEERING		
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	
AUPHDCE-103(A)	**Advance Concrete Technology**	Information on various ingredients, their physical and chemical properties including properties of green and hardened concrete Mix design procedures as per BIS, ACI and British mix methods, including design of concrete using fibers and mineral architecture.
AUPHDCE-103(B)	**Repair & Rehabilitation of Structure**	Student will able to acquire and apply knowledge of repair & rehabilitation techniques & estimation of quantities and will able to analysis rates and valuations of different materials related to construction and repair.
AUPHDCE-104A)	**Composite Material**	Able to Plan the quality checks and bring about economy in concrete construction.
AUPHDCE-104(B)	**Structural Engineering**	Student will able to solve various problems related to physical and mechanical aspects of civil constructions

School of Basic Science, Deptt. of Zoology

Programme Outcomes (POs)

- Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.
- Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.
- Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- Understands the complex evolutionary processes and behavior of animals.
- Correlates the physiological processes of animals and relationship of organ systems.
- Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
- Gain knowledge of Agro based Small Scale industries like vermicomposting preparation.
- Understands about various concepts of genetics and its importance in human health.
- Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.
- Apply the knowledge and understanding of Zoology to one's own life and work.
- Develops empathy and love towards the animals.

Programme Specific Outcomes (PSOs)

- Understand the nature and basic concepts of cell biology, genetics, biotechnology, physiology and medical zoology.
- Analyze the relationships among animals and microbes.
- Perform procedures as per laboratory standards in the areas of Animal Physiology, Environmental biology, Genetics, Medical Zoology, Endocrinology and Techniques in Biology, Toxicology, Entomology, Biochemistry, Biotechnology, Immunology and research methodology.
- Understand the applications of biological sciences in Entomology and Medicine.
- Gains knowledge about research methodologies, effective communication and skills of problem solving methods.
- Contributes the knowledge for Nation building.

Course Outcomes (COs)

AUZoo 101: Structure and Function of Animals – I

- Describe general taxonomic rules on animal classification.
- Classify Protista up to phylum using examples from parasitic adaptation.
- Classify Phylum Porifera to Echinodermata with taxonomic keys.
- Describe Phylum Nematoda and give examples of pathogenic Nematodes.
- Describe Mouthparts of Insects.

AUZoo 102: Biostatistics and Computer Applications

- Came to know the data collection, tabulation and presentation.
- Described the mean, median, mode and SD.
- Understood the Analysis of Variance.
- Described Student 't' test and probability
- Understood the Correlation and Regression.
- Students gain skills in basics of computers, operating systems, overview of programming languages
- Application of internet and statistical bioinformatics in research.

AUZoo 103: Biodiversity and Wildlife

- Biodiversity and conservation explore natural landscapes, species and ecosystems and acquires theories and practical methods in preserving environments and organisms.
- Biodiversity refers not only to endangered species but also to every organisms.
- Biodiversity and Conservation increase awareness and understanding of how human life depends on preserving animal species and natural ecosystems.
- Biodiversity and conservation is connected to similar disciplines like environmental science, natural resources management and animal sciences.
- Conserving biodiversity in the face of pressures such as land clearing, pest plants and animals and climate change is a challenge facing land managers and policy-makers globally.
- Key threats to biodiversity, including habitat modification and loss, unsustainable resource use, introduced species and climate change.
- Management actions that are used to mitigate threats to biodiversity, including selecting nature reserves, connectivity and wildlife corridors, ecosystem restoration and control of pest plants and animals.
- Policies to conserve biodiversity.

AUZoo 104: Environmental Biology and Toxicology

- It is a discipline overlapping with biology, chemistry, medicine that involves the study of toxic agents their mechanism of action.
- It involves the study of the adverse effects of chemical substances on living organisms.
- Skill development in environmental and occupational Toxicology.
- It provides opportunities for student's research projects, internships in assessing the effects of toxic pollutants on the environment and in the food chain.

AUZoo 201: Animal Physiology and Endocrinology

- An integrated Understanding of physiological mechanisms.
- Described the physiology of digestive and respiratory system of human beings.
- Understood the blood composition, types, groups and circulatory system.
- Described the physiology of excretory system and nervous system of human beings.

- Came to know the physiology of sense organs, muscles and reproductive system.

AUZoo 202: Metabolic Regulations of Cell

- Identified the classes of biomolecules and their monomeric building blocks.
- Explained the specificity of enzymes (biochemical catalysts), and the chemistry involved in enzyme action.
- Understood types, Structure, biochemical properties and functions of proteins.
- Explained how the metabolism of organic compounds leads ultimately to the generation of large quantities of ATP.
- Described the structure and classification of hormones.

AUZoo 203: Structure and Function of Animals-II

- Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment.
- Classification of muscles, General features of the Integument**,** Specializations of integument.
- Evolution of Skin, Integumentary System: Embryonic origin.
- Comparative account of skeleton system in vertebrates.
- Chemical coordination of body functions through neuro-secretion.
- Evolution of functional anatomy of brain.

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AUZoo 204: Medical Zoology

- Understands about composition of blood, blood born diseases, autopsy and biopsy.
- Types of immunity, antigens-antibodies and their properties.
- An overview to the parasitology, animal associations and host-parasite relationship.
- A study of the immune response to parasite and self-defense mechanisms, immune evasion and biochemical adaptations of parasites.

AUZoo 301: Biotechnology

- Understood cell structure, scope of biotechnology.
- Described the Gene cloning and gene transfer methods.
- Came to know the concept of PCR**,** Screening of recombinant clones, nucleic acid hybridization, DNA sequencing, DNA fingerprinting.
- Described the Animal tissue culture techniques.
- Understood Embryo transfer & transgenic animal technology.

AUZoo 302: Immunology

- Outline the key components of the innate and adaptive immune responses.
- Described about cell types and organs which are involved in an immune response.

- Described the Infectious diseases, hypersensitivity, autoimmune disorders, and immunodeficiency diseases.
- An overview of development and survival of lymphocytes, humoral immune response, production of effector T- Cells and effector mechanisms.
- Description of effector mechanisms, NK and NKT cell functions.
- Conceptualization of regulation of immune response, mucosal immunity, immunological memory, cytokines and chemokines. T- Cell mediated regulation of immune response, Immunological tolerance and allergy.
- Importance of immunity in health and disease, evasion of the immune response by pathogens.

AUZoo 303: Molecular Biology and Genetics

- Described the fundamental molecular principles of genetics
- Understood the structure and function of DNA & RNA
- Understood about the transmission, distribution, arrangement, and alteration of genetic information and how it functions and is maintained in populations
- Described the basics of genetic mapping.
- Described the ultra-structure and functions of cell organelles
- Understood DNA replication, RNA and protein synthesis and came to know protein Synthesis can be controlled at the level of transcription and translation.

AUZoo 304: Developmental Biology

- Understood the basic concepts of developmental biology.
- Understood how fertilization, cleavage and gastrulation occur.
- Understood the basic concepts of organogenesis.
- Understood about the basic concepts of growth, regeneration and ageing
- Described the test tube baby and placentation in mammals.

AUZoo 401: Techniques in Biology

- Students gain knowledge about various tools & techniques used in the laboratory.
- Understood the basic principles of Microscopy, Spectrophotometry, Chromatography, Flow cytometry and Electrophoresis.
- Understood the knowledge of basic Serological assays like ELISA, IFA.

AUZoo402: Specialization Paper: Entomology/Molecular Parasitology/ Animal Behaviour/Genomics/Fish Biology/ Endocrinology

AUZoo 402: Entomology

- Students gain knowledge about classification and morphology of insects and its larvae.
- Understood Systematic position, host plants, nature of damage and outlines of the life cycle of the pests of crops, vegetables and fruits.

- Understood pests of stored food products with particular reference to their habits, nature of damage caused by them and outlines of their life cycles.
- Understood the knowledge of integrated pest management (IPM).
- Learn how insects become pests and learn various methods to control the pests.

AUZoo 402: Molecular Parasitology

- An overview to the parasitology, animal associations and host-parasite relationship.
- Understanding the mode of infection of parasite, molecular biology of parasite and drug targets, mechanism of drug resistance, vaccine strategies and proteomic approaches, vaccine strategies.
- A study of the immune response to parasite and self-defense mechanisms, immune evasion and biochemical adaptations of parasites.
- A detailed understanding of parasites of veterinary importance and their management.
- Description of parasites of insects and their significance, nematode parasites of plants and host parasite interactions.

AUZoo 402: Animal Behaviour

- An overview of animal behavior, orientation to primary and secondary orientation; kinesis-orthokinesis, klinokinesis; taxis - different kinds of taxis; sun-compass orientation, dorsal- light reaction.
- Devising conservation strategies for different animal species. Learning and instincts: conditioning, habituation, sensitization, reasoning.
- Developing compassion towards other animals as well as other individuals, group selection, kin selection and inclusive fitness, cooperation, and alarm call.
- Evaluating other individuals of the society and taking decisions.

AUZoo 402: Genomics

- Detailed understanding of structure and organization of genomes along with their comparative account.
- Knowledge of transposable elements, retro-transposons, SINE, LINE, Alu and other repeat elements, pseudogenes, segmental duplications.
- Developing skills in how to map genomes and to integrate physical and genetic maps.
- To develop technical knowhow on sequencing genomes including high-throughput sequencing, strategies of sequencing and assessment of quality of genome-sequence data.
- Detailed exposure to bioinformatics tools and techniques for genomic analysis.
- Elucidation of comparative genomics methods.
- Development of skill to perform large scale mutagenesis and interference for genome wide gene targeting with different experimental approach.
- Making detailed understanding of the procedures and importance of transcriptome analysis, profiling, proteomics - expression analysis, protein structure analysis, protein-protein interaction.

AUZoo 402: Fish Biology

- Learning classification of riverine fisheries and their hydrological conditions.
- A detailed understanding of cold water fisheries, biology of important cold water fishes of India for better production of fishes in extreme condition.
- Learning fishing techniques for localizing catches- remote sensing, sonar, radar; crafts and gears.
- An overview of post-harvest technique to prevent fish spoilage for better preservation and quality control.
- Learning the management of aquatic pollution, waste management and fisheries extension services.
- Learning aquaculture technology for fresh and marine fishes.
- Management of water quality requirements for aquaculture.
- Learning integrated farming by fish-cum-livestock farming, paddy-cum-fish farming, and aquaculture engineering-aqua house.
- A detailed learning of transportation of finfish and shellfish, eggs, fry, fingerlings and adults.
- Managing improvement in the Nutrition of aquatic animals by leaning feed types, manufacture and ingredients, anti- nutritional factors in fish feed ingredients.
- Understanding environmental impact of aquaculture, aqua cultural wastes and future developments in waste minimization.
- Learning about fish vaccines- strategy and use in aquaculture.

AUZoo 402: Endocrinology

- General understanding of anatomical and structural organization of neuroendocrine organs. .
- Detailed understanding of the hypothalamo- hypophyseal axis and role of hormones.
- Knowledge of regulation of hypothalamic and pituitary hormone secretion. .
- Conceptualization of feed-back inhibition and feed-forward activation of neurohypophyseal hormones.
- Understanding of the link between environment and reproduction.
- Illustration of neuroendocrine regulation of immune system.
- Description of discovery of hormones as chemical signals for control and regulation of physiological processes. \
- Understanding the nature of hormonal action and its experimental methods of evaluation.
- Elucidation of biosynthesis of protein hormones and molecular mechanisms of regulation.
- Knowledge of signal discrimination, signal transduction and signal amplification in hormone regulated physiological processes.

School of Basic sciences

Department Mathematics

Programme outcomes

- To cultivate a mathematical attitude and nurture the interests,
- To motivate for research in mathematical and statistical sciences,
- To train computational scientists who can work on real life challenging problems
- **AUMath-101. Real Analysis-1**
- To introduce basics in mathematics.
- To improve analytical skill.
- **AUMaths-102. Advanced Algebra-I**
- A major objective is to introduce students to the language and precision of modern algebra. This means that the course will be proof-based, in the sense that students will be expected to understand, construct, and write proofs.
- A challenge for all students of mathematics is to balance the understanding with the communication. There is a tendency to think you are finished once you see why a mathematical statement is true or false.
- **AUMaths-103. Ordinary differential Equations**
- define an ordinary differential equation,
- differentiate between an ordinary and partial differential equation, and
- Solve linear ordinary differential equations with fixed constants by using classical solution and Laplace transform techniques.
- **AUMaths-104. Operation Research-I**
- To do things best under the given circumstances
- This general concept has great many applications.
- **AUMaths-105. Fluid dynamics**
- Calculate the pressure distribution for incompressible fluids.
- Calculate the Hydrostatic pressure and force on plane and curved surfaces.
- Demonstrate the application point of hydrostatic forces on plane and curved surfaces.
- Formulate the problem on buoyancy solve them.
- **AUMaths-201. Real Analysis-II**
- Describe the fundamental properties of the real number that underpin the formal development of real analysis.
- **AUMaths-202. Advanced algebra-II**
- Demonstrate capacity for mathematical reasoning through analysing, proving and explaining concepts from field extensions and Galois theory.
- Explain the fundamental concepts of field extensions and Galois theory and their role in modern mathematics and applied contexts.
- **AUMaths-203. Partial Differential Equations**
- To equip students with the concepts of partial differential equations and how to solve linear Partial Differential with different methods. Students also will be Introduced to

some physical problems in Engineering models that results in partial differential equations.

- **AUMaths-204. Classical Mechanics**
- To demonstrate knowledge and understanding of the following fundamental concepts in:
- the dynamics of system of particles,
- motion of rigid body,
- Lagrangian and Hamiltonian formulation of mechanics
- To represent the equations of motion for complicated mechanical systems using the Lagrangian and Hamiltonian formulation of classical mechanics.
- To develop math skills as applied to physics.
- **AUMaths-205. Solid Mechanics**
- To apply the formal theory of solid mechanics to calculate forces, deflections, moments, stresses, and strains in a wide variety of structural members subjected to tension, compression, torsion, bending, both individually and in combination, including :
- axially loaded bars
- components in pure shear
- circular shafts in torsion
- beams in bending
- thin-walled pressure vessels
- trusses
- To understand the concepts of stress at a point, strain at a point, and the stress-strain relationships for linear, elastic, homogeneous, isotropic materials.
- To determine principal stresses and angles, maximum shearing stresses and angles, and the stresses acting on any arbitrary plane within a structural element.
- 4 To draw Free Body Diagrams (FBD) for rigid bodies, beams, 2-D and 3-D structures, frames and machines, and set up equilibrium equations (i.e. forces and couples) for them.
- **AUMaths-301. Complex Analysis-I**
- Identify curves and regions in the complex plane defined by simple expressions.
- Describe basic properties of complex integration and having the ability to compute such integrals.
- Decide when and where a given function is analytic and be able to find it series development.
- Describe conformal mappings between various plane regions.
- Present the central ideas in the solution of Dirichlets problem.
- Give the main ideas in the proof of the Riemann mapping theorem.
- **AUMaths-302 Topology**
- Topology is used in many branches of mathematics, such as differentiable equations, dynamical systems, knot theory, and Riemann surfaces in complex analysis.
- It is also used in string theory in physics, and for describing the space-time structure of universe.
- **AUMaths-303 Analytic number Theory**
- Analytic number theory aims to study number theory by using analytic tools (inequalities, limits, calculus, etc).
- In this course we will mainly focus on studying the distribution of prime numbers by using analysis.

- **AUMaths-304 Operation Research –II**
- The aims of operation research include: solving operational questions, solving questions related to resources' operations, and solving decision-making questions. . . Operational research has a relation with different areas of study and it has several applications.
- Operation research is considered as a tool of productivity.
- **AUMaths-305 Mathematical Statistics**
- Calculate covariance and correlation and determine independence of random variables; obtain expectations and variances for linear combinations of random variables.
- Find the distribution of a function of random variables using the methods of distribution functions, transformations, and moment generating functions; perform bivariate transformations using Jacobians; calculate joint distributions and moments of order statistics.
- **AUMaths-401 Complex Analysis-II**
- To understand the Harmonic functions on a disc and concerned results.
- To understand the factorization of entire functions having infinite zero.
- To Understand certain theorems like Inverse Function theorem, Hardmards three circle theorem.
- **AUMaths-402 Functional Analysis**
- The objectives of the course are the study of the main properties of bounded operators between Banach and Hilbert spaces, the basic results associated to different types of convergences in normed spaces and the spectral theorem and some of its applications.
- **AUMaths -403 Advanced Discrete Mathematics**
- The course objective is to provide students with an overview of discrete mathematics. Students will learn about topics such as logic and proofs, sets and functions, probability, recursion, graph theory, matrices, Boolean algebra and other important discrete math concepts.
- **AUMaths-404 Differential Geometry**
- To get introduced to the notion of serret -frenet frame for space curves and the involutes and evolutes of space curves with the help of examples.
- To able to compute the curvature and torsion of space curves.
- To get introduced to geodesics on a surface and their characterization.
- **AUMath-405 Magneto Fluid Dynamics**
- The fundamental concept behind MFD is that magnetic fields can induce currents in a moving conductive fluid, which in turn polarizes the fluid and reciprocally changes the magnetic field itself. . The set of equations that describe MHD are a combination of the Navior Stoke's Equation of fluid dynamics and Maxwell's equations of electro-magnetism. These differential equations must be solved simultaneously, either analytically or numerically.

SCHOOL OF BASIC SCIENCES

MSc Chemistry

After completing M.Sc. Chemistry programme, students will be able to: Knowledge Outcomes:

PO1: Demonstrate and apply the fundamental knowledge of the basic principles in various fields of Chemistry

PO2: Create awareness and sense of responsibilities towards environment and apply knowledge to solve the issues related to Environmental pollution.

PO3: Apply knowledge to build up small scale industry for developing endogenous product.

PO4: Apply various aspects of chemistry in natural products isolations, pharmaceuticals, dyes, textiles, polymers, petroleum products, forensic etc. and also to develop interdisciplinary approach of the subject.

1. **AUMCH I-01- Inorganic Chemistry**
   - Inorganic Chemistry Principles is a transferable course. It is designed to meet the needs of the medical technology student in general. This course helps the student to develop an understanding of chemical principles and the applications of such principles to the Health Science field.
2. **AUMCHI-02- Organic Chemistry**
   - Predict and explain patterns in shape, structure, bonding, hybridization, formal charge, stability, acidity, basicity, solubility, and reactivity for hydrocarbons, halocarbons, alkenes, dienes, and arenes, by understanding and applying concepts of organic chemical structure and bonding and stability.
3. **AUMCHI-03- Physical Chemistry**
   - Represent of the rate law of the elementary and chain reaction
   - Understand of the theories for the determination of the rate of the reactions
   - Understand of the kinetics of the explosive photochemical and unimolecular reactions
4. **AUMCHI-04- Mathematics for Chemist & Applications of Computer in Chemistry**
   - inculcate logical thinking to address a problem and become result oriented with a positive attitude.
5. **AUMCHI-05- Inorganic Chemistry Lab**
   - prepare the exact solutions for quantitative analysis.
   - Apply the knowledge of quantitative analysis for the determination of metals from ores/alloys.
6. **AUMCHI-06- Organic Chemistry Lab**
   - understand concepts of stereochemistry and will be able to stereochemical aspects in organic chemistry.
   - develop knowledge of substitution (electrophilic, nucleophilic), addition and elimination reactions.
7. **AUMCHI-07- Physical Chemistry Lab.**
   - prepare the solution of the desired concentration and the desired volume
   - CO2: Know the principle and handling of pH meter, Potentiometer, conductivity meter, colorimeter, viscometer, etc

8. **AUMCHI-08- Inorganic Chemistry**
    - correlate application of symmetry to spectroscopy and find IR active modes of vibration.
    - Understand the detail chemistry of s- and p- block elements w.r.t. their compounds, reactions and applications.
9. **AUMCHI-09- Organic Chemistry**
    - Understand of Bioinorganic Chemistry: Use of metals in biological systems, various aspects of coordination chemistry related to bioinorganic research, metallobiopolymers, their structure, function, role of metal ion, etc.
10. **AUMCHI-10- Physical Chemistry**
    - Understand of the principle of Microwave, IR, Raman, Electronic, NMR, ESR and Mossbauer spectroscopy.
11. **AUMCHI-11- Chemistry of Life & Environmental Chemistry**
    - apply the techniques for structure determination of organic molecules.
    - perform statistical analysis of chemical data by developing analytical mind.
12. **AUMCHI-12- Inorganic Chemistry Lab.**
    - prepare the exact solutions for quantitative analysis.
    - Apply the knowledge of quantitative analysis for the determination of metals from ores/alloys
13. **AUMCHI-13- Organic chemistry Lab**
    - understand concepts of stereochemistry and will be able to stereochemical aspects in organic chemistry.
    - develop knowledge of substitution (electrophilic, nucleophilic), addition and elimination reactions.
14. **AUMCHI-14- Physical chemistry Lab**
    - synthesize Inorganic complexes and also find their purity
15. **AUMCH2-15- Inorganic Chemistry**
    - utilize their knowledge in practicals for various heterocyclic and photochemical conversions.
16. **AUMCH2-16- Organic Chemistry**
    - understand how to carry out different types of reactions and their workup methods.
17. **AUMCH2-17- Physical Chemistry**
    - Draw of the schematic Microwave, IR and Raman spectrum of di and triatomic molecules based on the selection rules.
    - Understand of decay kinetics and measurement of radioactivity
    - get knowledge of types of nuclear reactors
    - study the applications of radioactivity, Understand Radiolysis and radicals
18. **AUMCH2-18- Inorganic/Organic/Physical Chemistry special.**
    - understand how to carry out different types of reactions and their workup methods.
19. **AUMCH2-19- Inorganic Chemistry Lab**
    - Understand Ion-exchange chromatography for separation of metal ions.
    - Understand the principle and working of different instruments like colourimeter, conductometer, spectrophotometer, etc.
20. **AUMCH2-20- Organic Chemistry Lab.**
    - understand various reactions and rearrangements.

- understand and write mechanism of reactions and their applications.
- understand how to convert one molecule into another by using oxidising and reducing,reagents.
- apply theoretical knowledge in practical's for various conversions.

21. AUMCH2-21- Physical chemistry Lab

- understand the synthesis of various drugs.
- understand the mode of action of different anti-fungal, anti-bacterial and anti-viral drugs.

22. AUMCH2-22- Advanced Organometallics

- utilize their knowledge in practicals for various heterocyclic and photochemical conversions.

23. AUMCH2-23- Modern Techniques of Chemical Analysis

- understand the Principles of mass spectroscopy, gas chromatography and HPLC
- apply the techniques for structure determination of organic molecules.
- perform statistical analysis of chemical data by developing analytical mind.

24. AUMCH2-24- Inorganic Spectroscopy

- Understand the effect of various ligand field strengths on d-metal ions and find out ground state terms with their energies, microstates, degeneracy and microstate table for different transition metal ions and complexes

25. AUMCH2-25- Bio- Inorganic Chemistry

- Understand the effect of various ligand field strengths on d-metal ions and find out ground state terms with their energies, microstates, degeneracy and microstate table for different transition metal ions and complexes.

26. AUMCH2-26- Synthetic Strategy

- Industrial applications of organometallic compounds in organic reactions.
- Mechanisms of organometallic reactions.
- Stereochemistry of the organometallic reactions.

27. AUMCH2-27- Natural Products

- understand different Secondary metabolites and their importance.
- become familiar with many reagents used in organic synthesis.
- understand nature better by studying mechanisms in biological reactions.
- understand various laboratory methods to determine structure of unknown organic

28. AUMCH2-28- Medicinal Chemistry

- understand the stereochemistry of carbohydrates and their reactions.
- understand the concept of chiral templates and chiral drugs
- understand the synthesis of various drugs.
- understand the mode of action of different anti-fungal, anti-bacterial and anti-viral drugs.

29. AUMCH2-29- Polymer Chemistry

- Use of metals in biological systems, various aspects of coordination chemistry related to bioinorganic research, metallobiopolymers, their structure, function, role of metal ion, etc.

30. AUMCH2-30- Advanced Quantum Chemistry

- understand various ways of attack on electrophilic species by a nucleophile
- to predict enantioselective product.
- understand mechanisms in asymmetric reaction

31. AUMCH2-31- Solid State Chemistry

- To provide an introduction to the concepts underlying solid state chemistry
- To illustrate the wide range of materials and physical properties that currently available

32. AUMCH2-32- Biophysical Chemistry

- understand various terminologies in stereochemistry.
- will be able to draw the stereochemical structures of different molecules.

33. AUMCH2-33- Chemistry of Macromolecules

- account for the basis of biological macromolecules' constitution and traits
- explain structural mechanisms for how important biological processes take place and are controlled, for example catalysis, cell signalling and translation
- account for the principles of the most important methods for structural analysis: X-ray crystallography, NMR spectroscopy and electron microscopy and analyse the quality of models produced by these methods
- analyse structural details in macromolecules using a molecular graphics program

Programme and course outline of Agricultural Entomology
According to 4th Dean's Committee

Programme: Agricultural Entomology
Programme outcome:

1. Attain a solid foundation in insect biology, including general entomology, basic systematics, morphology, physiology, and biodiversity.

2. Understand evolution and biodiversity generation through macro- and micro-evolutionary processes, including how these processes have formed and diversified insects.

3. Develop the ability to read and interpret scientific papers in entomology, and critically assess content.

4. Attain skills in written and verbal scientific communication.

5. Develop the ability to design and perform a scientific study on insects, and to analyze results.

6. Develop an understanding of the distributions and abundances of organisms including insects, and their interactions with each other and the environment.

7. Learn modern techniques in insect science such as molecular biology, bioinformatics, and/or imaging.

Sr. No.	Course Outline	Topic	Course Outcome
1	AU.Ento.121	Insect Morphology and Systematics	This course helps the students to attain a solid foundation in insect biology, including general entomology, basic systematics, morphology, physiology, and biodiversity
2	AU.Ento.121	Insect Ecology and Integrated Pest Management including Beneficial insects	Ecologically based management relies on a comprehensive knowledge of the ecosystem, including the natural biological interactions that suppress pest populations. It is based on the recognition that many conventional agricultural practices disrupt natural processes that suppress pests.
3	AU.Ento.121	Crop Pests and Stored Grain Pests and their Management	This course helps the students to gain knowledge about different insect-pests associated with different horticultural, ornamental, plantation and stored crops. The knowledge of pests and their damage is helpful in deciding proper control measures for their management.
4	AU.Cr.Prot.474 (Ento./Path0o.)	IPM and IDM (Pest Disease Scouting)	✓ Pest Surveillance and Pest forecasting techniques ✓ Pest management methods including recent methods ✓ Beneficial insects and their mass multiplication techniques ✓ Acquaintance of insecticide formulations ✓ Sampling techniques for the estimation of insect population and damage ✓ Identification of major non–insect pests ✓ Acquaintance of mass multiplication techniques of important predators
5	AU.Cr.Prot.475 (Ento.)	Non-insect pests and their Management	There is a group of animal other than the insects, which cause the considerable yield losses to agricultural crops and commonly called as non insect pests which may include mammals (monkey, wild animals etc), rodents, birds, mites. The latest control problems are caused by non insect pests are not control by planting a resistant variety and advocate use of pesticides. Controlling these invasive species presents an unparalleled challenge worldwide. So, knowledge of such non-insect pests is very important and this course helps the students to attain the knowledge of such organisms.
6	AU.Cr.Prot.476 (Ento.)	Apiculture	Apiculture or beekeeping is a kind of occupation that helps the students to get well versed with nurturing and looking after bees for the purpose of acquiring bee products like beeswax, honey, royal jelly, flower pollen and bee pollen.
7	AU.Cr.Prot.477 (Ento.	Pesticide and Plant Protection Equipment	This course consists of basic knowledge on pesticides, pesticide preparing, principle on pesticide application, introduction about different type of pesticides and their mode of action, pesticide resistance, principle on integrated management of pests, effect of pesticides on ecosystem and environment, bio-originated pesticides, and innovation and development of pesticides. Based on class learning and experiment, the students should hold the

			basic knowledge and principal method about pesticide application, clarify correlation among chemical control, integrated management, and environmental protection, and gain a foundation for further application of pesticides in practice.

Programme and course outline of
Master of Science Agronomy (Agriculture)

Sr. No.	Code	Course Title	Course Outcome
1.	AU. Agron. 501	Modern Concepts in Crop production	To impart knowledge on advanced concepts of crop growth and productivity in relation to climate change, modern concepts of tillage and farm mechanization, principles and components of organic farming, precision farming and resource conservation technology
2.	AU. Agron. 502	Principles and Practices of Soil Fertility and Nutrient Management	To understand the knowledge on functions and deficiency symptoms of plant nutrients, nutrient cycle, preparation and use of organic manures, time and methods of commercial fertilizers application
3.	AU. Agron. 503	Principles and Practices of Weed Management	To understand the knowledge on weed biology, classification and characteristics, herbicide application techniques, different methods of weed control and integrated weed management
4.	AU. Agron. 504	Principles and Practices of Water Management	To understand the principles involved in estimating water requirement for different crops, irrigation scheduling and approaches, ideologies pertaining to water management in problem soils
5.	AU. Agron. 505	Agrometeorology and Crop Weather Forecasting	To acquire knowledge on agro meteorology and its different variables, onset and withdrawal of monsoon, crop seasons, evapo transpiration and its effect on crop production and crop weather calendars
6.	AU. Agron. 506	Agronomy of Major Cereals, and Pulses	To have knowledge about the *Kharif* cereals, *Rabi* cereals, *Kharif* pulses, and *Rabi* pulses and their cultivation practices with post harvest technologies
7.	AU. Agron. 507	Agronomy of Oilseed, Fibre and Sugar Crops	To gain knowledge about importance of oilseed, fibre and sugar crops, their beneficial and economic importance to the farming communities and cultivation practices
8.	AU. Agron. 508	Agronomy of Medicinal, Aromatic and Under- utilized Crops	To impart knowledge on importance of medicinal and aromatic plants, cultural practices, climate and soil requirements
9.	AU. Agron. 509	Agronomy of Fodder and Forage Crops	To impart knowledge on adaptation, distribution, improved varieties, quality aspects, cultural practices of important

			fodder crops, year round fodder production and management, methods of hay and silage making
10.	AU. Agron. 510	Agrostology and Agroforestry	To gain knowledge about importance and ecology of grassland, pasture and agro forestry system, crop production in agrostology and agroforestry, silvipastoral system, tree characteristics and nutritive value
11.	AU. Agron. 511	Cropping Systems	To impart knowledge on definition, concept and types of cropping system, allelopathic effects, competition relations, crop diversification for sustainability, crop residue management, plant ideotypes
12.	AU. Agron. 512	Dryland Farming	To gain knowledge about concept of dry land farming, constrains of crop production in dry land areas, drought, contingent crop planning, drought management strategies, techniques and practices of soil moisture conservation
13.	AU. Agron. 513	Principles and Practices of Organic Farming	To have knowledge about basic concept of organic farming, types of organic manures, biofertilizers, crop rotation, intercropping, allelopathy and crop diversification
14.	AU. Agron. 591*	Master Seminar	Presentation skills, discussion skills, listening skills, argumentative skils, critical thinking, help students to immerse themselves in the topic
15.	AU. Agron. 599*	Master Research	To work on a research independtly, develop thoughts and ideas, improve writing skills,

After completing master degree courses the candidates have further teaching and research studies option. Candidates can work in the private sector on applied research and product development or engage in basic research, mainly in universities or government agencies

Programme Course outcome of Agronomy

According to 5th Deans' Committee

Sr. No.	Course outline	Topic	Course outcome
1.	AU. Agron. 111	Fundamentals of Agronomy	• Students will gain knowledge on the fundamentals of agronomy. • Hands on training on various production methods and important cultural practices for major cereals, pulses, sugar, oilseed and fibre crops will be provided (Practical)
2.	AU. Agron. 112	Agricultural Heritage	• To know the basics of the agriculture, tillage and evolution of agriculture from different periods from veda to modern agriculture.
3.	AU. Agron. 233	Crop Production Technology-I (Kharif Crops)	• To impart knowledge on various cultivation practices of different Kharif crops
4.	AU. Agron. 244	Introductory Agrometeorology and Climate Change	• To learn different metrological parameters like rainfall, temperature, RH and other weather parameters. • To make short-range and long-range weather forecasts.
5.	AU. Agron. 245	Crop Production Technology-II (Rabi Crops)	• Students will get knowledge on crop production technologies of different Rabi crops.
6.	AU. Agron. 246	Farming System and Sustainable Agriculture	• Students will know different cropping and farming system like integrated farming system (IFS). • To get knowledge on sustainable agricultural practices such as

			organic farming.
7.	AU. Agron. 247	Agrochemicals	• To get the knowledge on agrochemicals, their type and role in agriculture. • To know about the basics of Fungicides, Insecticides and Fertilizers.
8.	AU. Agron. 358	Practical Crop Production -I (Kharif Crops)	• Each student will be allotted a minimum land area of 10 cents and he will do all field operations in the allotted land from field preparation to harvest and processing. • Under exigencies like water scarcity to raise wetland rice of the crop production programme shall be with two irrigated dry crops, with an area of not less than five cents. • Irrigated puddled lowland rice will be cultivated.
9.	AU. Agron. 359	Geoinformatics and Nano-technology for Precision Farming	• Students will know about applications of GIS in agriculture which will help them to forecast for precision farming.
10.	AU. Agron. 3510	Weed Management	• Students will get knowledge on different weeds associated with different crops. • To get knowledge on different weed management practices.
11.	AU. Agron. 3611	Practical Crop Production -II (Rabi Crops)	• Each student will be allotted a minimum land area of 10 cents and he will do all field operations in the allotted land from field preparation to harvest and processing.

			• The dryland crops like sunflower, gingelly etc., or the garden land crops like maize, finger millet etc., will be cultivated.
12.	AU. Agron. 3612	Principles of Organic Farming	• Students get to know about the oragnic farming practices and procedure for obtaining organic certificates.
13.	AU. Agron. 3613	Rainfed Agriculture and Watershed Management	• Student will study about rainfed agriculture which is predominant in all over India and develop watersheds to manage agricultural practices during off-season.
14.	AU. Agron. 3614	System Simulation and Agro-advisory	• To know the System Approach for representing soil-plant-atmospheric continuum. • Students will know about evaluation of crop responses to weather elements

Course outcome of Agronomy

According to 4th Deans' Committee

Sr. No.	Course outline	Topic	Course outcome
1.	AU. Agron. 111	Principle of Agronomy and Agricultural meteorology	• To know the basics of the agriculture, tillage. • To learn different metrological parameters like rainfall, temperature, RH and other weather parameters. • To make short-range and long-range weather forecasts.
2.	AU. Agron. 112	Introductory Agriculture (Ancient Heritage, Agriculture Scenario and Gender Equality in Agriculture)	• To know the basics of the agriculture, tillage and evolution of agriculture from different periods from veda to modern agriculture.
3.	AU. Agron. 123	Water Management including Micro-Irrigation	• To know the basics of Irrigation scheduling, System and Methods of irrigation. • Find out the quantity and quality of irrigation water, WUE, factors affecting W.U.E. and agronomic techniques to boost W.U.E. • Outline the elementary idea of drainage and its importance, causes and methods.
4.	AU. Agron. 124	Practical Crop Production	• To impart practical knowledge on various cultivation practices on different season crops.
5.	AU. Agron. 235	Field Crops-I (Kharif)	• To impart knowledge on various cultivation practices of different Kharif crops

6.	AU. Agron. 236	Farming System and Sustainable Agriculture	• Students will know different cropping and farming system like integrated farming system (IFS). • To get knowledge on sustainable agricultural practices such as organic farming.
7.	AU. Agron. 247	Field Crops-II (Rabi)	• Students will get knowledge on crop production technologies of different Rabi crops.
8.	AU. Agron. 358	Weed Management	• Students will get knowledge on different weeds associated with different crops. • To get knowledge on different weed management practices.
9.	AU. Agron. 359	Practical Crop Production -I (Kharif Crops)	• Each student will be allotted a minimum land area of 10 cents and he will do all field operations in the allotted land from field preparation to harvest and processing. • Under exigencies like water scarcity to raise wetland rice of the crop production programme shall be with two irrigated dry crops, with an area of not less than five cents. • Irrigated puddled lowland rice will be cultivated.

10.	AU. Agron. 3610	Practical Crop Production -II (Rabi Crops)	• Each student will be allotted a minimum land area of 10 cents and he will do all field operations in the allotted land from field preparation to harvest and processing. • The dryland crops like sunflower, etc., or the garden land crops like maize, finger millet etc., will be cultivated.
11.	AU. Agron. 3611	Organic Farming	• Students get to know about the oragnic farming practices and procedure for obtaining organic certificates.
12.	AU. Cr. Prod. 4712 (Agron)	Integrated Farming System	• Students get to know about the Integrated Farming System and about its importance. • Student will prepare an IFS model to the location specific.

Programme outcome of Agronomy
According to 5th Deans' Committee

- To provide the sound knowledge in the Agriculture required to solve common problems in management of crop cultivation.
- Develop the skills to manage agricultural farms, enhance quality of farm produces and their commercial utilization.
- How to operate the agricultural tools in the field.
- Identify the different agricultural tools, fertilizers, seeds and weeds.
- Get knowledge for differentiate the fertilizers and organic manures.
- Develop the understanding of the relationship between weather variables and agricultural crops.
- Students develop knowledge of principles of organic farming in context of improving human health and amelioration of the environment.
- Understand all related methods in agriculture to increase the profit from crop fields.
- Acquaint the knowledge on different Kharif, Rabi and Zaid season crops, its classification (cereal crops, oilseed crops, pulse crops, cash crops, fodder crops) and its importance in Indian economy.

Programme outcome of Agronomy
According to 4th Deans' Committee

- To provide the sound knowledge in the Agriculture required to solve common problems in management of crop cultivation.
- Develop the skills to manage agricultural farms, enhance quality of farm produces and their commercial utilization.
- Operate the agricultural tools in the field.
- Identify the different agricultural tools, fertilizers, seeds, and weeds.
- Get knowledge for differentiate the fertilizers, manure.
- Develop the understanding of the relationship between weather variables and agriculture.
- Students develop knowledge of principles of organic farming in context of improving human health and amelioration of the environment.
- Understand all related methods in agriculture to increase the profit from crop fields.
- Acquaint the knowledge on different Kharif, Rabi and Zaid season crops, its classification (cereal crops ,oilseed crops, pulse crops, sugar crops, fodder crops) and its importance in agriculture and national economy.

Programme and Course outline of Crop Physiology

According to 4th Dean Committee

SR. NO.	COURSE CODE	COURSE TITLE	COURSE OUTCOMES
1	**AU.Crop Physiol.241**	**Crop Physiology**	❖ Role of crop physiology in crop health. ❖ Identification of deficiency symptoms of nutrients. ❖ To understand the metabolic and synthetic pathway of biomolecules. ❖ To know the difference between C3, C4 and CAM plant. ❖ Importance of growth Harmon in Agriculture.
According to 5th Dean Committee			
SR. NO.	**COURSE CODE**	**COURSE TITLE**	**COURSE OUTCOMES**
1	**AU.Crop Physiol.121**	**Fundamentals of Crop Physiology**	❖ To impart basic knowledge on various functions and processes related to crop production, mineral nutrition, plant growth regulators and environmental stresses. ❖ Students will come to know the various functions and processes related to crop production, mineral nutrition, plant growth regulators and environmental stresses
2.	**AU. Bio.111**	**Introductory biology**	❖ The student will be able to read, understand, and critically interpret the primary biological literature in his/her area of interest. ❖ The student will be able to design, conduct, analyze, and communicate (in writing and orally) biological research. ❖ The student will recognize and be able to apply basic ethical principles to basic and applied biological/biomedical practice and will understand the role of biological/biomedical science, scientists, and practitioners in society. ❖ The student will be able to explain the process of organic evolution and its underlying principles and mechanisms. ❖ The student will be able to explain the fundamental biological processes of metabolism, homeostasis, reproduction, development, and genetics, and the relationships between form and function of biological structures at the molecular, cellular, organismal, population, and ecosystem levels of the biological hierarchy. 6. The student will

			be able to explain the importance of biodiversity at the genetic, organismal, community, and global scales.
3.	**AU.FOREST.111**	**Introduction to forestry**	❖ To impart knowledge about the basic facts of Forestry as well as agroforestry and familiarize the students with important trees suitable for agroforestry and various agroforestry systems. ❖ The students will learn about the silviculture and nursery technology of important agroforestry tree species.

M.Sc. ENTOMOLOGY

S.NO.	Course code	Course name	Course outcomes
1.	AUEnto501*	INSECT MORPHOLOGY (1+1)	1. Gained the knowledge about the external morphology of the insect body and their appendages and functions. 2. Acquired the knowledge to understand the various modification and adaptations such as head, legs, wings, antennae, mouthparts, abdomen, sense organs.
2.	AUEnto502*	INSECT ANATOMY, PHYSIOLOGY AND NUTRITION (2+1)	1.Developed a sound knowledge on basic aspects of anatomy of different systems, elementary physiology, nutritional physiology and their application in entomology. 2.Gained hands-on-training on the different internal systems like digestive system, circulatory system, reproductive system and nervous system. 3.Known the different types of system and their modifications in insects. 4.Understand the different types of nutrition and diet
3.	AUEnto 503	PRINCIPLES OF TAXONOMY (2+0)	1. Trained in classifying the organisms both theoretically and practically by following the rules 2.Learned about taxonomic key and also, they knew how to identify the insects using taxonomic keys.
4.	AUEnto 504*	CLASSIFICATIO N OF INSECTS (2+1)	1. Gained the knowledge about the classification of arthropods and hierarchical classification. 2.Easily identify the different orders of insect. 3. For pest control first they know the insect's identification, by studying this they known about different order, family and species of the insects.
s5.	AUEnto 505*	INSECT ECOLOGY (1+1)	1.Acquired the knowledge to understand the concepts of ecology, basic principles of distribution and abundance of organisms and their causes. 2.Sampling methods, calculation of diversity indices, constructing life tables
6.	AUEnto 506*	B I O L OGICAL CONTROL OF	1.Acquired the knowledge about theory and practice of biological control,

		CROP PESTS AND WEEDS (1+1)	2.Mass production techniques and field evaluation of various biological control agents like parasitoids, predators and various entomopathogenic microorganisms. 3. Familiarized with biological control of weeds using insects.
7.	**AUEnto 507**	**TOXICOLOGY OF INSECTICIDES (2+1)**	1.Learned about the structure and mode of action of important insecticides belonging to different groups 2.Classification of insecticides pesticide residues, pest resurgence, resistance to insecticides, 3.Insecticide dose calculation and some basics about their application 4.Safety measures during handling of pesticides and their usages.
8.	**AUEnto 508**	**PLANT RESISTANCE TO INSECTS (1+1)**	1.Gained knowledge to understand the types, basis, mechanisms and genetics of resistance in plants to insects and 2.Role of plant resistance in pest management and secondary metabolites and their functions in pest management. 3.Gained the practical knowledge about the various screening techniques 4. Practiced estimation of different mechanism resistance through no choice and multiple-choice techniques.
9.	**AUEnto 509***	**PRINCIPLES OF INTEGRATED PEST MANAGEMENT (1+1)**	1.Knowledge on sampling methods and factors affecting sampling; population estimation methods; crop loss assessment-direct losses, indirect losses, potential losses, avoidable losses, unavoidable losses. Computation of EIL and ETL 2. Knowledge about the tools of pest management and their integrationlegislative, cultural, physical and mechanical methods. 3.Familiarization with pest survey and surveillance, forecasting and types of surveys. crop modeling; designing and implementing IPM system.
10.	**AuEnto 510***	**PESTS OF FIELD CROPS (1+1)**	1.Learned about the nature of damage, biology and seasonal incidence of insect pests that cause loss to major field crops 2.Effective management by different methods.

			3.Got the clear knowledge about the identification of different insect pest in the field level 4.Got awareness of different IPM practices.
11.	**AUEnto AU.PL PATH 511/ENT 511**	**PLANT QUARANTINE (2+0)**	1.Obtained the knowledge about the principles and the role of Plant Quarantine in containment of pests and diseases, plant quarantine regulations and set-up. 2.Acquired the knowledge about various institution involved in the quarantine regulation, various disinfection methods followed in quarantine station also known about the students.
12.	**AUEnto 512***	**PESTS OF HORTICULTURAL AND PLANTATION CROPS (1+1)**	1.Understanding about the major pests of horticultural and plantation crops regarding the extent and nature of damage. 2.Acquired the knowledge about economic losses by pests, biology of various insect pests, seasonal history, their integrated management
13.	**AUEnto 513***	**TECHNIQUES IN PLANT PROTECTION (0+1)**	1.Knowledge about the manufacturing details, principles, operation methodologies of different pest control equipment. 2. Acquired the knowledge about protein isolation techniques, tissue culture techniques in plant protection which will create employability.
14.	**AUEnto 591***	**Masters Seminar**	The students can select topic of research on emerging and important issues and present on powerpoint.
15.	**AUEnto 599***	**Master Research**	Students can select a research topic, prepare synopsis and execute the programme as per suitable design

S. NO.	PROGRAM SPECIFIC OUTCOMES
1.	Develop fundamental knowledge on different theories, concepts of basic and applied
	Entomology and gaining detailed knowledge about insects and their usage in agriculture
2.	Creating awareness about how to maximize the utilization of natural resources and skills of teaching, research and extension activities in the field of plant protection
	specialization to entomology.

3.	Capability to implement Different basic and innovative tools of pest management in
	crop field benefiting the farming communities and their commercial use.
4.	Entrepreneurship ability in the commercial field of entomology like bee keeping, sericulture and lac culture.
5.	Skill in practical aspects like pesticide formulation, calculation of dose of specific pesticide as well as skill to handle different instruments in laboratory useful in entomological research

Programme and course outline of Agriculture Economics

According to 4 Deans' Committee

Sr. No.	Course outline	Topic	Course Outcome
1	AU. Ag. Econ.111	Principle of Agricultural Economics	In this course students will learn the meaning of Economics and Agricultural Economics, basic concept of demand, utility, national income, inflation, etc.
2	AU. Ag. Econ. 122	Production Economics and Farm Management	Nature and scope of Production Economics and Farm Management studied along with Factor –Product, factor- factor, Product- Product, linear Programming for minimizing the cost and maximizing the profit in the farm.
3	AU. Ag.Econ.233	Agricultural Finance and Co-operation	The course taught about banking and insurance system and functioning of financial institution.
4	AU. Ag. Econ.244	Agricultural Marketing, Trade and Prices	The subject provides basic concept of marketing and ways of reducing marketing cost.
5	AU. Ag. Econ.355	Fundamentals of Farm Business Management (Including Project Development, Appraisal &Monitoring)	The course gives the knowledge of agribusiness, planning, financial management of agribusiness and marketing management.
6	AU.ABM. 476 (Ag. Econ.)	Management of Agro-Based Industry	The course gives the knowledge of agro-industry, sales promotion strategies and formation of agro industrial project and their technical, economic, financial feasibility
7	AU.ABM. 477 (Ag. Econ.)	Marketing Management (Agricultural Import-Export Policy of Govt. of India & Business Laws)	The subject provides basic concept of marketing management, business law and political system, sale forecasting and marketing information system, India's foreign trade and foreign trade policy, etc.
8	AU.ABM. 478 (Ag. Econ.)	Financial Management of Agri - Business.	The course gives the knowledge of financial management, accounting, budgeting and budgetary control system, etc.
9	AU.ABM. 479 (Ag.	Natural Resources and	The subject provides basic concepts of

	Econ.)	Management	natural resource, major issues in the use, externalities and management of renewable and non- renewable resources.
10	AU.ABM. 471 (Mgn..)	Project Formulation, Evaluation and Monitoring	The course gives the knowledge of basic concepts for selection of agricultural project, project resource management, planning and scheduling, etc.
11	Programme outcome	The contents and subject matter in the programme is so arranged and presented that the undergraduate students can understand the realities and complexities of agriculture production and marketing system, Government policies, establishment of agro-based project and benefit from it, etc.	

Programme and course outline of Agriculture Economics

According to 5th Deans' Committee

Sr. No.	Course outline	Topic	Course Outcome
1	AU. Ag. Econ.121	Fundamental of Agricultural Economics	In this course students will learn the meaning of economics, micro & macro economics; basic concept of demand & supply, utility, costs, national income, inflation, economic system, etc.
2	AU. Ag. Econ.232	Agricultural Finance and Co-operation	The course taught about agricultural finance and banking system and functioning of financial and insurance institutions and co-operation, etc.
3	AU. Ag. Econ.243	Agricultural Marketing Trade and prices	The subject provides basic concept of marketing, ways of reducing marketing cost and role of government.
4	AU. Ag.Econ.354	Agricultural – Business Management	The subject provides knowledge transformation of agriculture into agribusiness, linkages between primary and support activities and marketing management.d marketing management.
5	AU. Ag. Econ. 365	Farm Management, Production and Resource Economics	Nature and scope of Production Economics and Farm Management studied along with Factor –Product, factor- factor, Product- Product, linear Programming for minimizing the cost and maximizing the profit in the farm. Risk and uncertainty in agriculture production and natural resource management.
6	Programme outcome	This programme deals with fundamentals of economics, farm management and production economics, agricultural finance and co-operation; agriculture marketing ; agriculture business and natural resource management and price policy; etc.	

(D. R. Thakur)

Dean School of Agriculture

Programme and course outcome of Horticulture
According to 4th Deans' Committee

Course outcome

Sr. No.	Course outline	Topic	Course outcome
1.	AU. Extn.121	Fundamentals of Rural Sociology & Educational Psychology	• The students will be able to acquaint the knowledge on various aspects related to rural society, nature and structure of Indian rural society, social stratification, social institution, cultural concept, meaning and significance of agricultural extension and social groups. • Develop the evaluative thinking on need of soft skills (selfmotivation, learning attitude, positive attitude, aspiring thoughts) while improvising oneself. • Analyzing attitude on rural society, nature and structure of rural society and components of rural society
2.	AU. Extn.242	Dimensions of Agricultural Extension	• The course intends to expose students to the fundamentals of extension education, extension systems in India, programme planning and rural development efforts. • The course will also provide an opportunity to students to visit different organizations involved in extension activities and rural development work.
3.	AU. Extn.353	Extension Methodologies for Transfer of Agricultural Technology	• To impart knowledge on different extension methods and approaches used for transfer of agricultural technology.
4.	AU. Extn.364	Entrepreneurship Development and Communication Skills	• To impart knowledge on different extension methods and approaches used for transfer of agricultural technology. • The course will also enable to develop practical skills on preparation of different extension teaching methods.

Programme outcome (PO):

After completion of the programme the students will be able to:

1. To impart practical based knowledge on agriculture and allied sectors
2. To impart in-depth practical knowledge in rural development
3. To provide hand hold exposure on agriculture -allied sectors like Diary, Apiculture, Fishery, Poultry science etc.
4. To disseminate different rural technologies through various extension activities

5. To identify and overcome the problems encountered in day-to-day life in agriculture and social sector
6. To provide knowledge on commercial agricultural production practices
7. To make students competitive in pursuing higher studies
8. To get an exposure to a new rural area and the socio-economic condition of people
9. To provide knowledge from ancient to modern agricultural practices
10. To face the rural reality during the rural living and learning experience
11. To impart in-depth practical knowledge in crop cultivation practices
12. To cope with adverse situations during their rural staying at different remote parts of rural area
13. To provide knowledge on working of different farm implements
14. Detailed knowledge on various agri-business activities
15. To build the manpower for serving the rural community
16. To disseminate recent agricultural technologies through extension

Programme and course outcome of Horticulture
According to 5th Deans' Committee

Course outcome

Sr. No.	Course outline	Topic	Course outcome
1.	AU.Ag.Extn.111	Rural Sociology & Educational Psychology	• The students will be able to acquaint the knowledge on various aspects related to rural society, nature and structure of Indian rural society, social stratification, social institution, cultural concept, meaning and significance of agricultural extension and social groups. • Develop the evaluative thinking on need of soft skills (selfmotivation, learning attitude, positive attitude, aspiring thoughts) while improvising oneself. • Analyzing attitude on rural society, nature and structure of rural society and components of rural society
2.	AU.Ag. Extn.122	Fundamentals of Agricultural Extension Education	• The course intends to expose students to the fundamentals of extension education, extension systems in India, programme planning and rural development efforts. • The course will also provide an opportunity to students to visit different organizations involved in extension activities and rural development work
3.	AU.Ag. Extn.123	Communication Skills and Personality Development	• Acquaint the knowledge on Listening, Speaking, Reading and Writing Skills along with classification; General & Technical Article and writing principles of these articles; comparison between Individual & Group presentation; organization of seminars & conferences and formats of Public Speaking • Develop evaluative thinking on variations between General & Technical Articles with the way of writing, how to prepare for public speaking and the principles to be followed and significance of Field

			Diary & Lab Record for an agriculture student
4.	AU.Ag. Extn.244	Agricultural Journalism	• Students will learn principles and professional skills for writing, editing and seminar. • This course also imparts skills on publications production, public relations and internet communications on agriculture.
5.	AU.Ag. Extn.355	Entrepreneurship Development and Business Communication	• To impart knowledge on different extension methods and approaches used for transfer of agricultural technology. • The course will also enable to develop practical skills on preparation of different extension teaching methods.

Programme outcome (PO):

After completion of the programme the students will be able to:

1. To impart practical based knowledge on agriculture and allied sectors
2. To impart in-depth practical knowledge in rural development
3. To provide hand hold exposure on agriculture -allied sectors like Diary, Apiculture, Fishery, Poultry science etc.
4. To disseminate different rural technologies through various extension activities
5. To identify and overcome the problems encountered in day-to-day life in agriculture and social sector
6. To provide knowledge on commercial agricultural production practices
7. To make students competitive in pursuing higher studies
8. To get an exposure to a new rural area and the socio-economic condition of people
9. To provide knowledge from ancient to modern agricultural practices
10. To face the rural reality during the rural living and learning experience
11. To impart in-depth practical knowledge in crop cultivation practices
12. To cope with adverse situations during their rural staying at different remote parts of rural area
13. To provide knowledge on working of different farm implements
14. Detailed knowledge on various agri-business activities
15. To build the manpower for serving the rural community
16. To disseminate recent agricultural technologies through extension

Programme and course outcome of Horticulture
According to 5th Deans' Committee

Course outcome

Sr. No.	Course outline	Topic	Course outcome
1.	AU. Hort. 111	Fundamentals of Horticulture	• Students will gain knowledge on the fundamentals of horticulture • Hands on training on various propagation methods and important cultural practices for major fruit and plantation crops will be provided (Practical
2.	AU. Hort. 232	Production Technology for Vegetable and Spices	• To impart knowledge on the principles of horticulture, propagation and production techniques of tropical, sub tropical, temperate vegetable and spice crops
3.	AU. Hort. 243	Production Technology for Fruit and Plantation Crops	• To impart knowledge on the principles of horticulture, propagation and production techniques of tropical, sub tropical, temperate fruit and plantation crops. • Students will be imparted with wide knowledge on major tropical, sub-tropical and temperate fruit and plantation crops. • Hands on training on various propagation methods and important cultural practices for major fruit and plantation crops will be provided
4.	AU. Hort. 244	Production Technology for Ornamental Crops, MAP and Landscaping	• Students will learn different production technology for ornamental Crops, • To learn the techniques in Landscaping
5.	AU. Hort. 366	Post-harvest Management and Value Addition of Fruit and Vegetables	• Students will get to know about different processing techniques of fruits and vegetable crops and they make value added products like jam, jelly, squash, juice etc
6.	AU. Hort. 367	Micro-propagation Technologies	• Study about tissue culture methods and applications extensively studied with application point of view. Production of viral free planting material by meristematic tissue
7.	AU. Hort. 368	Hi-tech Horticulture	• Student will get to know about farming technology to increase yields, ensures high quality. • Student will also learn about growing temperate vegetables in a tropical climate and developing disease-resistant plants through genetic engineering.

Programme outcome (PO):

After completion of the programme the students will be able to:

1. Transfer knowledge of Horticulture in the field of agricultural research especially in horticulture including fruits, vegetables, flowers, spices, medicinal and aromatic plants and their management.
2. Develop innovative agro- techniques to enhance the production and productivity of horticultural crops.
3. Increase farmers' income through adopting hi-tech horticulture.
4. Create job opportunities for the unemployed youths through teaching, research, training, extension etc., especially for the development of socially and economically depressed segment of society.
5. Establishment of models nurseries in rural areas for availability of quality planting materials.
6. Conservation and exploitation of biological diversity through crop management.
7. Prolong the post harvest storage life of horticultural commodities and increase income through value addition of the products and to reduce post harvest losses.

Programme and course outcome of Horticulture
According to 4th Deans' Committee

Course outcome

Sr. No.	Course outline	Topic	Course outcome
1.	AU. Hort. 351	Production Technology of fruit crops	• Impart basic knowledge about the importance and management of temperate fruits grown in India. • Study of commercial varieties of regional, national and international importance, ecophysiological requirements, recent trends in propagation, rootstock influence, planting system, cropping systems, root zone and canopy management, nutrient management, water management, fruit set and development, abiotic factors limiting fruit production, physiological of flowering, and remedies, quality improvement by management practices; maturity indices, harvesting, grading, packing, precooling, storage, transportation and ripening techniques.
2.	AU. Hort. 362	Production Technology of Spices, Aromatic, Medicinal and Plantation Crops	• Impart comprehensive knowledge about the production technology of medicinal and aromatic crops. • To impart knowledge on the principles of horticulture, propagation and production techniques of tropical, sub tropical, temperate spice crops • Study of Herbal industry, Indian system of medicine, indigenous Traditional Knowledge, IPR issues, Classification of medicinal crops, Systems of cultivation, Organic Production, Role of institutions and NGO's in production, GAP in medicinal crops production. • Knowledge of production technology forAromatic, Medicinal and Plantation Crops
3.	AU. Hort. 363	Post-harvest Management and Value Addition of Fruit and Vegetables	• Students will get to know about different processing techniques of fruits and vegetable crops and they make value added products like jam, jelly, squash, juice etc
4.	AU. Hort. 474	Commercial Fruit Production	• Students will learn different production technology for fruit Crops to gain

			higher productivity for marketing • learn about economic and nutritional advantages
5.	AU. Hort. 475	Nursery management for horticultural crops	• Familiarization with principles and practices of nursery management for Horticultural Crops. • Knowledge of nursery management, nursery establishment and nursery rules and regulation.
6.	AU. Hort. 476	Processing and value-addition of horticultural crops	• Students will get to know about different processing techniques of horticulturalcrops and they make value added products like jam, jelly, squash, juice etc
7.	AU.Hort. 473	Commercial Floriculture	• Students will learn different production technology of flowers for commercial production and marketing
8.	AU.Hort. 474	Protected Cultivation of Horticultural Crops and Seed Production of Vegetables and Flowers	• Students will produce different horticultural Crops under poly house/ protected cultivation • Educate principles and methods of quality seed and planting material production in and vegetables and flowers. • Definition of seed and its quality, new seed policies; DUS test, scope of vegetable seed industry in India. • Genetical and agronomical principles of seed production; methods of seed production; use of growth regulators and chemicals in vegetable and flowers seed production; floral biology, pollination, breeding behaviour, seed development and maturation; methods of hybrid seed production.

Programme outcome (PO):

After completion of the programme the students will be able to:

1. Transfer knowledge of Horticulture in the field of agricultural research especially in horticulture including fruits, vegetables, flowers, spices, medicinal and aromatic plants and their management.
2. Develop innovative agro- techniques to enhance the production and productivity of horticultural crops.
3. Increase farmers' income through adopting hi-tech horticulture
4. Create job opportunities for the unemployed youths through teaching, research, training, extension etc., especially for the development of socially and economically depressed segment of society.

5. Establishment of models nurseries in rural areas for availability of quality planting materials.
6. Conservation and exploitation of biological diversity through crop management.
7. Prolong the post harvest storage life of horticultural commodities and increase income through value addition of the products and to reduce post harvest losses.

Course out come and Programme outcome (Floriculture+Environemtn + IPR)

COURSE CODE	COURSE TITLE	SEMESTER	COURSE OUTCOME	Programme outcome
• **FLORICULTURE**				
AU.VSF. 231 3 (2+1)	Production Technology of Vegetables and Flowers	III	• analyze production technology of different ornamentals • examine ornamental garden and its planning • raising of plants and their maintenence	• Thorough knowledge of the ornamental horticulture will make students well versed with the ornamental crops and its use in development of a landscape
AU.HORT 245 3 (2+1) Elective	Landscaping	IV	• planning of gardens and its commercialization • cultivation of various ornamentals • developing landscape plan for bio aesthetic planning of rural and urban areas	
• **ENVIRONMENTAL SCIENCES**				
AU. Env. 361 2(1+1)	Environmental Science	IV	• examine various ecosystems • apply knowledge of natural resources for environment conservation • observe several case studies of environmental pollution	• knowledge of environment make students aware and active in identifying problems associated with recourse use and degradatio
AU. ENV.	Environmental	III	• Knowledge of	

DM. 231	sciences and disaster management		scarcity and sustainable use of natural resources • Examine the biodiversity and its conservation • Apply knowledge to prevent any disaster	n of environment as well as finding solution
• **FOOD TECHNOLOGY**				
AU. FSN 262 2 (2+0)	Principles of food science and nutrition	VI	• examine foods and its type based on nutrition • apply knowledge of food chemistry in diet planning • observe food composition for a balanced diet	• student will have a knowledge of proper and balanced diet and the impactit has on human health
• **SOCIAL SCIENCES**				
AU.HVE.111 1(1+0)	Human Value and Ethics	I	• self exploration of principles and philosophy of life • knowledge of self motivation and ethics • awareness of body mind and soul	• Students appreciation and motivation to set a goal in life
AU.IPR.351 1(1+0)	Intellectual Property Rights	V	• Examine various IPRs in India • Importance of IPR in agricultural inventions • Use of IPR in protection and commercialization of	• Students made aware of their rights as an innovator as well as how to utilize these rights

			agricultural produce	

Programme and course outline of Soil Sciene

According to 4th Dean's Committee

Sr. No	Course outline	Topic	Course Outcome
1.	AU. Soils 111	Introduction to Soil Science	**Student will be able to understand: To be able about physical and chemical properties of soil and their effect on plant health.**
2	AU. Soils 122	Soil Chemistry, Soil Fertility and Nutrient Management	**To understand essentiality of plant nutrient and mechanism of mutrient transport to plant and factor affecting nutrient availability.**
3	AU. Soils 233	Manure, Fertilizers and agro-chemicals	**Knowledge of different manure and fertilizers used in different crops according to soil condition.**
4	AU. Cr. Prod. Soils 474	Water management	**Student will be acquainted about different approaches of water management.**
5	AU. Cr. Prod. Soils 475	Soil Management	**To understand different factors responsible for saline, sodic and acidic soils and their properties.**
According to 5th Dean's Committee			
1	AU. Soils 111	Introduction to Soil Science	**Knowledge about soil forming rocks and mineral, their weathering and soil forming process and climate factors affect them.**
2.	AU. Soils. 242	Problematic soils and their management	**To provide knowledge about waste land and problematic soils in India and management of the soils.**
3.	AU. Soils. 353	Manures, Fertilizers and Soil Fertility Management	**To understand different sources responsible for Manure and fertilizers.**

Overall Course Programme outcome:

At the end of the course, student will able to understand:

To be able about procedure of soil testing and establish soil testing laboratory in future as a entrepreneur.

To aware the students about causes, effect and remedies to prevention and mitigation of soil pollution.

SCHOOL OF PHARMACY

Programme Outcomes (POs), Programme Specific Outcomes (PSOs)

& Course Outcomes (COs)

Programme Outcomes (POs)

POs-1: Pharmacy Knowledge: Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.

POs-2: Planning Abilities: Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.

POs-3: Problem analysis: Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.

POs-4: Modern tool usage: Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.

POs-5: Leadership skills: Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and

societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well- being.

POs-6: Professional Identity: Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).

POs-7: Pharmaceutical Ethics: Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

POs-8: Communication: Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.

POs-9: The Pharmacist and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.

POs-10: Environment and sustainability: Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

POs-11: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Programme Specific Outcomes (PSOs)

PSO-1: To prepare graduate to success in technical or professional careers in various pharmaceutical industry and/ or institute and /or Health care system through excellent real time exposure to rigorous education.

PSO-2: To prepare graduate of the program to learn and adapt in a globe of constantly developing trends

PSO-3: To prepare the graduate to have foundation in science, formulation technology, synthetic knowledge, Discovery tools as per the requirement of Pharmaceutical sectors.

PSO-4: To strengthen the professional and ethical attitude, effective communication skills, teamwork skills, multidisciplinary approach, and an ability to relate pharmaceutical sciences issues to broader social context.

PSO-5: To streams a lifelong career of personal and practicing professional growth with ethical codes and self esteem

Course Outcomes (COs)

AUBP101T. Human anatomy and physiology-i

COs-1: Explain the gross morphology, structure and functions of various organs of the human body.

COs-2: Describe the various homeostatic mechanisms and their imbalances.

COs-3: Identify the various tissues and organs of different systems of human body.

COs-4: Perform the various experiments related to special senses and nervous system.

COs-5: Appreciate coordinated working pattern of different organs of each system

AUBP102T. PHARMACEUTICAL ANALYSIS

COs-1: Understand the principles of volumetric and electro chemical analysis

COs-2: Carryout various volumetric and electrochemical titrationsdevelop analytical skills

AUBP103T. PHARMACEUTICS- I

COs-1: Know the history of profession of pharmacy

COs-2: Understand the basics of different dosage forms, pharmaceutical incompatibilities andpharmaceutical calculations

COs-3: Understand the professional way of handling the prescription

COs-4: Preparation of various conventional dosage forms

AUBP104T. PHARMACEUTICAL INORGANIC CHEMISTRY

COs-1: Know the sources of impurities and methods to determine the impurities ininorganic drugs and pharmaceuticals

COs-2: understand the medicinal and pharmaceutical importance of inorganic compounds

AUBP105T: COMMUNICATION SKILLS

COs-1: Understand the behavioral needs for a Pharmacist to function effectively in theareas of pharmaceutical operation

COs-2: Communicate effectively (Verbal and Non Verbal)

COs-3: Effectively manage the team as a team player

COs-4: Develop interview skills

COs-5: Develop Leadership qualities and essentials

AUBP 106RBT: Remedial Biology

COs-1: know the classification and salient features of five kingdoms of life

COs-2: understand the basic components of anatomy & physiology of plant

COs-3: know understand the basic components of anatomy & physiology animal with special reference to human

AUBP 106RMT: Remedial Mathematics

COs-1: Know the theory and their application in Pharmacy

COs-2: Solve the different types of problems by applying theory

COs-3: Appreciate the important application of mathematics in Pharmacy

AUBP 201T: HUMAN ANATOMY AND PHYSIOLOGY-II

COs-1: Explain the gross morphology, structure and functions of various organs of the human body.

COs-2: Describe the various homeostatic mechanisms and their imbalances.

COs-3: Identify the various tissues and organs of different systems of human body.

COs-4: Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.

COs-5: Appreciate coordinated working pattern of different organs of each system

COs-6: Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

AUBP202T: PHARMACEUTICAL ORGANIC CHEMISTRY –I

COs-1: write the structure, name and the type of isomerism of the organic compound

COs-2: write the reaction, name the reaction and orientation of reactions

COs-3: account for reactivity/stability of compounds,

COs-4: identify/confirm the identification of organic compound

AUBP203 T: BIOCHEMISTRY

COs-1: Understand the catalytic role of enzymes, importance of enzyme inhibitors indesign of new drugs, therapeutic and diagnostic applications of enzymes.

COs-2: Understand the metabolism of nutrient molecules in physiological andpathological conditions.

COs-3: Understand the genetic organization of mammalian genome and functions ofDNA in the synthesis of RNAs and proteins.

AUBP 204T: PATHOPHYSIOLOGY

COs-1: Describe the etiology and pathogenesis of the selected disease states;

COs-2: Name the signs and symptoms of the diseases; and

COs-3: Mention the complications of the diseases.

AUBP205 T: COMPUTER APPLICATIONS IN PHARMACY

COs-1: know the various types of application of computers in pharmacy

COs-2: know the various types of databases

COs-3: know the various applications of databases in pharmacy

AUBP 206 T: ENVIRONMENTAL SCIENCES

COs-1: Create the awareness about environmental problems among learners.

COs-2: Impart basic knowledge about the environment and its allied problems.

COs-3: Develop an attitude of concern for the environment.

COs-4: Motivate learner to participate in environment protection and environmentimprovement.

COs-5: Acquire skills to help the concerned individuals in identifying and solvingenvironmental problems.

COs-6: Strive to attain harmony with Nature.

AUBP301T: PHARMACEUTICAL ORGANIC CHEMISTRY –II

COs-1: Write the structure, name and the type of isomerism of the organic compound

COs-2: Write the reaction, name the reaction and orientation of reactions

COs-3: Account for reactivity/stability of compounds,

COs-4: Prepare organic compounds

AUBP302T: PHYSICAL PHARMACEUTICS-I

COs-1: Understand various physicochemical properties of drug molecules in thedesigning the dosage forms

COs-2: Know the principles of chemical kinetics & to use them for stability testing anddetermination of expiry date of formulations

COs-3: Demonstrate use of physicochemical properties in the formulationdevelopment and evaluation of dosage forms.

AUBP 303 T: PHARMACEUTICAL MICROBIOLOGY

COs-1: Understand methods of identification, cultivation and preservation ofvarious microorganisms

COs-2: To understand the importance and implementation of sterlization inpharmaceuticalprocessing and industry

COs-4: Learn sterility testing of pharmaceutical products.

COs-5: Carried out microbiological standardization of Pharmaceuticals.

COs-6: Understand the cell culture technology and its applications in pharmaceutical industries.

AUBP 304 T. PHARMACEUTICAL ENGINEERING

COs-1: To know various unit operations used in Pharmaceutical industries.

COs-2: To understand the material handling techniques.

COs-3: To perform various processes involved in pharmaceutical manufacturing process.

COs-4: To carry out various test to prevent environmental pollution.

COs-5: To appreciate and comprehend significance of plant lay out design for optimumuse of resources.

COs-6: To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries

AUBP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III

COs-1: Understand the methods of preparation and properties of organic compounds

COs-2: Explain the stereo chemical aspects of organic compounds and stereo chemicalreactions

COs-3: Know the medicinal uses and other applications of organic compounds

AUBP402T. MEDICINAL CHEMISTRY – I

COs-1: Understand the chemistry of drugs with respect to their pharmacological activity

COs-2: Understand the drug metabolic pathways, adverse effect and therapeutic value ofdrugs

COs-3: Know the Structural Activity Relationship (SAR) of different class of drugs

COs-4: Write the chemical synthesis of some drugs

AUBP 403 T. PHYSICAL PHARMACEUTICS-II

COs-1: Understand various physicochemical properties of drug molecules in thedesigning the dosage forms

COs-2: Know the principles of chemical kinetics & to use them for stability testing naddetermination of expiry date of formulations

COs-3: Demonstrate use of physicochemical properties in the formulationdevelopment and evaluation of dosage forms.

AUBP 404 T. PHARMACOLOGY-I

COs-1: Understand the pharmacological actions of different categories of drugs

COs-2: Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.

COs-3: Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.

COs-4: Observe the effect of drugs on animals by simulated experiments

COs-5: Appreciate correlation of pharmacology with other bio medical sciences

AUBP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I

COs-1: To know the techniques in the cultivation and production of crude drugs

COs-2: To know the crude drugs, their uses and chemical nature

COs-3: Know the evaluation techniques for the herbal drugs

COs-4: To carry out the microscopic and morphological evaluation of crude drugs

AUBP501T. MEDICINAL CHEMISTRY – II

COs-1: Understand the chemistry of drugs with respect to their pharmacological activity

COs-2: Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs

COs-3: Know the Structural Activity Relationship of different class of drugs

COs-4: Study the chemical synthesis of selected drugs

AUBP 502 T: Industrial Pharmacy-I

COs-1: Know the various pharmaceutical dosage forms and their manufacturing techniques.

COs-2: Know various considerations in development of pharmaceutical dosage forms

COs-3: Formulate solid, liquid and semisolid dosage forms and evaluate them for their Quality

AUBP503.T: PHARMACOLOGY-II

COs-1: Understand the mechanism of drug action and its relevance in the treatment ofdifferent diseases

COs-2: Demonstrate isolation of different organs/tissues from the laboratory animals bysimulated experiments

COs-3: Demonstrate the various receptor actions using isolated tissue preparation

COs-4: Appreciate correlation of pharmacology with related medical sciences

AUBP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II

COs-1: To know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents

COs-2: To understand the preparation and development of herbal formulation.

COs-3: To understand the herbal drug interactions

COs-4: To carryout isolation and identification of phytoconstituents

AUBP 505 T. PHARMACEUTICAL JURISPRUDENCE

COs-1: The Pharmaceutical legislations and their implications in the development and Marketing of pharmaceuticals.

COs-2: Various Indian pharmaceutical Acts and Laws

COs-3: The regulatory authorities and agencies governing the manufacture and sale ofpharmaceuticals

COs-4: The code of ethics during the pharmaceutical practice

AUBP601T. MEDICINAL CHEMISTRY – III

COs-1: Understand the importance of drug design and different techniques of drugdesign.

COs-2: Understand the chemistry of drugs with respect to their biological activity.

COs-3: Know the metabolism, adverse effects and therapeutic value of drugs.

COs-4: Know the importance of SAR of drugs.

AUBP602 T. PHARMACOLOGY-III

COs-1: Understand the mechanism of drug action and its relevance in the treatment of different infectious diseases

COs-2: Comprehend the principles of toxicology and treatment of various poisoningsandappreciate correlation of pharmacology with related medical sciences.

AUBP 603 T. HERBAL DRUG TECHNOLOGY

COs-1: Understand raw material as source of herbal drugs from cultivation to herbal drugproduct

COs-2: Know the WHO and ICH guidelines for evaluation of herbal drugs

COs-3: Know the herbal cosmetics, natural sweeteners, nutraceuticals

COs-4: Appreciate patenting of herbal drugs, GMP .

AUBP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS

COs-1: Understand the basic concepts in biopharmaceutics and pharmacokinetics andtheir significance.

COs-2: Use of plasma drug concentration-time data to calculate the pharmacokineticparameters to describe the kinetics of drug absorption, distribution,metabolism, excretion, elimination.

COs-3: To understand the concepts of bioavailability and bioequivalence of drugproducts and theirsignificance.

COs-4: Understand various pharmacokinetic parameters, their significance &applications.

AUBP 605 T. PHARMACEUTICAL BIOTECHNOLOGY

COs-1: Understanding the importance of Immobilized enzymes in PharmaceuticalIndustries

COs-2: Genetic engineering applications in relation to production of pharmaceuticals

COs-3: Importance of Monoclonal antibodies in Industries

COs-4: Appreciate the use of microorganisms in fermentation technology

AUBP606: TPHARMACEUTICAL QUALITY ASSURANCE

COs-1: Understand the cGMP aspects in a pharmaceutical industry

COs-2: Appreciate the importance of documentation

COs-3: Understand the scope of quality certifications applicable to pharmaceuticalIndustries

COs-4: Understand the responsibilities of QA & QC departments

AUBP701T: INSTRUMENTAL METHODS OF ANALYSIS

COs-1: Understand the interaction of matter with electromagnetic radiations and itsapplications in drug analysis

COs-2: Understand the chromatographic separation and analysis of drugs.

COs-3: Perform quantitative & qualitative analysis of drugs using various analyticalinstruments.

AUBP 702 T. INDUSTRIAL PHARMACY-II

COs-1: Know the process of pilot plant and scale up of pharmaceutical dosage forms

COs-2: Understand the process of technology transfer from lab scale to commercial batch

COs-3: Know different Laws and Acts that regulate pharmaceutical industry

COs-4: Understand the approval process and regulatory requirements for drug products

AUBP 703T: PHARMACY PRACTICE

COs-1: Know various drug distribution methods in a hospital

COs-2: Appreciate the pharmacy stores management and inventory control

COs-3: Monitor drug therapy of patient through medication chart review and clinical review

COs-4: Obtain medication history interview and counsel the patients

COs-5: Identify drug related problems

COs-6: Detect and assess adverse drug reactions

COs-7: Interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states

COs-8: Know pharmaceutical care services

COs-9: Do patient counselling in community pharmacy;

COs-10: Appreciate the concept of Rational drug therapy.

AUBP 704T: NOVEL DRUG DELIVERY SYSTEMS

COs-1: To understand various approaches for development of novel drug delivery systems.

COs-2: To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

AUBP801T: BIOSTATISITCS AND RESEARCH METHODOLOGY

COs-1: Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design ofExperiment)

COs-2: Know the various statistical techniques to solve statistical problems

COs-3: Appreciate statistical techniques in solving the problems**.**

AUBP 802T SOCIAL AND PREVENTIVE PHARMACY

COs-1: Acquire high consciousness/realization of current issuesrelated to health andpharmaceutical problems within the country and worldwide.

COs-2: Have a critical way of thinking based on current healthcare development.

COs-3: Evaluate alternative ways of solving problems related tohealth andpharmaceutical issues

AUBP803ET. PHARMA MARKETING MANAGEMENT

COs-1: Understanding of marketing conceptsand techniques and their applications in the pharmaceutical industry.

AUBP804 ET: PHARMACEUTICAL REGULATORY SCIENCE

COs-1: Know about the process of drug discovery and development

COs-2: Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals

COs-3: Know the regulatory approval process and their registration in Indian and international markets

AUBP 805T: PHARMACOVIGILANCE

COs-1: Importance of drug safety monitoring.

COs-2: History and development of pharmacovigilance

COs-3: National and international scenario of pharmacovigilance

COs-4: Dictionaries, coding and terminologies used in pharmacovigilance

COs-5: Detection of new adverse drug reactions and their assessment

COs-6: International standards for classification of diseases and drugs

COs-7: Adverse drug reaction reporting systems and communication in pharmacovigilance

COs-8: Methods to generate safety data during pre-clinical, clinical and post approval phases ofdrugs' life cycle

COs-9: Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation

COs-10: Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India

COs-11: ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning

COs-12: CIOMS requirements for ADR reporting

COs-13: Writing case narratives of adverse events and their quality.

AUBP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBAL

COs-1: Know WHO guidelines for quality control of herbal drugs

COs-2: Know Quality assurance in herbal drug industry

COs-3: Know the regulatory approval process and their registration in Indian and international markets

COs-4: Appreciate EU and ICH guidelines for quality control of herbal drugs

AUBP 807 ET. COMPUTER AIDED DRUG DESIGN

COs-1: Design and discovery of lead molecules

COs-2: The role of drug design in drug discovery process

COs-3: The concept of QSAR and docking

COs-4: Various strategies to develop new drug like molecules.

COs-5: The design of new drug molecules using molecular modeling software

AUBP808ET: CELL AND MOLECULAR BIOLOGY

COs-1: Summarize cell and molecular biology history.

COs-2: Summarize cellular functioning and composition.

COs-3: Describe the chemical foundations of cell biology.

COs-4: Summarize the DNA properties of cell biology.

COs-5: Describe protein structure and function.

COs-6: Describe cellular membrane structure and function.

COs-7: Describe basic molecular genetic mechanisms.

COs-8: Summarize the Cell Cycle

AUBP810 ET. PHARMACOLOGICAL SCREENINGMETHODS

COs-1: Appreciate the applications of various commonly used laboratory animals.

COs-2: Appreciate and demonstrate the various screening methods used in preclinical research

COs-3: Appreciate and demonstrate the importance of biostatistics and researchmethodology

COs-4: Design and execute a research hypothesis independently

AUBP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

COs-1: Understand the advanced instruments used and its applications in drug analysis

COs-2: Understand the chromatographic separation and analysis of drugs.

COs-3: Understand the calibration of various analytical instruments

COs-4: Know analysis of drugs using various analytical instruments

AUBP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

COs-1: Understand the need of supplements by the different group of people to maintainhealthy life.

COs-2: Understand the outcome of deficiencies in dietary supplements.

COs-3: Appreciate the components in dietary supplements and the application.

COs-4: Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

D. Pharmacy

D PHARMACY 1ST YEAR

PHARMACEUTICS- I (AUDPH-111)

COs-1.: Know the history of profession of pharmacy

COs-2.: Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations

COs-3.: Understand the professional way of handling the prescription

COs-4.: Preparation of various conventional dosage forms

PHARMACEUTICAL CHEMISTRY –I (AUDPH-112)

COs-1.: Write the structure, name and the type of isomerism of the organic compound

COs-2.: Write the reaction, name the reaction and orientation of reactions

COs-3.: Account for reactivity/stability of compounds,

COs-4.: Identify/confirm the identification of organic compound

PHARMACOGNOSY (AUDPH-113)

COs-1.: understand raw material as source of drugs from cultivation to drugs

COs-2.: know the herbal cosmetics, natural sweeteners, nutraceuticals

BIOCHEMISTRY AND CLINICAL PATHOLOGY (AUDPH-114)

COs-1.: Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.

COs-2.: Understand the metabolism of nutrient molecules in physiological and pathological conditions.

COs-3.: Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

HUMAN ANATOMY AND PHYSIOLOGY (AUDPH-115)

COs-1.: Explain the gross morphology, structure and functions of various organs of the human body.

COs-2.: Describe the various homeostatic mechanisms and their imbalances.

COs-3.: Identify the various tissues and organs of different systems of human body.

COs-4.: Perform the haematological tests like blood cell counts, haemoglobin estimation bleeding /clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.

COs-5.: Appreciate coordinated working pattern of different organs of each system

COs-6.: Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

HCP (AUDPH-116)

COs-1.: Know various drug distribution methods in a hospital

COs-2.: Appreciate the pharmacy stores management and inventory control

COs-3.: Monitor drug therapy of patient through medication chart review and clinicalreview

COs-4.: Obtain medication history interview and counsel the patients

COs-5.: Identify drug related problems

COs-6.: Detect and assess adverse drug reactions

PHARMACEUTICS-II (AUDPH-221)

COs-1.: Understand various physicochemical properties of drug molecules in the designing the dosage forms

COs-2.: Know the principles of chemical kinetics & to use them for stability testing and determination of expiry date of formulations

COs-3.: Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

PHARMACEUTICAL CHEMISTRY –II (AUDPH-222)

COs-1.: Write the structure, name and the type of isomerism of the organic compound

COs-2.: Write the reaction, name the reaction and orientation of reactions

COs-3.: Account for reactivity/stability of compounds,

COs-4.: Prepare organic compounds

PHARMACOLOGY AND TOXICOLOGY (AUDPH-223)

COs-1.: Understand the pharmacological actions of different categories of drugs

COs-2.: Explain the mechanism of drug action at organ system/sub cellular/macromolecular levels.

COs-3.: Apply the basic pharmacological knowledge in the prevention and treatment ofvarious diseases.

COs-4.: Observe the effect of drugs on animals by simulated experiments

COs-5.: Appreciate correlation of pharmacology with other bio medical sciences

COs-6.: Interpret selected laboratory results (as monitoring parameters in therapeutics) ofspecific disease states

COs-7.: Know pharmaceutical care services

COs-8.: Do patient counseling in community pharmacy;

COs-9.: Appreciate the concept of Rational drug therapy.

PHARMACEUTICAL JURISPRUDENCE (AUDPH-224)

COs-1.: The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.

COs-2.: Various Indian pharmaceutical Acts and Laws

COs-3.: The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals

COs-4.: The code of ethics during the pharmaceutical practice

DSBM (AUDPH-225)

COs-1.: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

HCP (AUDPH-226)

COs-1.: Know various drug distribution methods in a hospital

COs-2.: Appreciate the pharmacy stores management and inventory control

COs-3.: Monitor drug therapy of patient through medication chart review and clinical review

COs-4.: Obtain medication history interview and counsel the patients

COs-5.: Identify drug related problems

COs-6.: Detect and assess adverse drug reactions

PHARMACEUTICS (MPH)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (AUMPH101T)

COs-1.: Chemicals and Excipients

COs-2.: The analysis of various drugs in single and combination dosage forms

COs-3.: Theoretical and practical skills of the instruments

DRUG DELIVERY SYSTEMS (AUMPH102T)

COs-1.: The various approaches for development of novel drug delivery systems.

COs-2.: The criteria for selection of drugs and polymers for the development of delivering system

COs-3.: The formulation and evaluation of Novel drug delivery systems..

MODERN PHARMACEUTICS (AUMPH103T)

COs-1.: The elements of preformulation studies.

COs-2.: The Active Pharmaceutical Ingredients and Generic drug Product development

COs-3.: Industrial Management and GMP Considerations.

COs-4.: Optimization Techniques & Pilot Plant Scale Up Techniques

COs-5.: Stability Testing, sterilization process & packaging of dosage forms.

REGULATORY AFFAIRS (AUMPH104T)

COs-1.: The Concepts of innovator and generic drugs, drug development process

COs-2.: The Regulatory guidance's and guidelines for filing and approval process

COs-3.: Preparation of Dossiers and their submission to regulatory agencies in different countries

COs-4.: Post approval regulatory requirements for actives and drug products

COs-5.: Submission of global documents in CTD/ eCTD formats

COs-6.: Clinical trials requirements for approvals for conducting clinical trials

COs-7.: Pharmacovigilence and process of monitoring in clinical trials.

MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS) (AUMPH201T)

COs-1.: The various approaches for development of novel drug delivery systems.

COs-2.: The criteria for selection of drugs and polymers for the development of NTDS

COs-3.: The formulation and evaluation of novel drug delivery systems.

ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS (AUMPH202T)

COs-1.: The basic concepts in biopharmaceutics and pharmacokinetics.

COs-2.: The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.

COs-3.: The critical evaluation of biopharmaceutic studies involving drug product equivalency.

COs-4.: The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.

COs-5.: The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic

COMPUTER AIDED DRUG DEVELOPMENT (AUMPH203T)

COs-1.: History of Computers in Pharmaceutical Research and Development

COs-2.: Computational Modeling of Drug Disposition

COs-3.: Computers in Preclinical Development

COs-4.: Optimization Techniques in Pharmaceutical Formulation

COs-5.: Computers in Market Analysis

COs-6.: Computers in Clinical Development

COs-7.: Artificial Intelligence (AI) and Robotics

COs-8.: Computational fluid dynamics(CFD)

COSMETICS AND COSMECEUTICALS (AUMPH204T)

COs-1.: Key ingredients used in cosmetics and cosmeceuticals.

COs-2.: Key building blocks for various formulations.

COs-3.: Current technologies in the market

COs-4.: Various key ingredients and basic science to develop cosmetics and cosmeceuticals

COs-5.: Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.

PHARMACEUTICAL CHEMISTRY (AUMPC)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (AUMPC 101T)

COs-1.: The analysis of various drugs in single and combination dosage forms

COs-2.: Theoretical and practical skills of the instruments

ADVANCED ORGANIC CHEMISTRY – I (AUMPC 102T)

COs-1.: The principles and applications of reterosynthesis

COs-2.: The mechanism & applications of various named reactions

COs-3.: The concept of disconnection to develop synthetic routes for small target molecule.

COs-4.: The various catalysts used in organic reactions

COs-5.: The chemistry of heterocyclic compounds

ADVANCED MEDICINAL CHEMISTRY (AUMPC 103T)

COs-1.: Different stages of drug discovery

COs-2.: Role of medicinal chemistry in drug research

COs-3.: Different techniques for drug discovery

COs-4.: Various strategies to design and develop new drug like molecules for biological targets

COs-5.: Peptidomimetics

CHEMISTRY OF NATURAL PRODUCTS (AUMPC 104T)

COs-1.: Different types of natural compounds and their chemistry and medicinal importance

COs-2.: The importance of natural compounds as lead molecules for new drug discovery

COs-3.: The concept of rDNA technology tool for new drug discovery

COs-4.: General methods of structural elucidation of compounds of natural origin

COs-5.: Isolation, purification and characterization of simple chemical constituents from natural source

ADVANCED SPECTRAL ANALYSIS (AUMPC 201T)

COs-1.: Interpretation of the NMR, Mass and IR spectra of various organic compounds

COs-2.: Theoretical and practical skills of the hyphenated instruments

COs-3.: Identification of organic compounds

ADVANCED ORGANIC CHEMISTRY – II (AUMPC 202T)

COs-1.: The principles and applications of Green chemistry

COs-2.: The concept of peptide chemistry.

COs-3.: The various catalysts used in organic reactions

COs-4.: The concept of stereochemistry and asymmetric synthesis.

COMPUTER AIDED DRUG DESIGN (AUMPC 203T)

COs-1.: Role of CADD in drug discovery

COs-2.: Different CADD techniques and their applications

COs-3.: Various strategies to design and develop new drug like molecules.

COs-4.: Working with molecular modelingsoftwares to design new drug molecules

COs-5.: The in silico virtual screening protocols

PHARMACEUTICAL PROCESS CHEMISTRY (AUMPC 204T)

COs-1.: The strategies of scale up process of apis and intermediates

COs-2.: The various unit operations and various reactions in process chemistry

PHARMACOGNOSY (AUMPG)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (AUMPG 101T)

COs-1.: The analysis of various drugs in single and combination dosage forms

COs-2.: Theoretical and practical skills of the instruments

ADVANCED PHARMACOGNOSY – I (AUMPG 102T)

COs-1.: Advances in the cultivation and production of drugs

COs-2.: Various phyto-pharmaceuticals and their source, its utilization and medicinal value.

COs-3.: Various nutraceuticals/herbs and their health benefits

COs-4.: Drugs of marine origin

COs-5.: Pharmacovigilance of drugs of natural origin

PHYTOCHEMISTRY (AUMPG 103T)

COs-1.: Different classes of phytoconstituents, their biosynthetic pathways, their properties, extraction and general process of natural product drug discovery

COs-2.: Phytochemical fingerprinting and structure elucidation of phytoconstituents.

INDUSTRIAL PHARMACOGNOSTICAL TECHNOLOGY (AUMPG 104T)

COs-1.: The requirements for setting up the herbal/natural drug industry.

COs-2.: The guidelines for quality of herbal/natural medicines and regulatory issues.

COs-3.: The patenting/IPR of herbals/natural drugs and trade of raw and finished materials.

MEDICINAL PLANT BIOTECHNOLOGY (AUMPG 201T)

COs-1.: Know the process like genetic engineering in medicinal plants for higher yield of Phytopharmaceuticals.

COs-2.: Use the biotechnological techniques for obtaining and improving the quality of natural products/medicinal plants

ADVANCED PHARMACOGNOSY – II (AUMPG 202T)

COs-1.: Validation of herbal remedies

COs-2.: Methods of detection of adulteration and evaluation techniques for the herbal drugs

COs-3.: Methods of screening of herbals for various biological properties

INDIAN SYSTEMS OF MEDICINE (AUMPG 203T)

COs-1.: To understand the basic principles of various Indian systems of medicine

COs-2.: To know the clinical research of traditional medicines, Current Good Manufacturing Practice of Indian systems of medicine and their formulations.

HERBAL COSMETICS (AUMPG 204T)

COs-1.: Understand the basic principles of various herbal/natural cosmetic preparations

COs-2.: Current Good Manufacturing Practices of herbal/natural cosmetics as per the regulatory authorities

ABHILASHI UNIVERSITY

ENGINEERING AND MANAGEMENT

B.TECH (C.S.E)

3rd -8th semester

COURSE OUTCOME

3RD SEM		
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Probability & Statistics	**AUBTCSE-201**	To analyze various probabilistic use. To design statistical methods or models
Industrial economics and management	**AUBTCSE-202**	Utilize the tools and techniques for economic analysis of alternative 15 opportunities, considering time value of money and risk associated with returns. Recognize the fundamentals of Management thoughts that are vital for the development of conceptual frame work of Management as a discipline.
Data structure	**AUBTCSE-203**	To compare different algorithms, their advantages and disadvantages, choose appropriate data structure as applied to specified problem definition.
OOPS using C++	**AUBTCSE-204**	A competence to design, writes, compile, test and execute straightforward programs using a high level Language and also applying the knowledge of OOP.
Digital electronics	**AUBTCSE-205**	To state differences between number systems and describe some different codes. To explain the function of basic digital combinatorial circuits and sequential circuits.
Computer architecture and organization	**AUBTCSE-206**	Recognize and manipulate representations of numbers stored in digital computers. Recall the history and development of modern computers, developing an appreciation for the potential and directions for future changes.

Sociology& elements of Indian history for engineers	**AUBTCSE-OE*-207**	The objective of this course is to familiarize the prospective engineers with elements of Indian history and sociological concepts and theories by which they could understand contemporary issues and problems in Indian society.

4TH SEM		
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Optimization and Calculus of Variations	**AUBTCSE-211**	To understand the graphical ideas which should be used by various computer applications in Soft Computing like data mining, image processing, clustering, image capturing etc.
Human Values and Professional Ethics	**AUBTCSE-212**	To describe confidentiality, professional behaviour to ethical dilemmas and determine appropriate approach. CO3 To apply fundamental ethical principles of integrity, objectivity, professional competence, due care
Database Management System	**AUBTCSE-213**	Demonstrate an understanding of relational database using normalization theory. Transform an information model into a relational database schema and to apply a data definition language, data manipulation language and/or utilities to implement the schema using a SQL.
Operating System	**AUBTCSE-214**	To know the basic principles of operating systems and compare different styles of operating systems.
Theory of Computation	**AUBTCSE-215**	To introduce students to the mathematical foundations of computation including automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.
Microprocessor & Peripherals	**AUBTCSE-216**	To define the detailing (8085 IC, RAM, ROM, keyboard, display unit, crystal oscillator etc.) of 8085 training board. CO2 To explain 8085 microprocessor instruction set, addressing mode and the procedure for storing data and execution of program.
Law for Engineers	**AUBTCSE-OE*-217**	Be able to understand some of the legal terminologies and the implications of different laws in business management. Be able to analyze situations and use effective decision making and

		problem solving techniques in different scenarios.
5TH SEM		
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Computer Networks	**AUBTCSE-301**	The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems.
Core Java	**AUBTCSE-302**	At the end of the course the participant will be able to: • Implement object oriented programming concepts. Use and create package and interfaces in a Java program. Use graphical user interface in Java programs • Create applets.
Computer Graphics	**AUBTCSE-303**	Explain the core concepts of computer graphics, including viewing, projection, perspective, modelling and transformation in two and three dimensions. apply the concepts of colour models, lighting and shading models, textures, ray tracing, hidden surface elimination, anti-aliasing, and rendering.
Artificial Intelligence and Expert Systems	**AUBTCSE-304**	Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations. Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
Software Engineering	**AUBTCSE-305**	Basic knowledge and understanding of the analysis and design of complex systems.Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems.
Analysis and Design of Algorithm	**AUBTCSE-306**	Write rigorous correctness proofs for algorithms. Demonstrate a

		familiarity with major algorithms and data structures. Apply important algorithmic design paradigms and methods of analysis. Synthesize efficient algorithms in common engineering design situations.
Basics of Operating Systems	**AUBTCSE-OE*-307**	A successful student will be able to understand the basic components of a computer operating sys- tem, and the interactions among the various components. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.
PC Maintenance & Troubleshooting	**AUBTCSE-OE*-308**	Design and develop applications to analyze and solve all computer science related problems. Involve in perennial learning for a continued career development and progress as a computer professional.
Management of Information System	**AUBTCSE-OE*-309**	Relate the basic concepts and technologies used in the field of management information systems; 2. Compare the processes of developing and implementing information systems. 3. Outline the role of the ethical, social, and security issues of information systems.
6TH SEM		
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Advanced Java	**AUBTCSE-311**	Develop error-free, well-documented Java programs; develop and test Java network, search engine, and web framework programs. Learn how to write, test, and debug advanced-level Object-Oriented programs using Java.
Distributed Operating System	**AUBTCSE-312**	To provide hardware and software issues in modern distributed systems. CO2: To get knowledge in distributed architecture,

		naming, synchronization, consistency and replication, fault tolerance, security, and distributed file systems.
Compiler Design	**AUBTCSE-313**	At the end of the course, students will understand different considerations and phases of compilation, the impact of language attributes upon the compilation process, the effect of hardware feature on the generated code and the practical fundamentals of compiler implementation.
Linux Administration	**AUBTCSE-314**	After completing this course, students will be able to: Perform essential Linux commands such as installation, searches and manipulating files. Operate running Linux systems by managing the boot process, scheduling jobs, updating the system, monitoring system performance and managing security.
Data Mining and Data Warehousing	**AUBTCSE-315**	This course gives an introduction to methods and theory for development of data warehouses and data analysis using data mining. Data quality and methods and techniques for preprocessing of data
Modeling and Simulation	**AUBTCSE-316**	Grasping modeling concepts using mean value analysis with some information technology applications. Grasping how to build appropriate simulation models together with their parameterization and the analysis of simulator output data.
Management Information Systems	**AUBTCSE-OE*-317**	evaluate the benefits and limitations of enterprise systems and industrial networks. explain relationships between concepts of information systems, organization, management and strategy. identify the salient characteristics of organizations. analyze the relationship between information systems and organizations.
Enterprise Resource Planning	**AUBTCSE-OE*-318**	To provide a contemporary and forward-looking on the theory

		and practice of Enterprise Resource Planning Technology. To focus on a strong emphasis upon practice of theory in Applications and Practical-oriented approach
Multimedia Technology	**AUBTCSE-OE*-319**	Define multimedia to potential clients. Identify and describe the function of the general skill sets in the multimedia industry. Identify the basic components of a multimedia project. Identify the basic hardware and software requirements for multimedia development and playback
7TH SEM		
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Advanced Computer Architecture	**AUBTCSE-401**	Demonstrate concepts of parallelism in hardware/software. CO2 : Discuss memory organization and mapping techniques. CO3 : Describe architectural features of advanced processors. CO4 : Interpret performance of different pipelined processors.
Wireless & Mobile Communication	**AUBTCSE-402**	analyze the Mobile radio propagation, fading, diversity concepts and the channel modeling. CO3: analyze the design parameters, link design, smart antenna, beam forming and MIMO systems. CO4: analyze Multiuser Systems, CDMA, WCDMA network planning and OFDM Concepts.
Information System & Securities	**AUBTCSE-403**	Students themselves can formulate simple algorithms to solve problems, and can code them in a high-level language appropriate for corporate use.
Cloud Computing	**AUBTCSE-404**	explain the core issues of cloud computing such as security, privacy, and interoperability. choose the appropriate technologies, algorithms, and approaches for the related issues. identify problems, and explain, analyze, and evaluate various

		cloud computing solutions
Big Data Analytics	**AUBTCSE-OE*-405**	To study the basic technologies that forms the foundations of Big Data. To study the programming aspects of cloud computing with a view to rapid prototyping of complex applications. To understand the specialized aspects of big data including big data application, and big data analytics
Embedded System	**AUBTCSE-OE*-406**	Foster ability to understand the internal architecture and interfacing of different peripheral devices with Microcontrollers. 2. Foster ability to write the programs for microcontroller.
Web Technology	**AUBTCSE-OE*-407**	The students will be able to: • Analyze a web page and identify its elements and attributes. Create web pages using XHTML and Cascading Style Sheets. Build dynamic web pages using JavaScript (Client side programming). Create XML documents and Schemas.
	8TH SEM	
COURSE NAME	**COURSE CODE**	**COURSE OUTCOME**
Mobile Adhoc & Sensors Networks	**AUBTCSE-OE*-410**	To Learn the Basics of Sensor network and Mobile Ad hoc Networks with its Protocol Design. To Develop MAC routing protocol for sensor and mobile Networks.To Study an efficient protocol for sensor Network. Design the protocol for Sensor and mobile Network.
Distributed Computing	**AUBTCSE-OE*-411**	To provide hardware and software issues in modern distributed systems. CO2: To get knowledge in distributed architecture, naming, synchronization, consistency and replication, fault

		tolerance, security, and distributed file systems
Soft Computing	**AUBTCSE-OE*-412**	Upon successful completion of the course, students will have an understanding of the basic areas of Soft Computing including Artificial Neural Networks, Fuzzy Logic and Genetic Algorithms. Provide the mathematical background for carrying out the optimization associated with neural network learning.
Mobile Application Development	**AUBTCSE-OE*-413**	This course is concerned with the development of applications on mobile and wireless computing platforms. Android will be used as a basis for teaching programming techniques and design patterns related to the development of standalone applications and mobile portals to enterprise and commerce
Natural Language Processing	**AUBTCSE-OE*-414**	This course introduces the fundamental concepts and techniques of natural language processing (NLP). Students will gain an in-depth understanding of the computational properties of natural languages and the commonly used algorithms for processing linguistic information
Cyber Security & Cyber Laws	**AUBTCSE-OE*-415**	Make Learner Conversant With The Social And Intellectual Property Issues Emerging From 'Cyberspace. ... Give Learners In Depth Knowledge Of Information Technology Act And Legal Frame Work Of Right To Privacy, Data Security And Data Protection. 5. Make Study On Various Case Studies On Real Time Crimes.
Project Work – II/ Industrial Project	**AUBTCSE-416 (L)**	An ability to work in actual working environment An ability to write technical documents and give oral presentations related to the work completed

ABHILASHI UNIVERSITY

ENGINEERING AND MANAGEMENT

B.TECH (M E)

3rd -8th semester

COURSE OUTCOME

3RD SEM		
COURSE CODE	**COURSE NAME**	**COURSE OUTCOME**
AUBTCSE-201	Probability & Statistics	To analyze various probabilistic use. To design statistical methods or models
AUBTCSE-202	Industrial economics and management	Utilize the tools and techniques for economic analysis of alternative 15 opportunities, considering time value of money and risk associated with returns. Recognize the fundamentals of Management thoughts that are vital for the development of conceptual frame work of Management as a discipline.
AUBTME-203	Strength of Materials-I	Student will able to solve various problems related to physical materials of daily life
AUBTME-204	Engineering Thermodynamics	Student will able to understand basic concept of thermodynamics, restate definitions, and calculations of absolute and gage pressures
AUBTME-205	Fluid Mechanics	Student will able to solve various problems related to fluid properties, statistics, measurements flow through pipes
AUBTME-206	Machine Drawing	Student will able to understand about technical

		drawing that shows information about heating, ventilation, air conditioning & transportation around buildings (elevators)
AUBTME-OE*-207	Law for Engineers Engineers	Student will able to understand social structure and social process related to social laws
AUBTME-OE*- 208	German Language - I	Student will able to understand foreign language
AUBTME-OE*- 209	French Language - I	Student will able to understand foreign language

4TH SEM		
COURSE CODE	**COURSE NAME**	**COURSE OUTCOME**
AUBTME-210	Human Values and Professional Ethics	. To describe confidentiality, professional behaviour to ethical dilemmas and determine appropriate approach. CO3 To apply fundamental ethical principles of integrity, objectivity, professional competence, due care
AUBTME-211	Optimization and Calculus of Variations	Student will able to perform various mathematical experiments and trials related to linear & non linear programming
AUBTME-212	Manufacturing Technology-I	The student will be able to develop simplified manufacturing processes with the aim of reduction of cost and manpower. The student will be able to identify/control the appropriate process parameters, and possible defects of manufacturing processes so as to remove them.
AUBTME-213	Strength of Material-II	Student will able to solve various problems related to physical materials of daily life
AUBTME-214	I.C Engines	Students will be able to explain fuel supply systems,

		combustion and emission aspects of IC engines and recent developments in IC engines.
AUBTME-215	Turbo Machines	Students will be able to select turbo machine for given application. Predict performance of turbo machine using model analysis. Understand mechanisms behind working of Turbines
AUBTCSE-OE*-217	Law for Engineers	Student will able to understand social structure and social process related to social laws
AUBTME-OE*-217	German Language - II	Student will able to understand foreign language
AUBTME-OE*-218	French Language - II	Student will able to understand foreign language

5TH SEM

COURSE CODE	COURSE NAME	COURSE OUTCOME
AUBTME-301	Kinematics of Machines	Student will be able to develop skills for designing and analyzing linkages, cams, gears and other mechanism and will develop skills for use of mathematics software and for writing computer programs to solve kinematics problems.
AUBTME-302	Manufacturing Technology-II	The student will be able to develop simplified manufacturing processes with the aim of reduction of cost and manpower. The student will be able to

		identify/control the appropriate process parameters, and possible defects of manufacturing processes so as to remove them.
AUBTME-303	Heat Transfer	The student will be able to understand Heat transfer by conduction in solids for steady-state and transient conditions. - Heat transfer by convection in closed conduits and on external surfaces.
AUBTME-304	Machine Design-I	The student will be able to understand and apply principles of gear design to spur gears and industrial spur gear boxes. To learn a skill to design worm gear box for various industrial applications.
AUBTME-305	Automobile Engineering	The student will be able to Identify the different parts of the automobile & working of various parts like engine, transmission, clutch, brakes & also Describe how the steering and the suspension systems operate.
AUBTME-306	Materials Technology	The student will be able to understand fundamentals of electrical, magnetic and optical properties of materials and to apply those fundamentals for selecting and developing materials for different engineering applications.
AUBTME- OE*-307	Robotics	Students will be able to work through complex logic problems and will improve crucial puzzle-solving skills. In The addition to this, it also gives them the ideal

		environment to learn how to handle making mistakes
AUBTME- OE*-308	Automobile Technology	The student will be able to Identify the different parts of the automobile & working of various parts like engine, transmission, clutch, brakes & also Describe how the steering and the suspension systems operate.
AUBTME- OE*-309	Value Engineering	The student will be able to understand techniques of reducing project cost, without reducing the quality. Cost reduction can be achieved by taking advantage of the existing streets and utilities, or the prevailing winds and available solar heat.
6TH SEM		
COURSE CODE	**COURSE NAME**	**COURSE OUTCOME**
AUBTME-311	Computer Aided Design and Manufacturing (CAD/CAM)	The student will be able to understand the concepts and underlying theory of modelling and the usage of models in different engineering applications Create accurate and precise geometry of complex engineering systems and use the geometric models in different engineering applications
AUBTME-312	Measurement and Control	The student will be able to understand the methods of measurement and selection of measuring instruments

		,standards of measurement Identify and apply various measuring instruments Explain tolerance, limits of size, fits, geometric and position tolerances and gauge design
AUBTME-313	Machine Design-II	The student will be able to understand and apply principles of gear design to spur gears and industrial spur gear boxes. To learn a skill to design worm gear box for various industrial applications.
AUBTME-314	Operation research	The student will be able to formulate and solve problems as networks and graphs. Develop linear programming (LP) models for shortest path, maximum flow, minimal spanning tree, critical path, minimum cost flow, and transhipment problems.
AUBTME-315	Thermal Engineering	Students will be able to have knowledge of different aspects of designing of a thermal system, Identify and examine a design problem associated to a thermal system.
AUBTME-316	Dynamics of Machinery	The student will be able to understand fundamental knowledge of dynamics of machines so that student can appreciate problems of dynamic force balance, transmissibility of forces, isolation of systems, vibrations
AUBTME- OE*-317	Modern Manufacturing	The student will be able to understand fundamental

	processes	knowledge and understanding of Production and Industrial Engineering and acquire abilities and capabilities in the areas of advanced manufacturing methods, quality assurance and shop floor management.
AUBTME- OE*-318	Maintenance and Reliability	The student will be able to understand estimating the likely reliability of new designs, and for analysing reliability data Able to train personnel in specific maintenance skills. Advise on the acquisition, installation and operation of machinery. Ensure environmental protection
AUBTME- OE*-319	Composite Materials	The student will be able to understand the specifics of mechanical behaviour of layered composites compared to isotropic materials and constitutive equations of composite materials and understand mechanical behaviour at micro, macro and meso level and determine stresses and strains in composites.
7TH SEM		
COURSE CODE	**COURSE NAME**	**COURSE OUTCOME**
AUBTME-401	Industrial automation and Robotics	Students will be able to work through complex logic problems and will improve crucial puzzle-solving skills. In The addition to this, it also gives them the ideal environment to learn how to handle making mistakes
AUBTME-402	Refrigeration & Air	Student will able to understand Refrigeration and its

	Conditioning	process where heat is transferred from low temperature to high temperature medium with the help of external work.
AUBTME-403	Power Plant Engineering	Student will able to understand the various sources of energy and Gain the knowledge regarding Equipment, Plant layout, principle of working of various diesel and gas turbine plants.
AUBTME-404	Industrial Engineering & Production Management	The student will be able to understand fundamental knowledge and understanding of Production and Industrial Engineering and acquire abilities and capabilities in the areas of advanced manufacturing methods, quality assurance and shop floor management.
AUBTME- OE*-405	Material handling and Plant layout	The student will be able to understand economies in handling of raw materials, work in- progress and finished goods and to reduce the quantum of work-in-progress.
AUBTME- OE*-406	Industrial Tribology	The student will be able to understand the friction, wear, and lubrication of interacting surfaces through physical and chemical processes, near or on a surface.
AUBTME- OE*-407	Finite Element Method	The student will be able to understand and quantify the effects of real-world conditions on a part or assembly.

8TH SEM		
COURSE CODE	**COURSE NAME**	**COURSE OUTCOME**
AUBTME-419	Industrial Project	Student will able to understand various elements of mechanical engineering mechanism of machines and also able to use various methodologies and aspects related to problem solving techniques.
AUBTME- OE*-412	Total Quality Management	Student will able to understand the quality aspect in various products, services, processes, people, resources and interactions.
AUBTME- OE*-413	Non-Conventional Energy resources	Student will able to understand the Non-conventional energies and their applications and basic understanding of Solar energy, types of solar collectors and their application.
AUBTME- OE*-414	Production Planning and control	The student will be able to understand fundamental knowledge and understanding of Production and Industrial Engineering and acquire abilities and capabilities in the areas of advanced manufacturing methods, quality assurance and shop floor management.
AUBTME- OE*-415	Mechatronics	The student will be able to develop, assemble, maintain and optimize products, systems, machines, installations or industrial processes.
AUBTME- OE*-416	Gas Dynamics	The student will be able to understand and compare

		the working of various jet engines and calculate thrust & efficiency in jet propulsion using gas dynamics principles.

B-TECH CIVIL ENGINEERING SYLLABUS OUTCOME

SUBJECT CODE	SUBJECT NAME	COURSE OUTCOMES
3RD SEMESTER		
AUBTCE-201	Probability and Statistics	Student will able to perform various mathematical experiments and trials
AUBTCE-202	Industrial Economics and Management	Student will able to apply various value and investment analysis of HR and financial resources
AUBTCE-203	Mechanics of Solids	Student will able to solve various problems related to physical materials of daily life
AUBTCE-204	Mechanics of Fluids - I	Student will able to solve various problems related to fluid properties, statistics, measurements flow through pipes
AUBTCE-205	Building Materials	Student will able to understand various elements of building material construction
AUBTCE-206	Engineering Surveying–I	Student will able to perform various surveys related to open land, construction sites
AUBTCEOE*-207	Sociology & Elements of Indian History for Engineers	Student will able to understand social structure and social process related to Indian history of engineering
AUBTCEOE*-208	German Language – I	Student will able to understand foreign language
AUBTCEOE*-209	French Language - I	Student will able to understand foreign language
4TH SEMESTER		
AUBTCE-211	Optimization and Calculus of Variations	Student will able to perform various mathematical experiments and trials related to linear & non linear programming.
AUBTCE-212	Human Values and Professional Ethics	Student will able to behave properly in society
AUBTCE-213	Structural Analysis –I	Student will able to solve various problems related to physical and mechanical aspects of civil constructions
AUBTCE-214	Geotechnical Engg. –I	Student will able to understand various elements of physical land and soil
AUBTCE-215	Engineering Surveying –II	Student will able to perform various surveys related to open land, construction sites
AUBTCE-216	Building Planning and Construction	Student will able to apply various elements of building planning aspects
AUBTCEOE*-217	Law for Engineers	Student will able to understand social structure and social process related to social laws
AUBTCE OE*-218	German Language – II	Student will able to understand foreign language
AUBTCE OE*-219	French Language - II	Student will able to understand foreign language

5TH SEMESTER		
AUBTCE-301	Limit State Design of Concrete Structures-I	Student will able to solve various problems related to physical and mechanical aspects of civil constructions
AUBTCE-302	Structural Analysis - II	Student will able to solve various problems related to physical and mechanical aspects of civil constructions
AUBTCE-303	Geotechnical Engg. - II	Student will able to understand various elements of physical land and soil
AUBTCE-304	Mechanics of Fluid - II	Student will able to solve various problems related to fluid properties, statistics, measurements flow through pipes
AUBTCE-305	Environmental Engg. - I	Student will able to understand and apply various aspects of near environment
AUBTCE-306	Transportation Engg. - I	Able to acquire and apply knowledge of Public transport, its planning, its components and its characteristics
AUBTCEOE*-307	Element of Civil Engineering	Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUBTCEOE*-308	Optimization Methods in Engineering	Student will able to perform various mathematical experiments and trials related to linear & non linear programming.
AUBTCEOE*-310	Environmental Impact Assessment	Familiarization with various problems related to environmental health and social issues
6TH SEMESTER		
AUBTCE-311	Design of Concrete Structures-II	Student will able to solve various problems related to physical and mechanical aspects of civil constructions
AUBTCE-312	Transportation Engg. - II	Able to acquire and apply knowledge of Public transport, its planning, its components and its characteristics
AUBTCE-313	Environmental Engg. - II	Student will able to understand and apply various aspects of near environment
AUBTCE-314	Hydrology and Water Resources Engg.	Able to analyze the rain fall data with the help of hydrological models and to estimate the design flood. Able to apply the model results in verifying the analysis and design of structures
AUBTCE-315	Engineering Geology and Rock Mechanics	Student will able to understand various elements of physical land, soil and other geological aspects
AUBTCE-316	Concrete Technology	Understand the principles of concrete technology and apply them during construction supervision and testing. Supervise and manage concrete manufacturing and construction.
AUBTCEOE*-318	Remote Sensing and Applications of GIS	Student will able to acquire and apply knowledge of GIS, its planning, its applications, its components and its characteristics

		Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUBTCEOE*-319	Hydraulic Machines	Student will able to acquire and apply knowledge of various hydraulic machines, its components and its characteristics
AUBTCEOE*-320	Energy Efficient Buildings	Student will able to acquire and apply knowledge of Renewable energy resources, its planning, its components and its characteristics
7TH SEMESTER		
AUBTCE-401	Limit State Design of Metal Structures	Student will able to acquire and apply knowledge of Advanced metal structures, its components and its characteristics
AUBTCE-402	Quantity Surveying and Valuation	Student will able to acquire and apply knowledge of estimation of quantities and will able to analysis rates and valuations of different materials related to construction
AUBTCE-403	Irrigation and Design of Hydraulic Structures	Student will able to make use of concept of planning, optimal design criteria and application of economics in water resources projects
AUBTCE-404	Construction Engineering and Management	Student will able to apply various elements of building planning aspects
AUBTCEOE*-405	Municipal Solid Waste Management	Student will able to acquire and apply knowledge of solid waste, its management , its components and its characteristics
AUBTCEOE*-406	Bridge Engineering	Student will able to acquire and apply knowledge of bridge infrastructure, its planning, its design, its applications, its components and its characteristics
AUBTCEOE*-407	Finite Element Method	Student will able to understand various properties and characteristics of three dimensional structures
8TH SEMSTER		
AUBTCE-411(L)	Project Work - II	Student will able to understand various elements of civil engineering construction physically on site and also able to use various methodologies and aspects related to problem solving techniques
AUBTCEOE*-412	Highway Pavement Design	Student will able to acquire and apply knowledge of pavement, its planning, its design, its applications, its components and its characteristics
AUBTCEOE*-413	Ground Water Hydrology	Student will able to analyze the rain fall data with the help of hydrological models and to estimate the design flood and ground water
AUBTCEOE*-414	Water Power Engineering	Student will able to understand various structures related to water power engineering
AUBTCEOE*-415	Design of Pre-stressed Concrete Structures	Student will able to acquire and apply knowledge of pre- stressed concrete Structures its components and its characteristics
AUBTCEOE*-416	Design of Earthquake Resistant Structures	Student will able to acquire and apply knowledge of seismology, seismic designs, seismic resistant Structures its components and its characteristics

AUBTCEOE*-417	Transportation System Planning	Student will able to acquire and apply knowledge of Public transport, its planning, its components and its characteristics and also able to apply the knowledge of sampling data in conducting various surveys and analysis

M-TECH CIVIL ENGINEERING SYLLABUS OUTCOMES AND OBJECTIVES

SUBJECT CODE	SUBJECT NAME	OBJECTIVES	OUTCOMES
		1ST SEMESTER	
AUMTCE-101	**Agricultural Engineering**	Provide an insight on Agricultural Engineering, management and its components,	Able to Understand the principles of Agricultural Engineering and apply them in the fields to enhance the production
AUMTCE-102	**Research Methodology**	The method is supported by powerful optimization and numerical techniques, which allow us to work with bodies of complex initial design and with very fine finite-element meshes, giving thus quite accurate solutions even in "difficult'' parts and for complex geometries.	Able to apply the knowledge of sampling data & conducting various analysis
AUMTCE-103	**Advanced Concrete Technology**	Understand the principles of concrete technology and apply them during construction supervision and testing. Supervise and manage concrete manufacturing and construction.	Information on various ingredients, their physical and chemical properties including properties of green and hardened concrete Mix design procedures as per BIS, ACI and British mix methods, including design of concrete using fibers and mineral architecture.
AUMTCE-104(A)	**Composite Materials**	Understand the principles of Composite Materials and apply them during construction supervision and testing. Supervise and manage concrete manufacturing and construction. Interpret the test results in accordance with BIS Stipulations.	Able to Plan the quality checks and bring about economy in concrete construction.

AUMTCE-104(B)	**Construction planning & Management**	Provide an insight on Construction planning, scheduling, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of Construction planning, scheduling, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
2ND SEMESTER			
AUMTCE-201	**Solid Waste Management**	Provide an insight on Solid waste, its components and its characteristics Explain sampling , transportation, treatment and disposal of waste	Able to acquire and apply knowledge of solid waste, its management , its components and its characteristics
AUMTCE-202	**Environmental Health & Hygiene**	Gain knowledge concerning environmental health, various pollutants, disease parameters etc.	Familiarization with various problems related to environmental health
AUMTCE-203	**Advanced RCC Design**	Provide an insight on RCC Design, its planning, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to design and analyze various types of problems related to concrete designs.
AUMTCE-204(A)	**Advanced Structural Analysis**	The main objective is to enable the student to have a good grasp of all the fundamental issues in these advanced topics in Advanced Structural Analysis Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of Advanced Structural analysis, its components and its characteristics
AUMTCE-204(B)	**Advanced Hydrology**	To introduce the fundamentals of hydrological models used in solving the water resources problems. To understand practical flow aspects of fluid flow in	Able to analyze the rain fall data with the help of hydrological models and to estimate the design flood.

		various hydraulic structures such as open channel, canal falls, hydraulic jump, dams and spillway etc.	Able to apply the model results in verifying the analysis and design of structures.
3RD SEMESTER TRANSPORTATION ENGINEERING			
AUMTCE-301(T)	**Public Transportation Planning**	Provide an insight on Public transport, its planning, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of Public transport, its planning, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUMTCE-302(T)	**Remote Sensing & GIS**	Provide an insight on GIS, its planning, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of GIS, its planning, its applications, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUMTCE-303(T)	**Railway Infrastructure Planning & Design**	Provide an insight on Railway infrastructure, its planning, its design, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of Railway infrastructure, its planning, its design, its applications, its components and its characteristics Able to apply the knowledge of sampling data
AUMTCE-304(T)	**Highway Pavement Design**	Provide an insight on pavement desining, its planning, its components and its characteristics	Student will able to acquire and apply knowledge of pavement, its planning, its design, its

		Explain sampling of data, analysis and interpretation of data in conducting various survey	applications, its components and its characteristics
AUMTCE-305(T)	**Pre Thesis**	To provide basic knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis
3RD SEMESTER **ENVIRONMENTAL ENGINEERING**			
AUMTCE-301(E)	**Renewable Energy**	Provide an insight on Renewable energy resources, its planning, its components and its characteristics	Able to acquire and apply knowledge of Renewable energy resources, its planning, its components and its characteristics
AUMTCE-302(E)	**Remote Sensing & GIS**	Provide an insight on GIS, its planning, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of GIS, its planning, its applications, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUMTCE-303(E)	**Water Resources Planning and Management**	To understand the concept of planning of water resources projects including feasibility studies and to learn the concept of relevant mathematical tools. To understand the concept of project analysis, issues in planning and data needed for planning.	Able to make use of concept of planning, optimal design criteria and application of economics in water resources projects. Able to apply the concepts of linear and dynamic programming in real life problems.
AUMTCE-304(E)	**Environmental Impact Assessment**	Provide an insight on environmental impact assessment, its planning, its components and its characteristics	Familiarization with various problems related to environmental health and social issues

AUMTCE-305(E)	**Pre Thesis**	To provide basic knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis
3RD SEMESTER **CONSTRUCTION TECHNOLOGY ENGINEERING**			
AUMTCE-301(C)	**Bridge Engineering**	Provide an insight on bridge infrastructure, its planning, its design, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Student will able to acquire and apply knowledge of bridge infrastructure, its planning, its design, its applications, its components and its characteristics
AUMTCE-302(C)	**Remote Sensing & GIS**	Provide an insight on GIS, its planning, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of GIS, its planning, its applications, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUMTCE-303(C)	**Design of Pre-stressed Concrete Structures**	Provide an insight on pre-stressed concrete structural design, its planning, its design, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Student will able to acquire and apply knowledge of pre- stressed concrete Structures its components and its characteristics
AUMTCE-304(C)	**Concrete Technology**	Provide an insight on various concrete related technologies, its planning, its design, its applications, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Understand the principles of concrete technology and apply them during construction supervision and testing. Supervise and manage concrete manufacturing and construction.
AUMTCE-305(C)	**Pre Thesis**	To provide basic knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis

4TH SEMESTER			
AUMTCE-401	**Thesis /Dissertation**	To provide brief knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis Able to summarize and analyze the data collected

M-TECH COMPUTER SCIENCE ENGINEERING SYLLABUS OUTCOMES AND OBJECTIVES

SUBJECT CODE	SUBJECT NAME	OBJECTIVES	OUTCOMES
		1ST SEMESTER	
AUMTCSE-101	**Big Data Analytics**	• To provide an overview of an exciting growing field of big data analytics. • To introduce the tools required to manage and analyze big data like Hadoop, NoSQL, Map Reduce. • To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability. To enable students to have skills that will help them to solve complex real-world problems in for decision support.	• Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. • Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. • Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.
AUMTCE/ME/CSE-102	**Research Methodology**	• The method is supported by powerful optimization and numerical techniques, which allow us to work with bodies of complex initial design and with very fine finite-element meshes, giving thus quite accurate solutions even in "difficult" parts and for complex geometries.	• Able to apply the knowledge of sampling data & conducting various analysis.
AUMTCSE-103	**Data Structure & Algorithm Analysis in C**	• To teach various storage mechanisms of data. • To design and implement various data structures. • To introduce various techniques for representation of the data in the real world.	• Students will be able to implement various linear and nonlinear data structures. • Able to apply the knowledge of sampling data in conducting various surveys and analysis.

			Students will be able to select appropriate sorting technique for given problem.
AUMTCSE-104(A)	**Software Engineering**	• To provide the knowledge ofsoftware engineering discipline. • To apply analysis, design andtesting principles to softwareproject development. • To demonstrate and evaluatereal time projects with respect to software engineering principles.	• Understand and demonstrate basic knowledge in software engineering. • Identify requirements, analyzeand prepare models. • Identify risks, manage thechange to assure quality in software projects.
AUMTCSE-104(B)	**Advanced Software Engineering Concepts**	• To demonstrate and evaluate real time projects with respect to software engineering principles. • To specify, abstract, verify and validate solutions to large-size problems, to plan, develop and manage large software and learn emerging trends in software engineering.	• Identify and apply the principles, processes and main knowledge areas for Software Project Management. • Apply testing principles on software project and understand the maintenance concepts.
2ND SEMESTER			
AUMTCSE-201	**Object Oriented Programming with JAVA**	• To program using C++ features such as composition of objects, Operator overloading, inheritance, Polymorphism etc. • To understand the concept of object oriented programming, java elements.	• Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++. • Be able to program using C++ features such as composition of objects, Operator overloading,

			inheritance, Polymorphism etc.
AUMTCSE-202	**Computer Networks**	• To get a basic introduction to key concepts and techniques underlying cellular communication and medium access control in wireless networks. • To learn the architecture and issues related to IEEE 802.11 wireless LAN. • To expose the students to various internetworking, routing and multicasting issues and protocols.	• Grasp the concepts and characteristics of wireless signals and transmission channels. • Identify and understand the various design issues of internetworking, routing and multicasting.
AUMTCSE-203	**Distributed Data Base Management System**	• To learn Distributed Database Management Systems (DDBMSs) features such as concurrency control, recovery control, transactional models, and query processing. • To learn advanced topics of databases like object-oriented, parallel and distributed databases. • To implement the concepts of decision-support models in various database applications	• Analyze the advanced concepts along with their application areas. • Design recovery protocols for distributed databases and parallel database architectures.
AUMTCSE-204(A)	**Software Quality and Testing**	• To provide the students with theoretical knowledge about concepts of software quality, about the quality models, standards and – methodologies used in software industry. • Understanding and usage of the theory is consolidated by the case studies and exercises. • To understand software and functional testing.	• To develop ability to analyze the relations among software product, process and project in quality assurance and management. • To understand the relationships between software process improvement and software quality management.
AUMTCSE-204(B)	**Computer Architecture and Parallel Processing**	• To provide students with a broad understanding of computer architecture.	• Understand the advanced concepts of computer

		• To study architectures exploiting instruction-level parallelism (ILP), and multiprocessors and minicomputers. • To provide exposure to current and emerging trends in Computer Architectures.	architecture. • Investigate modern design structures of Pipelined and Multiprocessors systems. • Understand the interaction amongst architecture, applications and technology.
3RD SEMESTER			
AUMTCSE-301	**Artificial Intelligence & Expert System**	• To understand the concept of AI and Expert Systems. • To understand the insight of natural language processing.	• Be able to understand the concept of AI, Expert Systems and NLP. • Be able to use propositional logic and pragmatic processing.
AUMTCSE-302	**Operating System and Case Study**	• To introduce advanced operating system concepts with emphasis onfoundations & design principles. • Different components of operating system are covered.	• Able to analyze the structure of operating systems and evaluate the relationshipbetween the application programs that work on them. • Able to review the state of art in operating systems design.
AUMTCSE-303	**Data Warehousing and Data Mining**	• Compare and contrast different conceptions of data mining as evidenced in both research and application. • Describe how to extend a relational system to find patterns using association rules. • Evaluate methodological issues underlying the effective application of data mining.	• Demonstrate the knowledge gained through solving problems. • Use of data mining tools during Projects to build reliable products, the current demand of the industry.
AUMTCSE-304(A)	**Cloud Computing**	• An overview of the concepts, processes, and best practices needed to successfully secure	• Identify security aspects of each cloud model.

		information withinCloud infrastructures. • To learn the basic Cloud types and delivery models and develop an understanding of the risk andcompliance responsibilities and Challenges for each Cloud type and service delivery model.	• Develop a risk-management strategy for moving to the Cloud. • Implement a public cloud instance using a public cloud service provider.
AUMTCSE-304(B)	**Cyber Law**	• Examine how the online world has borne new crimes and law enforcement response. • Gain insights to application of IT Laws for different types of cyber-crimes.	• Analyze various types of cyber-crime and formulate real world cyber-crime investigations. • Ability to find solutions in cyber-crime investigations, evidence and applicable law for real world case studies.
AUMTCSE-305	**Pre Thesis**	• To provide basic knowledge of thesis work to the students	• Able to apply various methodologies, strategies related to thesis
4TH SEMESTER			
AUMTCSE-401	**Thesis /Dissertation**	• To provide brief knowledge of thesis work to the students	• Able to apply various methodologies, strategies related to thesis • Able to summarize and analyze the data collected

M-TECH MECHANICAL ENGINEERING SYLLABUS OUTCOMES AND OBJECTIVES

SUBJECT CODE	SUBJECT NAME	OBJECTIVES	OUTCOMES
		1ST SEMESTER	
AUMTME-101	**Agriculture engineering**	To Provide an insight on Agricultural Engineering, management and its components,	Able to Understand the principles of Agricultural Engineering and apply them in the fields to enhance the production
AUMTME-102	**Research Methodology**	To provide an insight on various research needs, analysis and types	Able to apply the knowledge of sampling data & conducting various analysis
AUMTME-103	**Metal Casting**	Understand the principles of metal casting and apply them during factory supervision and testing. Supervise and manage manufacturing process.	Information on various types, their physical and chemical properties including properties of metal casting as per BIS, ACI and British mix methods.
AUMEME-104(A)	**Welding Technology**	Understand the principles of welding technologies and apply them during factory supervision and testing. Interpret the test results in accordance with BIS Stipulations.	Able to Plan the quality checks and perform various welding operations
AUMEME-104(B)	**Advance Mechatronics and Product Design**	Provide an insight on mechatronics, its components and its characteristics	Able to acquire and apply knowledge of mechatronics, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis

2ND SEMESTER			
AUMTME-201	**Plastics and Composites**	Provide an insight on various plastics , its components and its characteristics Explain sampling, treatment & composition.	Able to acquire and apply knowledge of various plastics , its management , its components and its characteristics
AUMTME-202	**Jig, Fixture and Die Design**	Gain knowledge concerning jig fixtures die design etc.	Familiarization with various problems related to jig fixtures and die design.
AUMTME-203	**Mechanization of Farm Power and Machinery**	Provide an insight on machinery, its planning, its components and its characteristics	Able to design and analyze various types of machines.
AUMTME-204(A)	**Production Planning and Control**	To provide an insight on various production planning techniques, coordination of materials, machines, tools and operating time	Able to acquire and apply knowledge of production planning and control, its components and its characteristics
AUMTME-204(B)	**Machine Tool Design**	To introduce the fundamentals of machine tools etc To understand working and principles of various machine tool designs.	Able to analyze the fundamentals of machine tools etc Able to apply the model results in verifying the analysis and design of machine tools.
3RD SEMESTER			
AUMTME-301	**Materials Technology**	Provide an insight on material technology, its planning, its components and its characteristics Explain sampling of data, analysis and interpretation of data in conducting various survey	Able to acquire and apply knowledge of material technology, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUMTME-302	**Industrial Tribology**	Provide an insight on industrial tribology, wear friction, lubrication its components and its characteristics	Able to acquire and apply knowledge on industrial tribology, wear friction, lubrication its components and its characteristics

AUMTME-303	**Operational Research**	The subject is supported by powerful optimization and numerical techniques, which allow us to work with bodies of complex initial design and with very fine finite-element meshes, giving thus quite accurate solutions even in "difficult'' parts and for complex geometries.	Able to apply the knowledge of sampling data & conducting various analysis
AUMTME-304(A)	**Total Quality Management**	To provide management philosophy that focus on producing quality service to meet customer need	Able to apply the knowledge of various customer needs, finance, marketing and manufacturing etc
AUMTME-304(B)	**Entrepreneurship**	To provide management philosophy that focus on producing quality service to meet customer need. To provide insight on various market needs and business	Able to apply the knowledge of various customer needs, finance, marketing and manufacturing etc
AUMTCE-305	**Pre Thesis**	To provide basic knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis
4TH SEMESTER			
AUMTCE-401	**Thesis /Dissertation**	To provide brief knowledge of thesis work to the students	Able to apply various methodologies, strategies related to thesis Able to summarize and analyze the data collected

PhD MECHANICAL		
SUBJECT CODE	**SUBJECT NAME**	**COURSE OUTCOMES**
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	
AUPHDME-103(A)	**Applied Mechanics and Design**	Student will able to solve various problems related to physical materials of daily life
AUPHDME-103(B)	**Fluid Mechanics and Thermal Sciences**	Student will able to solve various problems related to fluid properties, statistics, measurements flow through pipes
AUPHDME-104(A)	**Material, Manufacturing and Industrial Engineering**	Able to acquire and apply knowledge of material technology, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUPHDME-104(B)	**Industrial Tribology**	Able to acquire and apply knowledge on industrial tribology, wear friction, lubrication its components and its characteristics
AUPHDME-105	**Seminar and Presentation**	Student will able to enhance their presentation, discussion, learning & listening skills. Will able to learn argument and questioning techniques etc.
PhD COMPUTER SCIENCE ENGINEERING		
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	
AUPHDCSE-103(A)	**Cloud Computing**	To explain the core issues of cloud computing such as security, privacy, and interoperability. Choose the appropriate technologies, algorithms, and approaches for the related issues. identify problems, and explain, analyze, and evaluate various cloud computing solutions
AUPHDCSE-103(B)	**Advance Software Engineering**	Basic knowledge and understanding of the analysis and design of complex systems. Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems.
AUPHDCSE-104(A)	**Software Testing and Auditing**	Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems.
AUPHDCSE-104(B)	**Theory of Computation**	To introduce students about the mathematical foundations of computation including

		automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.
AUPHDCSE-105	**Seminar and Presentation**	Student will able to enhance their presentation, discussion, learning & listening skills. Will able to learn argument and questioning techniques etc.
PhD CIVIL ENGINEERING		
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	
AUPHDCE-103(A)	**Advance Concrete Technology**	Information on various ingredients, their physical and chemical properties including properties of green and hardened concrete Mix design procedures as per BIS, ACI and British mix methods, including design of concrete using fibers and mineral architecture.
AUPHDCE-103(B)	**Repair & Rehabilitation of Structure**	Student will able to acquire and apply knowledge of repair & rehabilitation techniques & estimation of quantities and will able to analysis rates and valuations of different materials related to construction and repair.
AUPHDCE-104A)	**Composite Material**	Able to Plan the quality checks and bring about economy in concrete construction.
AUPHDCE-104(B)	**Structural Engineering**	Student will able to solve various problems related to physical and mechanical aspects of civil constructions

Ph.D in Pharmacy

Program Outcome:

- The scholastic educational module and research programs have been structured with refreshed information with the essential concentration to rudiments and developing fields of Pharmacy.

- Research regions in the division essentially centre around different pharmaceutical medication conveyance frameworks, novel medication conveyance frameworks, phytochemistry, institutionalization and quality control of home grown medications, and other push regions of Pharmaceutical Research.

- The programme consistently distributes their exploration research in reputed national and international journals.

- The course concentrates on research and coursework identifying with the improvement, creation and portrayal of measurement shapes, just as the aura and activity of medications in the body.

- The group based way to deal with medication conveyance, grasping an assortment of exercises in the wide region of medication definition and conveyance.

- The department works towards promoting multidisciplinary, team-based approach to drug delivery, embracing a variety of activities in the broad area of drug formulation and delivery.

- Major areas of emphasis include quality education with professionalism by considering the recent demands in different aspect of pharmaceutical fields.

Programme Specific Outcomes

- The ultimate destination for quality education, practical based training and research in pharmaceutical technology and allied areas for the well-being of people.

- Provide qualified personnel who can take up responsibilities as pharmaceutical sciences professionals, suitable for community, industries and institutions.

- Provide infrastructure and research facilities to disseminate the advanced knowledge to the students in various branches pharmaceutical sciences through innovative teaching learning processes with inter-disciplinary approach such that they grow their wisdom to 3 acquire all kinds of knowledge and generate new ideas.

- Educate and train manpower for the development of the country and establish linkages with industries for the promotion of science and technology.

- Develop the spirit of internationalism and competitiveness in students such that they develop new original ideas and make new discoveries and inventions to make a strong society.

- Encourage students for, acquiring self-confidence, self- respect and self-dependence and instill moral values in students making them well disciplined and pay special attention to the improvement of the social and economic conditions.

Course Outcomes

AUPH-101-Research Methodology

- Students should understand a general definition of research design.
- Students should know why educational research is undertaken, and the audiences that profit from research studies.
- Students should be able to identify the overall process of designing a research study from its inception to its report.
- Students should be familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research.
- Students should know the primary characteristics of quantitative research and qualitative research.
- Students should be able to identify a research problem stated in a study.
- Students should be familiar with how to write a good introduction to an educational research study and the components that comprise such an introduction.
- *Students should be familiar with conducting a literature review for a scholarly educational study:*
  a. The steps in the overall process.
  b. The types of databases often searched.
  c. The criteria for evaluating the quality of a study.
  d. The ways of organizing the material found.
  e. The different types of literature reviews.

Course Outcomes

AUPH-102-Advances in pharmaceutical sciences

- Important for achieving a better understanding of the interrelationship between intracellular activity and function of engineered nanomaterials, which is needed for nanoparticle drug-delivery systems.

Course Outcomes

AUPH-103-Advance Pharmacology

- Understand the pharmacological actions of different categories of drugs
- Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
- Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
- Observe the effect of drugs on animals by simulated experiments
- Appreciate correlation of pharmacology with other bio medical sciences.

Course Outcomes

AUPH-103-Pharmaceutical Product Development

- develop familiarity with models of innovation and the marketing and technology interface
- understand the importance of new product development to firm performance
- learn methods of generating, evaluating and testing product ideas
- learn methods of evaluating and monitoring the success of a launch

Course Outcomes

AUPH-103-Advance Pharmaceutical Chemistry

- Learn the different stages of drug discovery & Role of medicinal chemistry in drug research
- Learn different techniques for drug discovery
- Understand various strategies to design and develop a new drug like molecules for biological targets
- Explain drug receptor concept
- Elaborate prodrug development and applications
- Learn the structural activity relationship of the important class of drugs
- Explain types of Enzyme inhibition and its application in medicine
- Discuss peptidomimetics approach and applications

Course Outcomes

AURPE-04- RESEARCH AND PUBLICATION ETHICS

- To propose and test certain hypotheses to provide causal relationships between certain variables
- To discover and establish the existence of relationship, association, and independence between two or more aspects of a particular situation or phenomenon
- To understand different phenomenon and develop new perceptions about it
- To study and describe accurately the characteristics of situations, problems, phenomena, services, groups, or individuals
- To explain unexplored horizons of knowledge
- To test reported findings and conclusions on new data and novel conclusions on previously reported data
- To study the frequency of research that is connected with unspecified objectives

M.A. Education

1st Year Courses

Course Code: AUPHEDU-101 Philosophical and Social Foundations of Education

Course Outcomes:

To enable the learners to:

- Describe the Philosophical Perspectives of Education.
- Understand Education as the discipline and the aims of Education, basic tenants of varying thoughts of Indian Philosophical Schools and their implication for improving the present system of Education in the country.
- To develop depth understanding about contemporary Indian Education system.
- To develop the knowledge about Indian thought and its contribution to educational practices
- To develop the knowledge about social change.
- To enable the students to understand the concept of Educational Sociology and Sociology in Education.

Course Code: AUPHEDU-102 Methodology of Educational research

Course Outcomes:

To enable the learners to:

- Understand the basics concept of Educational Research.
- Students will be able to understand various sampling techniques along with sampling errors.
- Students will be able to describe the various types of tools used in research along with their construction, validation, standardization and uses.
- Students will be able to describe the different methods of educational research.
- Students will be able to understand the characteristics of an experiment, concept of experimental designs and different types of experimental designs along with their merits and limitations.
- To make the students to understand the organization, analysis, interpretation and validation of qualitative data.
- Students will be able to understand the theory and computation involved in different types of quantitative data.

Course Code: AUPHEDU-103 Teacher Education

Course Outcomes:
To enable the learners to:

- Understand the concept and scope of Teacher Education in India with the Historical Perspectives.
- Understand the Concept, Development and Agencies of Teacher Education.
- Understand the Aims and Objectives of Teacher Education at Elementary and Secondary Levels.
- Understand the Recommendations of Various Commissions for Teacher Education and Role of NCTE.
- Understand the Different Teacher Education Programmes and their Utility.

- Understand the Current scenario of Teacher Education in India.
- Understand the Problems of Teacher Education in India.
- Understand the Issues, Problems and Innovative Practices in Teacher Education.
- Research and Professionalism in Teacher Education.

Course Code: AUPHEDU-104 Research and Publication Ethics

Course Outcomes:
To enable the learner to:

1. Understanding of ethical issues related to Research and Publication.
2. Understand Patents and rights.
3. Understand IPR – Intellectual Property Rights
4. Write research papers/thesis following publication ethics and Related issues.
5. Develop Competencies for Publishing ethically and avoiding plagiarism.

PhD MECHANICAL		
SUBJECT CODE	**SUBJECT NAME**	**COURSE OUTCOMES**
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	Knowledge of ethics in research and publications
AUPHDME-103(A)	**Applied Mechanics and Design**	Student will able to solve various problems related to physical materials of daily life
AUPHDME-103(B)	**Fluid Mechanics and Thermal Sciences**	Student will able to solve various problems related to fluid properties, statistics, measurements flow through pipes
AUPHDME-104(A)	**Material, Manufacturing and Industrial Engineering**	Able to acquire and apply knowledge of material technology, its components and its characteristics Able to apply the knowledge of sampling data in conducting various surveys and analysis
AUPHDME-104(B)	**Industrial Tribology**	Able to acquire and apply knowledge on industrial tribology, wear friction, lubrication its components and its characteristics
AUPHDME-105	**Seminar and Presentation**	Student will able to enhance their presentation, discussion, learning & listening skills. Will able to learn argument and questioning techniques etc.
PhD COMPUTER SCIENCE ENGINEERING		
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	Knowledge of ethics in research and publications
AUPHDCSE-103(A)	**Cloud Computing**	To explain the core issues of cloud computing such as security, privacy, and interoperability. Choose the appropriate technologies, algorithms, and approaches for the related issues. identify problems, and explain, analyze, and evaluate various cloud computing solutions
AUPHDCSE-103(B)	**Advance Software Engineering**	Basic knowledge and understanding of the analysis and design of complex systems. Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems.
AUPHDCSE-104(A)	**Software Testing and Auditing**	Ability to apply software engineering principles and techniques. Ability to develop, maintain and evaluate large-scale software systems.
AUPHDCSE-104(B)	**Theory of Computation**	To introduce students about the mathematical foundations of computation including

		automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.
AUPHDCSE-105	**Seminar and Presentation**	Student will able to enhance their presentation, discussion, learning & listening skills. Will able to learn argument and questioning techniques etc.
PhD CIVIL ENGINEERING		
AUPHDRM-101	**Research Methodology**	Able to apply the knowledge of sampling data & conducting various analysis
AURPE-04	**Research & Publication Ethics**	Knowledge of ethics in research and publications
AUPHDCE-103(A)	**Advance Concrete Technology**	Information on various ingredients, their physical and chemical properties including properties of green and hardened concrete Mix design procedures as per BIS, ACI and British mix methods, including design of concrete using fibers and mineral architecture.
AUPHDCE-103(B)	**Repair & Rehabilitation of Structure**	Student will able to acquire and apply knowledge of repair & rehabilitation techniques & estimation of quantities and will able to analysis rates and valuations of different materials related to construction and repair.
AUPHDCE-104A)	**Composite Material**	Able to Plan the quality checks and bring about economy in concrete construction.
AUPHDCE-104(B)	**Structural Engineering**	Student will able to solve various problems related to physical and mechanical aspects of civil constructions

Ph.D in Chemistry

Programme Outcomes

PO1: Theoretical knowledge on different frontier aspects of chemical sciences

PO2: Advanced courses on different aspects of chemical sciences Skill developed

PO3: Hands on training on advance instruments for chemical analysis

PO4: Computer application in chemical sciences

PO5: To choose a research problem following up to date scientific literature Competency developed
PO6: To handle frontier area research problem independently

Course Outcomes

AUPHDCHl-01-Techniques in Biological Research

- The properties of biomolecules that are used for their analysis
- The principle concepts in using analytical and preparatory techniques
- How to quantify and assay for a biomolecule

Course Outcomes

AUPHDCHl-02-Advances in Nanomaterials and Chemistry of Life Processes

- Get to know the representation of small molecules and proteins
- Able to understand the drug discovery process, Have practical exposure of in-silico drug design

Course Outcomes

AUPHDCHl-03-Inorganic Chemistry in Biological Systems

- To understand the relevance, basic concepts of transplantation immunology
- To understand the relevance, basic concepts of antibody engineering
- To utilize the knowledge to understand the mechanisms of immune reactions against grafts and transplants
- To utilize the knowledge to understand the approaches to antibody engineering
- students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments

Course Outcomes

AUPHDCHl-04-Polymer Chemistry

- Different kind of polymers and their properties.
- Concept of Molecular Weight and distribution.
- Variation of properties of polymer by crystallinity and glass transition temperature.
- Process of polymer degradation.
- Behaviors of polymer solution at different concentrations

Course Outcomes

AUPHDCHl-05-Non-Equilibrium Physical Chemistry and Theoretical and Applied Aspects of Surfactant Systems

- Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.
- Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.

Course Outcomes

AURPE 04-Research and Publication ethics

- To understand the relevance, basic concepts, theories and approaches towards research project planning, execution, report submissions and research publications 丨
- To utilize the understanding (as above) for applications in all areas of research methodology
- To be able to integrate the theory concepts to real-time research situations/examples/case-studies

Ph.D in Education

Programme Outcomes

PO1: Analyze and critically evaluate educational theories, policies, research and practices intended to improve equity and social justice.

PO2: Collaborate with others to set direction, design and enact improvements as a leader in education, work or community settings.

PO3: Apply principles of individual and organizational learning to effect positive change.

PO4: Design and conduct research and inquiry to improve practice and promote equity.

PO5: Communicate effectively to scholarly and practitioner audiences.

Programme Specific Outcomes

PSOs1: Apply theories of learning and development to understand fundamental questions involving education, communities, and/or families.

PSOs2: Identify and analyze an issue related to equity.

PSOs3: Apply a critical lens to interrogate existing research and theoretical perspectives.

PSOs4: Critically apply theories, methods, and knowledge to address questions in their primary field.

PSOs5: Demonstrate skills and knowledge at a level required for college and university teaching

PSOs6: Plan and conduct research of significance

PSOs7: Demonstrate skills in oral and written communication sufficient to publish and present work in their field or prepare grant proposals

COURSE OUTCOMES

AUPHEDU-101- Philosophical and Social Foundations of Education

- To enable the student to understand the philosophical and sociological origins of education.
- Logical analysis, interpretation and synthesis of various concepts, proposition and Philosophical assumptions about educational phenomena.
- To help the student to develop a philosophical and sociological outlook towards educational problems.
- Critical appraisal of contributions made to education by prominent educational thinkers

AUPHEDU-102- Methodology of Educational Research

- To explain the concept of Educational Research
- To describe the scope of Educational Research
- To state the purpose of Educational Research
- To explain what is scientific enquiry.
- To explain importance of theory development.
- To explain relationship among science, education and educational research.

- To Identity fundamental research

AUPHEDU-103- Teacher Education

- Demonstrate an understanding of the several different senses of education, including education as experience, education as upbringing, education as character building, education as intellectual development, education as personal discovery, education as institutional achievement, education as social praxis;
- Explain and analyse competing theories of education, especially education as an instrument for the achievement of societal ends; education as an intrinsic good; education as harmonization with community values; and education as the development and empowering of individual autonomy;
- Develop an ability to employ aspects of philosophical analysis and reasoning, as well as critical thinking skills, in the context of writing about the philosophy of education.

AURPE-04- RESEARCH AND PUBLICATION ETHICS

- To propose and test certain hypotheses to provide causal relationships between certain variables
- To discover and establish the existence of relationship, association, and independence between two or more aspects of a particular situation or phenomenon
- To understand different phenomenon and develop new perceptions about it
- To study and describe accurately the characteristics of situations, problems, phenomena, services, groups, or individuals
- To explain unexplored horizons of knowledge
- To test reported findings and conclusions on new data and novel conclusions on previously reported data
- To study the frequency of research that is connected with unspecified objectives

Ph.D in Management

Programme Outcomes

PO1: Understand the concepts related to Business.

PO2: Demonstrate the roles, skills and functions of management.

PO3: Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

PO4: Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.

Programme Specific Outcomes:

PSO1: To help the students gain understanding of the functions and responsibilities of managers.

PSO2: To provide them tools and techniques to be used in the performance of the managerial job.

PSO3: To enable them to analyze and understand the environment of the organization.

PSO4: To help the students to develop cognizance of the importance of management principles.

Course Outcomes

AUPHDMGT-01- Research Methodology

- Meaning & Importance of Research, Objectives of Research, Critical Thinking of research; Types of Research in Social Sciences, Research Process, Criteria for good Research.

Course Outcomes

AUPHDMGT-02- Management Thought and Theory

- To help the students gain understanding of the functions and responsibilities of managers.
- To provide them tools and techniques to be used in the performance of the managerial job.
- To enable them to analyze and understand the environment of the organization.
- To help the students to develop cognizance of the importance of management principles.

Course Outcomes

AUPHDMGT-03- Contemporary Issues in HRM

- Explain the concept of human resource management
- Describe the functions of human resource management
- Explain the concept of people analytics
- Identify the use of people analytics in strategy
- Discuss human capital trends
- Discuss the benefits & challenges of a diverse workforce
- Discuss how to promote diversity within your organization
- Highlight current diversity-related trends

Course Outcomes

AUPHDMGT-03- Contemporary Issues in Finance

- Describe the nature of different types of managerial approaches adopted by organisations in contemporary time
- Understand the purpose of different types of contemporary managerial approaches
- Examine the different ways that organisations can implement these contemporary managerial approaches in the workplace.

Course Outcomes

AUPHDMGT-03- Contemporary Issues in Marketing

- Explain the purpose of segmentation and targeting in marketing
- Describe common segmentation approaches
- Explain the process of selecting an appropriate segmentation approach and deciding which customer segments to target for marketing activities
- Explain how targeting influences each element of the marketing mix
- Explain the role of marketing information in helping firms understand and reach consumers
- Describe the key types of marketing information including internal data, competitive intelligence and marketing research
- Outline a standard process for using marketing research to address an organization's strategic questions

- Recognize alternative methods for conducting marketing research, including primary and secondary research methods

Course Outcomes

AURPE-04- RESEARCH AND PUBLICATION ETHICS

- To propose and test certain hypotheses to provide causal relationships between certain variables
- To discover and establish the existence of relationship, association, and independence between two or more aspects of a particular situation or phenomenon
- To understand different phenomenon and develop new perceptions about it
- To study and describe accurately the characteristics of situations, problems, phenomena, services, groups, or individuals
- To explain unexplored horizons of knowledge
- To test reported findings and conclusions on new data and novel conclusions on previously reported data
- To study the frequency of research that is connected with unspecified objectives

Ph.D in Pharmacy

Program Outcome:

- The scholastic educational module and research programs have been structured with refreshed information with the essential concentration to rudiments and developing fields of Pharmacy.

- Research regions in the division essentially centre around different pharmaceutical medication conveyance frameworks, novel medication conveyance frameworks, phytochemistry, institutionalization and quality control of home grown medications, and other push regions of Pharmaceutical Research.

- The programme consistently distributes their exploration research in reputed national and international journals.

- The course concentrates on research and coursework identifying with the improvement, creation and portrayal of measurement shapes, just as the aura and activity of medications in the body.

- The group based way to deal with medication conveyance, grasping an assortment of exercises in the wide region of medication definition and conveyance.

- The department works towards promoting multidisciplinary, team-based approach to drug delivery, embracing a variety of activities in the broad area of drug formulation and delivery.

- Major areas of emphasis include quality education with professionalism by considering the recent demands in different aspect of pharmaceutical fields.

Programme Specific Outcomes

- The ultimate destination for quality education, practical based training and research in pharmaceutical technology and allied areas for the well-being of people.

- Provide qualified personnel who can take up responsibilities as pharmaceutical sciences professionals, suitable for community, industries and institutions.

- Provide infrastructure and research facilities to disseminate the advanced knowledge to the students in various branches pharmaceutical sciences through innovative teaching learning processes with inter-disciplinary approach such that they grow their wisdom to 3 acquire all kinds of knowledge and generate new ideas.

- Educate and train manpower for the development of the country and establish linkages with industries for the promotion of science and technology.

- Develop the spirit of internationalism and competitiveness in students such that they develop new original ideas and make new discoveries and inventions to make a strong society.

- Encourage students for, acquiring self-confidence, self- respect and self-dependence and instill moral values in students making them well disciplined and pay special attention to the improvement of the social and economic conditions.

Course Outcomes

AUPH-101-Research Methodology

- Students should understand a general definition of research design.
- Students should know why educational research is undertaken, and the audiences that profit from research studies.
- Students should be able to identify the overall process of designing a research study from its inception to its report.
- Students should be familiar with ethical issues in educational research, including those issues that arise in using quantitative and qualitative research.
- Students should know the primary characteristics of quantitative research and qualitative research.
- Students should be able to identify a research problem stated in a study.
- Students should be familiar with how to write a good introduction to an educational research study and the components that comprise such an introduction.
- *Students should be familiar with conducting a literature review for a scholarly educational study:*
  a. The steps in the overall process.
  b. The types of databases often searched.
  c. The criteria for evaluating the quality of a study.
  d. The ways of organizing the material found.
  e. The different types of literature reviews.

Course Outcomes

AUPH-102-Advances in pharmaceutical sciences

- Important for achieving a better understanding of the interrelationship between intracellular activity and function of engineered nanomaterials, which is needed for nanoparticle drug-delivery systems.

Course Outcomes

AUPH-103-Advance Pharmacology

- Understand the pharmacological actions of different categories of drugs
- Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
- Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
- Observe the effect of drugs on animals by simulated experiments
- Appreciate correlation of pharmacology with other bio medical sciences.

Course Outcomes

AUPH-103-Pharmaceutical Product Development

- develop familiarity with models of innovation and the marketing and technology interface
- understand the importance of new product development to firm performance
- learn methods of generating, evaluating and testing product ideas
- learn methods of evaluating and monitoring the success of a launch

Course Outcomes

AUPH-103-Advance Pharmaceutical Chemistry

- Learn the different stages of drug discovery & Role of medicinal chemistry in drug research
- Learn different techniques for drug discovery
- Understand various strategies to design and develop a new drug like molecules for biological targets
- Explain drug receptor concept
- Elaborate prodrug development and applications
- Learn the structural activity relationship of the important class of drugs
- Explain types of Enzyme inhibition and its application in medicine
- Discuss peptidomimetics approach and applications

Course Outcomes

AURPE-04- RESEARCH AND PUBLICATION ETHICS

- To propose and test certain hypotheses to provide causal relationships between certain variables
- To discover and establish the existence of relationship, association, and independence between two or more aspects of a particular situation or phenomenon
- To understand different phenomenon and develop new perceptions about it
- To study and describe accurately the characteristics of situations, problems, phenomena, services, groups, or individuals
- To explain unexplored horizons of knowledge
- To test reported findings and conclusions on new data and novel conclusions on previously reported data
- To study the frequency of research that is connected with unspecified objectives

Ph.D in Zoology

Program Outcome

PO1.Apply the knowledge of various branches of Zoology and General biology meant both for a graduate terminal course and for higher studies.

PO2 .Develop positive attitude towards sustainable development

PO3. Understand the unity of life with the rich diversity of organisms and their ecological and evolutionary significance

PO4.Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation

Program specific Outcomes:

PSO1.Identify and list out common animals

PSO2.Explain various physiological changes in our bodies

PSO3. Analyze the impact of environment on our bodies

PSO4.Understand various genetic abnormalities

PSO5.Develop respect for nature

PSO6. Explain the role and impact of different environmental conservation programmes
PSO7. Identify animals beneficial to humans

PSO8.Identify various potential risk factors to health of humans

PSO9.Explain the importance of genetic engineering

PSO10. Use tools of information technology for all activities related to zoology

Course Outcomes

AUZooMP 101- TECHNIQUES IN BIOLOGICAL RESEARCH

- Obtain a general knowledge of the basic principles of biological systems through a series of required courses in Genetics, Cell Biology, Biochemistry, and Evolution.
- Obtain depth of knowledge in a selected area of biology through upper level courses.
- Develop skills in analytical thinking through problem-based assignments and exams and laboratory exercises.
- Develop skills in the use of current methodology and investigation through laboratory courses.

Course Outcomes

AUZooMP 102: RECENT ADVANCES IN ZOOLOGY

- Opportunities of continuing education and professional development.
- Widen the scope of the learners for careers in different sectors of employment.
- Enable the students to avail career opportunities in teaching, industry and research.

Course Outcomes

AUZooMP 103 - ADVANCED TOPICS IN PARASITOLOGY

- distinguish the individual parasitic enfectious diseases.
- recognize the protozoanal enfectious diseases.
- explain the methods used for diagnosis and treatment of protozoanal enfectious diseases.
- recognize the protozoanal enfectious agents of individual flora regions of humal body.
- distinguish the individual helmintic enfectious diseases.

Course Outcomes

AUZooMP 103 - ADVANCED TOPICS IN ENDOCRINOLOGY

- The course aims to provide students with a broad understanding of the major human endocrine glands and their hormones, together with understanding hormones action and their effect on target cell. In addition, the course aims to provide students with understanding of the medical conditions resulted from abnormal hormone secretion and the laboratory tests that are used to diagnose these conditions.

Course Outcomes

AUZooMP 103-ADVANCED TOPICS IN ENTOMOLOGY

- Attain a solid foundation in insect biology, including general entomology, basic systematics, morphology, physiology, and biodiversity.
- Understand evolution and biodiversity generation through macro- and micro-evolutionary processes, including how these processes have formed and diversified insects.
- Develop the ability to read and interpret scientific papers in entomology, and critically assess content.
- Attain skills in written and verbal scientific communication.
- Develop the ability to design and perform a scientific study on insects, and to analyze results.

Course Outcomes

AURPE-04- RESEARCH AND PUBLICATION ETHICS

- To propose and test certain hypotheses to provide causal relationships between certain variables
- To discover and establish the existence of relationship, association, and independence between two or more aspects of a particular situation or phenomenon
- To understand different phenomenon and develop new perceptions about it
- To study and describe accurately the characteristics of situations, problems, phenomena, services, groups, or individuals
- To explain unexplored horizons of knowledge
- To test reported findings and conclusions on new data and novel conclusions on previously reported data
- To study the frequency of research that is connected with unspecified objectives