A.M.A.L.COLLEGE,ANAKPALLE
DEPARTMENT OF MATHMETICS

COURSE-I
CBCS/ SEMESTER SYSTEM
B.Sc. MATHEMATICS (w.e.f. 2020-21 Admitted Batch)
DIFFERENTIAL EQUATIONS
SYLLABUS

Course Outcomes:

After successful completion of this course, the student will be able to; 1.Solve linear differential equations

2.Convertnonexact homogeneous equations to exact differential equations by using integrating factors.

3.Know the methods of finding solutions of differential equations of the first order but not of the first degree.

4.Solvehigher-order linear differential equations, both homogeneous and non homogeneous, with constant coefficients.

5. Understand the concept and apply appropriate methods for solving differential equations.

COURSE-II
CBCS/ SEMESTER SYSTEM (w.e.f. 2020-21 Admitted Batch) B.A./B.Sc.
MATHEMATICS
THREE DIMENSIONAL ANALYTICAL SOLID GEOMETRY Syllabus

Course Outcomes:

After successful completion of this course, the student will be able to;

1. get the knowledge of planes.
2. basic idea of lines, sphere and cones.
3. understand the properties of planes, lines, spheres and cones.
4. express the problems geometrically and then to get the solution.

COURSE-III
CBCS/ SEMESTER SYSTEM (w.e.f. 2020-21 Admitted Batch)
B.Sc. MATHEMATICS ABSTRACT ALGEBRA SYLLABUS

Course Outcomes:

After successful completion of this course, the student will be able to;

1. Acquire the basic knowledge and structure of groups, subgroups and cyclic groups.
2. Get the significance of the notation of a normal subgroups.
3. get the behavior of permutations and operations on them.
4. Study the homomorphisms and isomorphisms with applications.
5. Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems.
6. Understand the applications of ring theory in various fields.

COURSE-IV
CBCS/ SEMESTER SYSTEM (w.e.f. 2020-21 Admitted Batch)
B.Sc. MATHEMATICS REAL ANALYSIS
SYLLABUS

Course Outcomes:

After successful completion of this course, the student will be able to 1. get clear idea about the real numbers and real valued functions.

2. Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series.
3. Test the continuity and differentiability and Riemann integration of a function.
4. Know the geometrical interpretation of mean value theorems.

COURSE-V
CBCS/ SEMESTER SYSTEM (w.e.f. 2020-21 Admitted Batch)
B.Sc. MATHEMATICS
LINEAR ALGEBRA SYLLABUS

Course Outcomes:

After successful completion of this course, the student will be able to;

1. Understand the concepts of vector spaces, subspaces, basises, dimension and their properties
2. Understand the concepts of linear transformations and their properties
3. Apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
4. Learn the properties of inner product spaces and determine orthogonality in inner product spaces.

Semester – V

Max Marks: 100

Course-6A: Numerical Methods

(Skill Enhancement Course (Elective), 5 credits)

1. Learning Outcomes:

Students after successful completion of the course will be able to

1. Understand the subject of various numerical methods that are used to obtain approximate solutions
2. Understand various finite difference concepts and interpolation methods.
3. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
4. Find numerical solutions of ordinary differential equations by using various numerical methods.
5. Analyze and evaluate the accuracy of numerical methods.

Semester – V

Max Marks: 100

Course-7A: Mathematical Special Functions

(Skill Enhancement Course (Elective), 5 credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations.
2. Find power series solutions of ordinary differential equations.
3. Solve Hermite equation and write the Hermite Polynomial of order (degree) n, also find the generating function for Hermite Polynomials, study the orthogonal properties of Hermite Polynomials and recurrence relations.
4. Solve Legendre equation and write the Legendre equation of first kind, also find the generating function for Legendre Polynomials, understand the orthogonal properties of Legendre Polynomials.
5. Solve Bessel equation and write the Bessel equation of first kind of order n, also find the generating function for Bessel function understand the orthogonal properties of Bessel unction.

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

DEPARTMENT OF PHYSICS

Course Outcomes - B.Sc. Physics

Program Learning Outcomes in B.Sc. (Physics)

The student graduating with the Degree in B.Sc. Courses in Physics is expected to

- Acquire
  - ✓ A fundamental or systematic understanding of the academic field of Physics, its different learning areas and applications in basic Physics like Astrophysics, Material science, Nuclear and Particle Physics, Condensed matter Physics, Atomic and Molecular Physics, Mathematical Physics, Analytical dynamics, Space physics, and its linkages with related disciplinary areas like Chemistry, Mathematics, Life sciences, Environmental sciences, Atmospheric Physics, Computer science, Information Technology.
  - ✓ Procedural knowledge that creates different types of professionals related to the disciplinary area of Physics, including professionals engaged in research and development, teaching and government/public service.
- Demonstrate the ability to use skills in Physics and its related areas of technology for formulating and tackling Physics-related problems and identifying and applying appropriate physical principles and methodologies to solve a wide range of problems associated with Physics.

Recognize the importance of mathematical modelling simulation and computing, and the role of approximation and mathematical approaches to describing the physical world.

- Plan and execute Physics-related experiments or investigations, analyze and interpret data/information collected using appropriate methods, including the use of appropriate software such as programming languages and purpose-written packages, and report accurately the findings of the experiment/investigations while relating the conclusions/findings to relevant theories of Physics.
- Demonstrate relevant generic skills and global competencies such as

✓ problem-solving skills that are required to solve different types of Physics-related problems with well-defined solutions, and tackle open-ended problems that belong to the disciplinary-area boundaries;

✓ investigative skills, including skills of independent investigation of Physics-related issues and problems;

✓ communication skills involving the ability to listen carefully, to read texts and research papers analytically and to present complex information in a concise manner to different groups/audiences of technical or popular nature;

✓ analytical skills involving paying attention to detail and ability to construct logical arguments using correct technical language related to Physics and ability to translate them with popular language when needed;

✓ ICT skills;

✓ personal skills such as the ability to work both independently and in a group.

- Demonstrate professional behaviour such as

✓ being objective, unbiased and truthful in all aspects of work and avoiding unethical,

irrational behaviour such as fabricating, falsifying or misrepresenting data or committing plagiarism;

- ✓ the ability to identify the potential ethical issues in work-related situations;
- ✓ appreciation of intellectual property, environmental and sustainability issues;
- ✓ promoting safe learning and working environment.

Course Learning Outcomes (CLO) of B.Sc. (Physics)

S. No.	Semester	Title of the Paper	Hours/ Semester	Duration of exam (hrs)	Max Marks (external)
Thoery					
1	I	Paper I: Mechanics& Properties of Matter	60	3	75
2	II	Paper II: Waves & Oscillations	60	3	75
3	III	Paper III: Wave Optics	60	3	75
4	IV	Paper IV: Thermodynamics & Radiation Physics	60	3	75
5	V	Paper V:Electricity, Magnetism& Electronics	60	3	75
		Paper VI: Modern Physics	60	3	75
6	VI	Paper VII :Elective (One)	60	3	75
		Paper VIII: Cluster Electives (Three)	60	3	75
Practicals					
1	I	Practical I	30	3	50
2	II	Practical II	30	3	50
3	III	Practical III	30	3	50
4	IV	Practical IV	30	3	50
5	V	Practical V	30	3	50
		Practical VI	30	3	50
6	VI	Practical VII	30	3	50
		Practical VIII	30	3	50

Paper I: Mechanics& Properties of Matter

Course learning outcome:

After going through the course, the student should be able to

- Understanding Scalar and vector fields, gradient of a scalar field, Divergence and curl of a vector field. Vector integration (line, surface and volume), Gauss and Stokes theorems.
- Understand laws of motion and their application to various dynamical situations, motion of inertial frames and concept of Galilean invariance. He / she will learn the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.
- Understand the analogy between translational and rotational dynamics, and application of both motions simultaneously in analyzing rolling with slipping.
- Write the expression for the moment of inertia about the given axis of symmetry for different uniform mass distributions. Understand the phenomena of collisions and idea about center of mass and laboratory frames and their correlation.

- Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.
- Apply Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation.
- Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.
- Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting in a merry-go-round experiences an outward pull.
- Describe special relativistic effects and their effects on the mass and energy of a moving object.
- Appreciate the nuances of Special Theory of Relativity (STR).
- In the laboratory course, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic properties (Young Modulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.

Paper II: Waves & Oscillations

Course learning outcome:

This course will enable the student to

- Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems.

Apply basic knowledge of principles and theories about the behaviour of light and thephysical vironment to conduct experiments.

- Understand the principle of superposition of waves, so thus describe the formation of standing waves.
- Explain several phenomena we can observe in everyday life that can be explained as wave phenomena.

Paper III: Wave Optics

Course learning outcome:

This course will enable the student to

- Use the principles of wave motion and superposition to explain the Physics of polarisation, interference and diffraction.
- Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms.
- In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt firsthand.
- The motion of coupled oscillators, study of Lissajous figures and behaviour of transverse, longitudinal waves can be learnt in this laboratory course.

Paper IV: Thermodynamics & Radiation Physics

Course learning outcome:

- Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations.
- Learn about Maxwell's thermodynamic relations.
- Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzman distribution law, equitation of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion.
- Learn about the real gas equations, Van der Waal equation of state, the JouleThompson effect.
- In the laboratory course, the students are expected to do some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, temperature coefficient of resistant, variation of thermo-emf of a thermocouple with temperature difference at its two junctions and calibration of a thermocouple.

Paper V: Electricity, Magnetism& Electronics

Course learning outcome:

- Achieve an understanding of the Maxwell's equations, role of displacement current, gauge transformations, scalar and vector potentials, Coulomb and Lorentz gauge, boundary conditions at the interface between different media.
- Apply Maxwell's equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density. Analyse the phenomena of wave propagation in the unbounded, bounded, vacuum, dielectric, guided and unguided media.
- Understand the laws of reflection and refraction and to calculate the reflection and transmission coefficients at plane interface in bounded media.
- Understand the linear, circular and elliptical polarisations of em waves. Production as well as detection of waves in laboratory.
- Understand propagation of em waves in anisotropic media, uni-axial and biaxial crystals phase retardation plates and their uses.
- Understand the concept of optical rotation, theories of optical rotation and their experimental rotation, calculation of angle rotation and specific rotation.
- Understand the features of planar optical wave guide and obtain the Electric field components, Eigen value equations, phase and group velocities in a dielectric wave guide.
- In the laboratory course, the student gets an opportunity to perform experiments Demonstrating principles of
- Interference, Refraction and diffraction of light using monochromatic sources of light. Demonstrate interference, Refraction and Diffraction using microwaves.
- Determine the refractive index of glass and liquid using total internal reflection of light. Verify the laws of Polarisation for plane polarised light.
- Determine Polarisation of light by Reflection and determine the polarization angle off or air-glass surface
- Determine the wavelength and velocity of Ultrasonic waves in liquids using diffraction.

- Study specific rotation of sugar using Polarimeter.
- Analyze experimentally the Elliptically Polarised light using Babinet's Compensator
- Study Experimentally the angle dependence of radiation for a simple dipole antenna
- Plan and Execute 2-3 group projects for designing new experiments based on the Syllabii.

Paper VI: Modern Physics

Course learning outcome:

- Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.
- Understand the theory of quantum measurements, wave packets and uncertainty principle. Understand the central concepts of quantum mechanics: wave functions,

momentum and energy operator, the Schrodinger equation: time dependent and time independent robability density and the normalization techniques. One dimensional rigid box.

- Understanding the properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula.
- Radioactive decays like alpha, beta, gamma decay.
- Neutrinos and its properties and role in theory of beta decay.
- Understand fission and fusion well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.
- Understand various interactions of electromagnetic radiation with matter. Electron positron pair creation.
- In the laboratory course, the students will get opportunity to perform the following experiments:
  - ✓ Measurement of Planck's constant by more than one method.
  - ✓ Verification of the photoelectric effect and determination of the work Function of a metal. Determination of the charge of electron and e/m of electron.
  - ✓ Determination of the ionization potential of atoms.
  - ✓ Determine the wavelength of the emission lines in the spectrum of Hydrogen atom. Determine the absorption lines in the rotational spectrum of molecules.
  - ✓ Determine the wavelength of Laser sources by single and Double slit experiments Determine the wavelength and angular spread of He-Ne Laser using plane diffraction grating.
  - ✓ Verification of the law of the Radioactive decay and determine the mean life time of a Radioactive Source, Study the absorption of the electrons from Beta decay.
  - ✓ Study of the electron spectrum in Radioactive Beta decays of nuclei.
  - ✓ Plan and Execute 2-3 group projects in the field of Atomic, Molecular and Nuclear Physics in collaboration with other institutions, if, possible where advanced facilities are available.

Elective-Paper VII-(B): Materials Science

Course learning outcome:

At the end of the course the students are expected to learn and assimilate the ollowing.

- A brief idea about Materials Classification; Metals, Alloys, Semiconductors, Polymers, Ceramics, Plastics, Bio-materials, Composites, Bulk and nano materials, Interatomic forces, chemical bonds, Binding energy of a crystal.
- Knowledge of different types of magnetism from diamagnetism to ferromagnetism and hysteresis loops and energy loss.
- Understanding about the dielectric, piezoelectric, pyroelectric and ferroelectric properties of materials.

A brief idea about mechanical behavior of Materials, Creep, Fracture, Technological properties, Factors affecting mechanical properties of a material, Heat treatment, Cold and hot working, Types of mechanical tests, Metal forming process, Powder, Misaligning, Deformation of metals.

- Understand the basic idea about Defects and Diffusion in Materials
- To carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop.

Cluster Elective Paper –VIII-C-1:Solar Thermal and Photovoltaic Aspects

Course learning outcome:

At the end of the course the students are expected to learn and assimilate the following.

- Understanding the Basics of Solar Radiation
- A brief idea about the Radiative Properties and Characteristics of Materials
- Knowledge above Flat Plate Collectors (FPC), Concentrating Collectors
- Solar photovoltaic (PV) cell, Solar cell fabrication.
- Solar PV systems, Solar thermal applications, Solar PV applications.
- Carry out experiments on Measurement of direct solar radiation using pyrheliometer, global and diffuse solar radiation using pyranometer, Measurement of emissivity, reflectivity and transsivity, Measurement of efficiency of solar flat plate collector, Performance testing of solar air dryer unit, Effect of tilt angle on the efficiency of solar photovoltaic panel, Study on solar photovoltaic panel in series and parallel combination.

Cluster Elective Paper –VIII-C-2 :Wind, Hydro and Ocean Energies

At the end of the course the students are expected to learn and assimilate the following.

- A brief idea about generation, meteorology, world distribution of wind, wind speed variation with height, wind speed statistics, General introduction; Wind Measurements:Eolian features, biological indicators, rotational anemometers, other anemometers, wind measurements withballoons.
- Wind Energy Conversion System, Design of Wind Turbine.
- Wind Energy Application: Wind pumps: Economics of wind energy utilization; Wind energy in India; Environmental Impacts of Wind farms.
- Small Hydropower Systems: Overview of micro, mini and small hydro systems.
- Ocean Thermal, Tidal and Wave Energy Systems.
- Tidal Energy.
- Carry out experiments on Estimation of wind speed using anemometer, Determination of characteristics of a wind generator, Study the effect of number and size of blades of

a wind turbine on electric power output, Performance evaluation of vertical and horizontal axes wind turbine rotors, Study the effect of density of water on the output power of hydroelectric generator, Study the effect of wave amplitude and frequency on the wave energy generated.

Cluster Elective Paper –VIII-C-3 :Energy Storage Devices

At the end of the course the students are expected to learn and assimilate the following.

- Energy Storage
- Electrochemical Energy Storage Systems
- Magnetic and Electric Energy Storage Systems
- Fuel Cell, Types of Fuel Cells
- Carry out experiments on Study of charge and discharge characteristics of storage battery, Study of charging and discharging behavior of a capacitor, Determination of efficiency of DC-AC inverter and DC-DC converters, Study of charging characteristics of a Ni-Cd battery using solar photovoltaic panel, Performance estimation of a fuel cell, Study of effect of temperature on the performance of fuel cell.

PRINCIPAL
A.M.A.I. COLLEGE
ANAKAPALLE

Department of physics

B.Sc. Electronics Syllabus under CBCS
w.e.f. 2020-21 (revised in June 2020)

SEMESTER-1 **PAPER – I**

CIRCUIT THEORY AND ELECTRONIC DEVICES

Objectives:

To explain the basic concepts and laws of DC and AC electrical networks and solve them using mesh and nodal analysis techniques. Analyze circuits in time and frequency domain. Synthesize the networks using passive elements. Understand the construction, working and VI characteristics of electronic devices.

Outcomes:-

- ✓ Apply concepts of electric network topology, nodes, branches, loops to solve circuit problems including the use of computer simulation.
- ✓ Apply time and frequency concepts of analysis.
- ✓ Synthesize the network using passive elements.
- ✓ Know about amplifier circuits, switching circuits and oscillator circuits their design and use in electronics.
- ✓ Design and construction of a power supply.

Department of physics

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2020-21 (revised in June 2020)

SEMESTER – II **PAPER – 2**

Digital Electronics

Objectives:

Understand the number systems, Binary codes and Complements.

Understand the Boolean algebra and simplification of Boolean expressions. Analyze logic processes and implement logical operations using combinational logic circuits. Understand the concepts of sequential circuits and to analyze sequential systems in terms of state machines.

Outcomes:-

- ✓ Develop a digital logic and apply it to solve real life problems.
- ✓ Analyze, design and implement combinational logic circuits.
- ✓ Classify different semiconductor memories.
- ✓ Analyze, design and implement sequential logic circuits.
- ✓ Simulate and implement combinational and sequential logic circuits using VHDL

Department of physics

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2020-21 (revised in June 2020)

2nd YEAR

SEMESTER – III **PAPER – 3**

Analog Circuits and Communication

OBJECTIVES:

To understand the concepts, working principles and key applications of linear integrated circuits. Perform analysis of circuits based on linear integrated circuits.

Design circuits and systems for particular applications using linear integrated circuits. Introduce students to various modulation and demodulation techniques of analog communication.

OUTCOMES:

- ✓ Understand the fundamentals and areas of applications for the integrated circuits.
- ✓ Analyze important types of integrated circuits.
- ✓ Demonstrate the ability to design practical circuits that perform the desired operation.
- ✓ Select the appropriate integrated circuit modules to build a given application.
- ✓ Use of different modulation and demodulation techniques used in analog communication.
- ✓ Identify and solve basic communication problems.

Department of physics

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2020-21 (revised in June 2020)

2nd YEAR

Semester-IV **Paper- IV**

I

TITLE: MICROPROCESSOR SYSTEMS

OBJECTIVES:

To understand basic architecture of 16 bit and 32 bit microprocessors.

Understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design. Understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.

OUTCOMES:

- The student can gain good knowledge on microprocessor and implement in practical applications
- Design system using memory chips and peripheral chips for 16 bit 8086 Microprocessor.
- Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
- Understand multi core processor and its advantages

Department of physics

B.Sc. Electronics CBCS Syllabus
2nd YEAR

IV SEMESTER **Paper: V**

MICRO CONTROLLER AND INTERFACING

OBJECTIVES:

- To understand the concepts of microcontroller based system. Enable design and programming of microcontroller based system. Know about the interfacing Circuits.

OUTCOMES:

- The student can gain good knowledge on microcontrollers and implement in practical applications.
- learn Interfacing of Microcontroller
- get familiar with real time operating system

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
DEPARTMENT OF CHEMISTRY
2020-2021

SEMESTER – I Course I (Inorganic &Physical Chemistry)
Course outcomes:
At the end of the course, the student will be able to;
1. Understand the basic concepts of p-block elements
2. Explain the difference between solid, liquid and gases in terms of intermolecular interactions.
3. Apply the concepts of gas equations, pH and electrolytes while studying other chemistry courses.

LABORATORY COURSE -I
Practical-I Analysis of SALT MIXTURE (At the end of Semester-I)
Qualitative inorganic analysis (Minimum of Six mixtures should be analyzed)
50 M Course outcomes:
At the end of the course, the student will be able to;
1. Understand the basic concepts of qualitative analysis of inorganic mixture
2. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
3. Apply the concepts of common ion effect, solubility product and concepts related to qualitative analysis

SEMESTER – II
Course II – (Organic & General Chemistry)
Course outcomes:
At the end of the course, the student will be able to;
1. Understand and explain the differential behaviour of organic compounds based on fundamental concepts learnt.
2. Formulate the mechanism of organic reactions by recalling and correlating the fundamental properties of the reactants involved.
3. Learn and identify many organic reaction mechanisms including Free Radical Substitution, Electrophilic Addition and Electrophilic Aromatic Substitution.
4. Correlate and describe the stereo chemical properties of organic compounds and reactions.

LABORATORY COURSE-II
Practical-II Volumetric Analysis
(At the end of Semester-II)
Course outcomes:
At the end of the course, the student will be able to;
1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Understand and explain the volumetric analysis based on fundamental Concepts learnt in ionic equilibria
3. Learn and identify the concepts of a standard solutions, primary and secondary standards
4. Facilitate the learner to make solutions of various molar concentrations. This may include: The concept of the mole; Converting moles to grams; Converting grams to moles; Defining concentration; Dilution of Solutions; Making different molar concentrations.

SEMESTER - III
Course III (ORGANICCHEMISTRY&SPECTROSCOPY)
Course outcomes:
At the end of the course, the student will be able to;
1. Understand preparation, properties and reactions of haloalkanes, haloarenes and Oxygen containing functional groups.
2. Use the synthetic chemistry learnt in this course to do functional group transformations.
3. To propose plausible mechanisms for any relevant reaction

LABORATORY COURSE -III
Practical Course-III Organic preparations and IR Spectral Analysis
(At the end of Semester- III)
Course outcomes:
On the completion of the course, the student will be able to do the following:
1. How to use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. How to calculate limiting reagent, theoretical yield, and percent yield
3. How to engage in safe laboratory practices by handling laboratory glassware, Equipment, and chemical reagents appropriately
4. How to dispose of chemicals in a safe and responsible manner
5. How to perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration.
6. How to create and carry out work up and separation procedures
7. How to critically evaluate data collected to determine the identity, purity, and percent yield of products and to summarize findings in writing in a clear and concise manner

SEMESTER - IV
Course IV (INORGANIC, ORGANIC AND PHYSICAL CHEMISTRY)
Course outcomes:
At the end of the course, the student will be able to;
1. To learn about the laws of absorption of light energy by molecules and the subsequent photo chemical reactions.
2. To understand the concept of quantum efficiency and mechanisms of photo chemical reactions.

LABORATORY COURSE -IV
Practical Course-IV Organic Qualitative analysis
(At the end of Semester- IV)
Course outcomes:
At the end of the course, the student will be able to;
1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Determine melting and boiling points of organic compounds
3. Understand the application of concepts of different organic reactions studied in theory part of organic chemistry

SEMESTER - IV
Course V (INORGANIC &PHYSICAL CHEMISTRY)
Course outcomes: At the end of the course, the student will be able to;
1. Understand concepts Of boundary conditions and quantization, probability distribution, most probable values, uncertainty and expectation values
2. Application of quantization to spectroscopy.
3. Various types of spectra and the irusein structure determination.

SEMESTER - IV
Course V LABORATORY COURSE
Practical-Course –V Conductometric and Potentiometric Titrimetry
Course outcomes:
At the end of the course, the student will be able to;
1. Use glassware, equipment and chemicals and follow experimental procedures in the laboratory
2. Apply concepts of electrochemistry in experiments
3. Be familiar with electro analytical methods and techniques in analytical chemistry which study an analyte by measuring the potential (volts) and/or current (amperes) in an electrochemical cell containing the analyte

Semester–V

Course Code:
***Course6-B*: Analytical Methods in Chemistry-1** (Skill Enhancement Course (Elective), Credits: 05)
Max Marks: 100+50
I. Learning Outcomes:
Students after successful completion of the course will be able to:
1. Identify the importance of solvent extraction and ion exchange method.
2. Acquire knowledge on the basic principles of volumetric analysis and gravimetric analysis.
3. Demonstrate the usage of common laboratory apparatus used in quantitative analysis.
4. Understand the theories of different types of titrations.
5. Gain knowledge on different types of errors and their minimization methods.

***Course6-B*: Analytical methods in chemistry-1-PRACTICALSYLLABUS**
IV.Learning Outcomes:
On successful completion of this practical course, student shall be able to:
1. Estimate Iron(II) using standard Potassium dichromate solution
2. Learn the procedure for the estimation of total hardness of water
3. Demonstrate the determination of chloride using Mohr's method
4. Acquire skills in the operation and calibration of pH meter
5. Perform the strong acid vs strong base titration using pH meter

Semester–V

Course Code:

***Course7-B*: Analytical Methods in Chemistry-2** (Skill Enhancement Course (Elective), Credits: 05)

Max Marks: 100+50

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of chromatography in the separation and identification of compounds in a mixture
2. Acquire a critical knowledge on various chromatographic techniques.
3. Demonstrate skills related to analysis of water using different techniques.
4. Understand the principles of spectro chemistry in the determination of metal ions.
5. Comprehend the applications of atomic spectroscopy.

***Course7-B*: Analytical Methods in Chemistry-2- PRACTICAL SYLLABUS**

V.Learning Outcomes:

On successful completion of this practical course, student shall be able to:

1. Perform the separation of a given dye mixture using TLC
2. Learn the preparation of TLC plates
3. Demonstrate the separation of mixture of amino acids using paper chromatography
4. Acquire skills in using column chromatography for the separation of dye mixture

PRINCIPAL
A.M.A.L. COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
DEPARTMENT OF COMPUTER SCIENCE
PROBLEM SOLVING IN C

Semester	Course Code	Course Title	Hours	Credits
I	C1	PROBLEM SOLVING IN C	60	3

Objectives:
This course aims to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.

Course Learning Outcomes:
Upon successful completion of the course, a student will be able to:
1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply 'C' language constructs to the algorithms towrite a 'C' language program.

DATA STRUCTURES USING C

Semester	Course Code	Course Title	Hours	Credits
II	C2	DATA STRUCTURES USING C	60	3

Course Objectives
To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

Course Learning Outcomes:
Upon successful completion of the course, a student will be able to:
1. Understand available Data Structures for data storage and processing.
2. ComprehendData Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
3. Choose a suitable Data Structures for an application
4. Develop ability to implement different Sorting and Search methods
5. Have knowledge onData Structures basic operations like insert, delete, search,update and traversal
6. Design and develop programs using various data structures
7. Implement the applications of algorithms for sorting, pattern matching etc

DATABASE MANAGEMENT SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
III	C3	DATABASE MANAGEMENT SYSTEMS	60	3

Course Objective:
The objective of the course is to introduce the design and development of databases with special emphasis on relational databases.

Course Learning Outcomes:
On completing the subject, students will be able to:
1. Gain knowledge of Database and DBMS.

2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
4. Model databaseusing ER Diagrams and design database schemas based on the model.
5. Create a small database using SQL.
6. Store, Retrieve data in database.

OBJECT ORIENTATED PROGRAMMING THROUGH JAVA

Semester	Course Code	Course Title	Hours	Credits
IV	C4	OBJECT ORIENTATED PROGRAMMING THROUGH JAVA	60	3

Objectives:
To introduce the fundamental concepts of Object-Oriented programming and to design & implement object oriented programming concepts in Java.
Course Learning Outcomes: At the end of this course student will:
1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

OPERATING SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
IV	C5	OPERATING SYSTEMS	60	2

Objectives:
This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc.
Course Learning Outcomes:
Upon successful completion of the course, a student will be able to:
1. Know Computer system resources and the role of operating system in resource management with algorithms
2. Understand Operating System Architectural design and its services.
3. Gain knowledge of various types of operating systems including Unix and Android.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
5. Have a basic knowledge about multithreading.
6. Comprehend different approaches for memory management.
7. Understand and identify potential threats to operating systems and the security features design to guard against them.
8. Specify objectives of modern operating systems and describe how operating systems have evolved over time.
9. Describe the functions of a contemporary operating system

PRINCIPAL
A.M.A.M. COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
DEPARTMENT OF BOTANY
2020-2021
Course - 1
Fundamentals of Microbes and Non-vascular Plants (Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)
Theory:

Learning Outcomes:
On successful completion of this course, the students will be able to:

- Explain origin of life on the earth.
- Illustrate diversity among the viruses and prokaryotic organisms and can categorize them.
- Classify fungi, lichens, algaeand bryophytes based on theirstructure, reproduction and life cycles.
- Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.
- Recall and explain theevolutionary trends among amphibians of plant kingdom for their shift to land habitat.
- Evaluate the ecological and economic value of microbes, thallophytes and bryophytes.

Practical syllabus of Botany Core Course – 1/ Semester – I Fundamentals of Microbes and Non-vascular Plants (Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes) (Total hours of laboratory exercises 30 Hrs. @ 02 Hrs./Week)
Course Outcomes: On successful completion of this practical course, student shall be ableto;
1. Demonstrate the techniques of use of lab equipment, preparing slides and identify the material and draw diagrams exactly as it appears.
2. Observe and identify microbes and lower groups of plants on their own.
3. Demonstrate the techniques of inoculation, preparation of media etc.
4. Identify the material in the permanent slides etc.

II Semester /Botany Core Course – 2 Basics of Vascular plants and Phytogeography (Pteridophytes, Gymnosperms, Taxonomy of Angiosperms and Phytogeography)
Theory:
Learning Outcomes:
On successful completion of this course, the students will be able to:

- Classify and compare Pteridophytes and Gymnosperms based on their morphology, anatomy, reproduction and life cycles.
- Justifyevolutionary trends in tracheophytes to adapt for land habitat.
- Explain the process of fossilization and compare the characteristics of extinct and extant plants.
- Critically understand various taxonomical aids for identification of Angiosperms.
- Analyze the morphology of the most common Angiospermplants of their localitiesand recognize their families.
- Evaluate the ecological, ethnic and economic value of different tracheophytes and summarize their goods and services for human welfare.
- Locate different phytogeographical regions of the world and India and can analyze their floristic wealth.

Practical syllabus of Botany Core Course – 2/ Semester – IIBasics of Vascular plants and Phytogeography

(Pteridophytes, Gymnosperms, Taxonomy of Angiosperms and PhytogeographyCourse **Outcomes:**

On successful completion of this course students shall be able to:

1. Demonstrate the techniques of section cutting, preparing slides, identifying of the material and drawing exact figures.
2. Compare and contrast the morphological, anatomical and reproductive features of vascular plants.
3. Identify the local angiosperms of the families prescribed to their genus and species level and prepare herbarium.
4. Exhibit skills of preparing slides, identifying the given twigs in the lab and drawing figures of plant twigs, flowers and floral diagrams as they are.
5. Prepare and preserve specimens of local wild plants using herbarium techniques.

III Semester /Botany Core Course - 3

Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

Theory:

Learning outcomes:

On successful completion of this course, the students will be able to;

- Understand on the organization of tissues and tissue systems in plants.
- Illustrate and interpret various aspects of embryology.
- Discuss the basic concepts of plant ecology, and evaluate the effects

Of environmental and biotic factors on plant communities.

- Appraise various qualitative and quantitative parameters to study the population and community ecology.
- Correlate the importance of biodiversity and consequences due to its loss.
- Enlist the endemic/endangered flora and fauna from two biodiversity hot spots

In India and assess strategies for their conservation.

Practical syllabus of Botany Core Course – 3 /Semester – III Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

Course Outcomes:

On successful completion of this practical course students shall be able to:

1. Get familiarized with techniques of section making, staining and microscopic study of vegetative, anatomical and reproductive structure of plants.
2. Observe externally and under microscope, identify and draw exact diagrams of the material in the lab.
3. Demonstrate application of methods in plant ecology and conservation of biodiversity and qualitative and quantitative aspects related to populations and communities of plants.

IV Semester/ Botany Core Course – 4 Plant Physiology and Metabolism

On successful completion of this course, the students will be able to;

- Comprehend the importance of water in plant life and mechanisms for transport of water and solutes in plants.
- Evaluate the role of minerals in plant nutrition and their deficiency symptoms.
- Interpret the role of enzymes in plant metabolism.
- Critically understand the light reactions and carbon assimilation processes responsible for synthesis of food in plants.
- Analyze the biochemical reactions in relation to Nitrogen and lipid metabolisms.
- Evaluate the physiological factors that regulate growth and development in plants.
- Examine the role of light on flowering and explain physiology of plants under stress conditions.

Practical Syllabus of Botany Core Course – 4 / Semester – IV
Plant Physiology and Metabolism

Course outcomes: On successful completion of this practical course, students shall be able to:

1. Conduct lab and field experiments pertaining to Plant Physiology, that is, biophysical and biochemical processes using related glassware, equipment, chemicals and plant material.
2. Estimate the quantities and qualitative expressions using experimental results and calculations
3. Demonstrate the factors responsible for growth and development in plants.

IV Semester / Botany Core Course –5
Cell Biology, Genetics and Plant Breeding

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

- Distinguish prokaryotic and eukaryotic cells and design the model of a cell.
- Explain the organization of a eukaryotic chromosome and the structure of genetic material.
- Demonstrate techniques to observe the cell and its components under a microscope.
- Discuss the basics of Mendelian genetics, its variations and interpret inheritance of traits in living beings.
- Elucidate the role of extra-chromosomal genetic material for inheritance of characters.
- Evaluate the structure, function and regulation of genetic material.
- Understand the application of principles and modern techniques in plant breeding.
- Explain the procedures of selection and hybridization for improvement of crops.

Practical Syllabus of Botany Core Course – 5/ IVSemester Cell Biology, Genetics and Plant Breeding

Course Outcomes: After successful completion of this practical course the student shall be able to:

1. Show the understanding of techniques of demonstrating Mitosis and Meiosis in the laboratory and identify different stages of cell division.
2. Identify and explain with diagram the cellular parts of a cell from a model or Picture and prepare models
3. Solve the problems related to crosses and gene interactions.
4. Demonstrate plant breeding techniques such as emasculation and bagging

A.P. State Council of Higher Education Semester-wise Revised Syllabus under CBCS, 2020-21

Course Code: Four-year B.Sc. (Hons)

Domain Subject: **BOTANY**

IV Year B. Sc. (Hons) – Semester – V

Max Marks: 100

Course 6B: Vegetable Crops – Cultivation Practices

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Identify different vegetable plants and realize their value in human nutrition.
2. Analyse the types of soils to cultivate vegetable crops.
3. Demonstrate skills on agronomic practices for cultivation of vegetable crops.
4. Acquire knowledge on water, weed and disease managements in vegetable farming.
5. Comprehend aspects related to harvesting and storage of produce.

Course 6B: Vegetable Crops – Cultivation Practices – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. List out, identify and handle different garden implements.
2. Identify the important vegetable crops grown in their locality.
3. Demonstrate various skills in cultivation of vegetable crops.
4. Identify pests, diseases and their remedies that are specific to a vegetable crop.

BOTANY

Semester – V

Max Marks: 100

Course 7B: Vegetable Crops – Post Harvest Practices

(Skill Enhancement Course (Elective), Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand various practices for vegetable produce from harvesting to marketing.
2. Demonstrate skills on storage, processing and preservation of vegetables.
3. Summarize causes for spoilage of vegetables before and during storage and methods to prevent and control them.
4. Make use of preservation methods to reduce the loss of vegetable produce.
5. Explain about value added products, packaging and marketing of vegetables.

Course 7B: Vegetable Crops – Post harvest Practices – Practical syllabus

IV. Learning Outcomes: On successful completion of this practical course, student will be able to:

1. Identify stages of maturity in vegetable crops.
2. Handle material for storage of vegetables.
3. Identify physical and biological causes for spoilage of vegetables.
4. Make some value-added products of vegetables.

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
2020-21
DEPARTMENT OF ZOOLOGY
SEMESTER I
PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

Course Outcomes: By the completion of the course the graduate should able to –

CO1 Describe general taxonomic rules on animal classification
CO2 Classify Protozoa to Coelenterata with taxonomic keys
CO3 Classify Phylum Platy hemninthes to Annelida phylum using examples from parasitic adaptation and vermin composting
CO4 Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscans
CO5 Describe Echinodermata to Hemi chordata with suitable examples and larval stages in relation to the phylogeny

ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER ZOOLOGY - PAPER - I
ANIMAL DIVERSITY - BIOLOGY OF NONCHORDATES

Learning Outcomes:

- To understand the importance of preservation of museum specimens
- To identify animals based on special identifying characters
- To understand different organ systems through demo or virtual dissections
- To maintain a neat, labeled record of identified museum specimens

AP STATE COUNCIL OF HIGHER EDUCATION
w.e.f. 2020-21 (Revised in April, 2020)
ZOOLOGY –SEMESTER II
PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

Course Outcomes:

By the completion of the course the graduate should able to –

CO1 Describe general taxonomic rules on animal classification of chordates
CO2 Classify Protochordata to Mammalia with taxonomic keys
CO3 Understand Mammals with specific structural adaptaions
CO4 Understand the significance of dentition and evolutionary significance
CO5 Understand the origin and evolutionary relationship of different phyla from Prochordata to mammalia.

ZOOLOGY PRACTICAL SYLLABUS FOR II SEMESTER ZOOLOGY - PAPER - II
ANIMAL DIVERSITY - BIOLOGY OF CHORDATES

Learning Outcomes:

- To understand the taxidermic and other methods of preservation of chordates
- To identify chordates based on special identifying characters
- To understand internal anatomy of animals through demo or virtual dissections, thus directing the student for "empathy towards the fellow living beings"
- To maintain a neat, labeled record of identified museum specimens

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020)

ZOOLOGY – SEMESTER III

PAPER – III: CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION

Course Outcomes:

The overall course outcome is that the student shall develop deeper understanding of what life is and how it functions at cellular level. This course will provide students with a deep knowledge in Cell Biology, Animal Biotechnology and Evolution and by the completion of the course the graduate shall able to –

CO1 To understand the basic unit of the living organisms and to differentiate the organisms by their cell structure.

CO2 Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell.

CO3 To understand the history of origin of branch of genetics, gain knowledge on heredity, interaction of genes, various types of inheritance patterns existing in animals

CO4 Acquiring in-depth knowledge on various of aspects of genetics involved in sex determination, human karyo typing and mutations of chromosomes resulting in various disorders

CO5 Understand the central dogma of molecular biology and flow of genetic information from DNA to proteins.

CO6 Understand the principles and forces of evolution of life on earth, the process of evolution of new species and apply the same to develop new and advanced varieties of animals for the benefit of the society

AP STATE COUNCIL OF HIGHER EDUCATION

w.e.f. 2020-21 (Revised in April, 2020)

ZOOLOGY – SEMESTER IV

PAPER – IV: ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY

Course Outcomes:

This course will provide students with a deep knowledge in Physiology, Cellular metabolism and Molecular Biology and by the completion of the course the graduate shall able to –

CO1 Understand the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems.

CO2 Understand the muscular system and the neuro-endocrine regulation of animal growth, development and metabolism with a special knowledge of hormonal control of human reproduction.

CO3 Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms

CO4 Develop broad understanding the basic metabolic activities pertaining to the catabolism and anabolism of various biomolecules

CO 5 Describe the key events in early embryonic development starting from the formation of gametes upto gastrulation and formation of primary germ layers.

ZOOLOGY – SEMESTER IV
COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Course Outcomes:

This course will provide students with a deep knowledge in immunology, genetics, embryology and ecology and by the completion of the course the graduate shall able to –

CO1 To get knowledge of the organs of Immune system, types of immunity, cells and organs of immunity.

CO2 To describe immunological response as to how it is triggered (antigens) and regulated (antibodies)

CO3 Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering.

CO4 Get familiar with the tools and techniques of animal biotechnology.

Semester –V

Max. Marks: 100+50

Course6 A: **SUSTAINABLE AQUACULTURE MANAGEMENT** (Skill Enhancement Course (Elective), -Credits: 05)

I. Learning Outcomes:

Students at the successful completion of this course will be able to

- Evaluate the present status of aquaculture at the Global level and National level
- Classify different types of ponds used in aquaculture
- Demonstrate induced breeding of carps
- Acquire critical knowledge on commercial importance of shrimps
- Identify fin and shell fish diseases

Course6 A: SUSTAINABLE AQUACULTURE MANAGEMENT PRACTICAL SYLLABUS

IV. Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify the characaters of Fresh water cultivable species
- Etimate physico chemical characateristics of water used for aquaculture
- Examine the diseases of fin and shell fish
- Suggest measures to prevent diseases in aquaculture

Semester –V

Course 7 A: **POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES** (Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of this course will be able to

- Identify the types of preservation methods employed in aquaculture
- Choose the suitable Processing methods in aquaculture
- Maintain the standard quality control protocols laid down in aqua industry
- Identify the best Seafood quality assurance system

Course 7 A: POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES

PRACICAL SYLLABUS

IV. Learning Outcomes: On successful completion of this practical course, student shall be able to:

- Identify the quality of aqua processed products.
- Determine the quality of fishery by products by observation
- Analyze the protocols of aqua processing methods

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

Department of Commerce

Course Objectives and Course Outcomes

Class/Course code	Course name	Course objectives	Course outcomes
SEM 1 DSC 2A	Business organization	Explanation of 1)Aids to trade and entrepreuship 2) Different types of Business Organisations 3) Joint stock company and the procedure of incorporation	1)Students learn about relationship between trade industry and commerce 2)Students learn how to start Business 3) Select the best type of organisation based on the resources at their disposal 3) Acquire knowledge how to register a company with necessary documents
SEM 2 DSC 2B	Business Environment	Explanation of 1)Different types of Business environment 2) factors influencing balanced growth 3)Niti ayog ,New economic reforms and	1) Awareness of legal, political, economic cultural ,demographic environment of Business 2)Learn about objectives of Niti Ayog and licensing of industries 3)Learn about budget allocation tovarious sectors and how
		New industrial policy 4) Importance of Union Budget	budgets are utilised .

SEM 3 DSC 2C	Business statistics	Explanation of 1)Importance of statistics and diagrammatic representation 2)Different types of averages 3)Dispersion methods 4)Measures of relation 5)Analysis of Time series and index numbers	1) Learn application of statistics in daily life and in Research and how to present it through diagrams through Excel. 2) Learn how to apply dispersion methods taken from different averages like mean median and mode 3)Expereinxe with given variables what is the relationship between them and to find out the dependent variables which is useful for forecasting demand 4) Know to calculate trend and seasonal variations in products 5) Practical knowledge of construction of index numbers which is useful in daily life for evaluation of cost of living and curb inflation
SEM 4 DSC 1D	Accounting for Service organisations	Explanation of 1)Service organisations and Sec 8 of companies Act 2)Accounting of electricity. Bank, life insurance and General Insurance accounts	1) Learn how to register service organisations under sec 8 of companies act 2013 2)Gain knowledge in accounting of electricity, Bank ,insurance. 3)Acquire practical skills to prepare the required schedules
SEM 5	Commercial geography	Explanation of 1)About how earth was	1) Knox about the latitudes and longitudes and different layers of

DSC 3E		formed 2)Agriculture ,different types of soils 3)Food and non food crops , Problems of Agriculture 4)Forest acts, Minerals and mining 5)Water resources and interlinking of rivers	atmosphere 2)Acquire knowledge about suitable soils for agriculture produce 3)Experince how to overcome problems in agriculture 4) Learn about minerals and their uses in various industries 5) Learn about Rivers flowing in our country and interlinking of rivers between states
SEM 5 DSC 3F	Central banking	Explanation of 1)Evolution of central bank development and trends 2)Interface between RBI and banks Monetary and credit policies ,Inflation and price control by RBI 3))Basel ,Prudential norms	1) Students learn how central banks play an important role in development of economy 2) Learn how RBI plays the role of controlling the money circulation in economy 3) Study International Basel norms in functioning of banks and also the Prudential norms of RBi
SEM 6 DSC 3G	Management Accounting	Explanation of 1)Analysis of financial statements ,Ratio analysis 2)Funds and cash flow 3)Break even analysis	1) Students learn how to analyse the financial statements 2)Gain knowledge by calculating various current, leverage. profitablilty .turnover ratios. 3) How to interpret the performance of companies and improve their financial position and take measures 3) Gain decision making skills to buy or make the product, continue or stop producing loss making units

SEM 6 DSC 3H	Financial services	Explanation of 1)Difference between banking and nonbanking companies 2)Fund based and fee based activities 3)Venture capital and Demat services Leasing and hire purchase 5)Credit rating of companies 6)Factoring and forfaiting	1)Students acquire knowledge about the functions of banking and nonbanking companies registration, Acts etc 2) know about financial institutions which support and finance new projects 3) Experience how to open demat account and how to invest in markets 4) Acquire skills how to get advances by discounting of bills through banks and factors

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
DEPARTMENT OF ENGLISH
2020-2021
English Syllabus-Semester-I
English Praxis Course-I
A Course in Communication and Soft Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Use grammar effectively in writing and speaking.
- Demonstrate the use of good vocabulary
- Demonstrate an understating of writing skills
- Acquire ability to use Soft Skills in professional and daily life.
- Confidently use the tools of communication skills

English Syllabus-Semester-II
English Praxis Course-II
A Course in Reading & Writing Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Use reading skills effectively
- Comprehend different texts
- Interpret different types of texts
- Analyse what is being read
- Build up a repository of active vocabulary
- Use good writing strategies
- Write well for any purpose
- Improve writing skills independently for future needs

English Syllabus-Semester-III
English Praxis Course-III
A Course in Conversational Skills

Learning Outcomes

By the end of the course the learner will be able to :

- Speak fluently in English
- Participate confidently in any social interaction
- Face any professional discourse
- Demonstrate critical thinking
- Enhance conversational skills by observing the professional interviews

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – I

Paper I- GENERAL CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Understand the wave function properties; Operators & Postulates of Quantum Mechanics.

CO 2: Learn & understand the selection rules for a particle in various dimensional boxes.

CO 3: Learn & understand the selection rules & criteria for molecules to exhibit rotational & IR Spectroscopy.

CO 4: Understand the classical & Quantum mechanical theories of Raman Spectroscopy & basic concepts of Electronic Spectroscopy.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To apply the operations to various problems in Quantum chemistry.

LO 2: To predict the selection rules for a particle present in various dimensional boxes.

LO 3: To apply the Spectroscopic methods for structure elucidation of molecules.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020– 2021

M.Sc. (Previous) semester – I

Paper II- INORGANIC CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Acquire the knowledge on applications of VSEPR, Valence bond & Molecular orbital theories in explaining the structures of simple molecules & role of p & d orbitals in Pi- bonding.

CO 2: Understand the concept of MO Theory to square planar

($PtCl_4^{2-}$) & octahedral complexes (CoF_6^{3-}, $[CO(NH_3)_6^{3+}]$).

CO 3: Understand about cage & ring compounds of inorganic elements like B, N, P & S.

CO 4: Understand the splitting of d-orbitals in various geometries & factors which influence the splitting of d- orbitals.

CO 5: Understand the concept of Term symbols, electronic spectra & rules of complexes.

CO 6: Understand the Orgel & Tanabe-Sugano diagrams for d^1- d^9octahedral & tetrahedral transition metal complexes.

CO 7: Develop interest in the areas of magnetic properties of transition & inner transition metal complexes

Learning Outcomes (Los):

Up on completion of the course the student will be able to

LO 1: Explain idea of structure & bonding theories of Inorganic compounds.

LO 2: Introduce electron counting rules for higher boranes.

LO 3: Analyze the preparation, structure & bonding in inorganic ring & cage like compounds.

LO 4: Understanding structure & bonding in coordination compounds.

LO 5: Explain selection rules, Tanabe-Sugano & Orgel diagrams.

LO 6: To calculate magnetic moment of metal complexes.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – I

Paper III- ORGANIC CHEMISTRY

Course Objectives (Cos): To make the students

CO 1: Acquire the knowledge of Aliphatic Nucleophilic and Electrophilicsubstitutions, Stereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural products.

CO 2: Understand theAliphatic Nucleophilic and Electrophilicsubstitutions, Stereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural products.

CO 3: Apply the knowledge & understanding of Aliphatic Nucleophilic and ElectrophilicsubstitutionsStereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural products to new situations.

CO 4: Develop interest in the areas ofAliphatic Nucleophilic and Electrophilicsubstitutions, Stereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural products.

Learning outcomes: At the end of the course, the learners should be able to:

LO 1: Explain & interpret theAliphatic Nucleophilic and Electrophilicsubstitutions, Stereochemistry & conformational analysis; Chemistry of Heterocyclic compounds & Chemistry of Natural Products.

LO 2: Compare & analyze theAliphatic Nucleophilic and Electrophilic substitutions Stereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural Products.

LO 3: Solve & identify the Aliphatic Nucleophilic and Electrophilic substitutionsStereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural Products.

LO 4: Apply Aliphatic Nucleophilic and Electrophilic substitutions Stereochemistry & conformational analysis, Chemistry of Heterocyclic compounds & Chemistry of Natural Products.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – I

Paper IV - PHYSICAL CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the concepts of Thermodynamics & its applications.

CO 2: Understand the principle of Micellization, types of Polymers & analyze various physical properties of polymers.

CO 3: Understand various kinetic theories, measurement of Reaction rates, learn experimental techniques for measuring the kinetics of fast reactions.

CO 4: Learn principles of Photochemistry & various photochemical reactions.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To apply the concepts of Thermodynamics to various problems in chemistry.

LO 2: To apply the concept of Micellization to various chemical reactions & analyze the kinetics of different polymerization process.

LO 3: To predict various reaction mechanisms.

LO 4: To predict the mechanism of photochemical reactions.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – II

Paper I- GENERAL CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Understand the solution of Hydrogen atom; Approximation methods.

CO 2: Learn MO Theory – LCAO approximation.

CO 3: Learn basics of Group theory & its applications in chemistry.

CO 4: Learn Anatomy of Character table & its applications in chemistry.

CO 5: Understand the basic concept of FORTRAN programming & its applications.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To calculate the ground state energy of Helium & Hydrogen atoms by using approximation methods.

LO 2: To calculate the Ionic & Covalent bond contributions in Hydrogen molecule.

LO 3: To predict the bond order, magnetic nature of Homo Nuclear & Hetero Nuclear diatomic molecules.

LO 4: To acquire knowledge of molecular Symmetry & group theory & to solve chemical problems.

LO 5: To write Fortran programs for simple chemical problems.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – II

Paper II- INORGANIC CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: To give a basic & updated knowledge for the students on metal clusters, Organometallic chemistry of transition metals.

CO 2: To discuss the preparation, structure & functional aspects of metal clusters.

CO 3: To understand the stability of complexes & factors favorable for stability of the complexes.

CO 4: To discuss basic principles of reaction mechanism in metal complexes.

Learning Outcomes (Los):

Up on completion of the course the student will be able to

LO 1: Explain the idea of metal clusters.

LO 2: Explain the various types of OMC & their preparation, structure & bonding.

LO 3: Verify the 18-electron rule & 16 electron rule in various metal clusters.

LO 4: Determine the stability constants of metal complexes.

LO 5: Explain the kinetics of substitution reaction, conjugate base mechanism & trans effect.

LO 6: Design new coordination compounds based on a fundamental understanding of their reaction mechanism.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – II

Paper III- ORGANIC CHEMISTRY

Course Objectives (Cos): To make the students

CO 1: Acquire the knowledge of aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, ,Peptides and proteins and Nucleic acids.

CO 2: Understand aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, ,Peptides and proteins and Nucleic acids.

CO 3: Apply the knowledge & understanding of aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, ,Peptides and proteins and Nucleic acids.

CO 4: Develop interest in areas of aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, Peptides and proteins and Nucleic acids.

Learning outcomes: At the end of the course, the learners should be able to:

LO 1: Explain & interpret thearomaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, Peptides and proteins and Nucleic acids.

LO 2: Compare &analyze aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, Peptides and proteins and Nucleic acids.

LO 3: Solve & identify the aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, Peptides and proteins and Nucleic acids.

LO 4: Apply aromaticity and Aromatic nucleophilic substitution reactions, Reactive intermediates mechanism of Named reactions Molecular rearrangements, Spectroscopy, Alkaloids, Peptides and proteins and Nucleic acids.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Previous) semester – II

Paper IV - PHYSICAL CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Learn Spectroscopic methods based on magnetic resonance principles.

CO 2: Learn & understand the principle & technique of ESR Spectroscopy.

CO 3: Understand the concepts of Electrochemistry.

CO 4; Understand the basic concept & theories of Electrode – Electrolyte interface.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To apply the Spectroscopic methods for structure elucidation of molecules.

LO 2: To apply the basic concept of Electrochemistry to different electrochemical cells.

LO 3: To acquire knowledge of Electrode – Electrolyte interface.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – III

Paper I –ORGANIC REACTION MECHANISMS,PHOTO CHEMISTRY & PERICYCLIC REACTIONS

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Acquire the knowledge of Aliphatic Nucleophilic Substitution mechanisms, Electrophilic Substitutions Aromatic Nucleophilic Substitution, Radical Substitution mechanism, Molecular Orbital Symmetry, Electrocyclic reactions, Cycloadditions, FMO & PMO Methods. Photochemistry of carbonyl compounds

CO 2: Understand Aliphatic Nucleophilic Substitution, Aliphatic Electrophilic Substitutions, Aromatic Nucleophilic Substitution, Radical Substitution mechanism, Molecular Orbital Symmetry, Electrocyclic reactions, Cycloadditions, FMO & PMO Methods. Photochemistry of olefins

CO 3: Acquire the knowledge & Understanding the Aliphatic Nucleophilic, Electrophilic Substitutions, Aromatic Nucleophilic Substitution, Radical Substitution mechanism, Molecular Orbital Symmetry, Electrocyclic reactions, Cycloadditions, FMO & PMO Methods. Photochemistry of Aromatic compounds.

CO 4: Develop interest in the areas of Aliphatic Nucleophilic, Electrophilic Substitutions, Aromatic Nucleophilic Substitution, Radical Substitution mechanism, Molecular Orbital Symmetry, Electrocyclic reactions, Cycloadditions, FMO & PMO Methods. Photochemistry of enones.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Explain & Compare the Aliphatic & Aromatic Substitution mechanisms.

LO 2: To interpret Electrocyclic & Cycloaddition reactions.

LO 3: Learn about Radical Substitution Mechanism.

LO 4: To Predict FMO & PMO Methods.

LO 5: Understanding & Predict the Molecular Orbital Symmetry.

LO 6: Learn the difference between Electrophilic & Nucleophilic Substitution reactions.

LO 7 : Understanding the different photochemical reactions of organic compounds.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – III

Paper II–ORGANIC SPECTROSCOPY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Acquire, Apply & Understanding the knowledge & develop interest in the areas ofUV Spectroscopy and IR Spectroscopy.

CO 2: Acquire, Apply & Understanding the knowledge & develop interest in the areas of NMR Spectroscopy.

CO 3: Acquire, Apply & Understanding the knowledge & develop interest in the areas of Mass Spectroscopy.

CO 4: Acquire, Apply & Understanding the knowledge & develop interest in the structural elucidation of organic compounds by using given spectral data..

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Explain Stretching & Bending vibrations in relation to IR absorption & identify the molecular species that absorb IR Spectroscopy. Explain basic principles, relevant terms & applications of UV - Spectroscopy.

LO 2: Assign ^{1}H &^{13}C NMR Spectra of organic molecules.

- Analyze complex first order multiplets.
- Use data from coupling constants.
- Elucidate the structure of organic molecules.

LO 3: Explain basic principle & instrumentation of Mass Spectroscopy.

- Outline the use of Mass Spectrometry in the determination of relative isotopic masses & for identifying elements.

LO 4: Explain the structural elucidation of some important organic compounds.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – III

Paper III –ORGANIC SYNTHESIS - I

Course Objectives:

C01: Acquire the knowledge of Carbon-Carbon bond formation is the key reaction for organic Synthesis to construct the carbon framework of organic molecules.

CO2: Understand the Carbon - Carbon double bond formation is the Key reaction for organic Synthesis of construct the Carbon frame work of organic molecules.

CO3: Apply the knowledge and understanding of Methods of measuring the molecular weight, polymerization kinetics and copolymerization and polymer processing technology and reactions of un activated C – H bond.

CO4: Develop interest in the areas of Learn various asymmetric transformations and employ such reactions in asymmetric organic synthesis of important chiral molecules.

Learning outcomes:

LO1: To identify many different molecular structures can be built from this the versatile atoms. Carbon can easily bond to lots of other elements (C-C)

LO2: To Identify many different molecular structures can be built from this the versatile atoms(C=C). Carbon can easily bond to lots of other elements.

LO3: To identify demonstrate their knowledge of polymers by modelling different situations.

L04: Analyse to make diastereomers out of enantiomers. Because diastereomers have different reactivities.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – III

Paper IV – NATURAL PRODUCTS AND BIOPOLYMERS -I

Course Objectives: To make the students

CO 1: Special emphasis on mechanisms & orientation of chemical reactions.

CO 2: Basic knowledge regarding general methods of preparation of organic compounds.

CO 3: Knowledge about the mechanism pathways of different class of Natural products.

CO 4: To draw the structures & synthesize simple pharmaceutically active organic compounds.

Learning outcomes: At the end of the course, the learners should be able to:

LO 1: Understand the key pathways for the isolation of Penicillin – G, Cephalosporin- C, Streptomycin etc.

LO 2: Apply principles learnt to the synthesis & biosynthesis of a medicinal natural products. (Terpenes)

LO 3: Understand the key pathways for the isolation of Alkaloids & structure elucidation, Stereochemistry.

LO 4: Apply principles learnt to the synthesis of Natural pigments.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – III

Paper I –SEPERATION METHODS - I

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the basic concepts of chromatography along with its principles and methods of development.

CO 2: To explain the principles, general aspects and applications of paper, TLC and HPTLC

CO 3: To explain the Theory, principle, Instrumentation and applications of Column and Gel Chromatography, Capillary electrophoresis

CO 4: To explain the Principle, Instrumentation and Applications of Gas, affinity and counter current chromatography,GC-MS.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To apply different chromatographic techniques.

LO 2: To acquire knowledge of handling Instrumentation.

LO 3: To calculate Rf values of different compounds.

LO 4: Understand and analyze Organic, Inorganic molecules, drugs, biomolecules.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – III

Paper II–QUALITY CONTROL & TRADITIONAL METHODS OF ANALYSIS - I

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain characteristics, Evaluation and Reliability of analytical data with regard to Quality Assurance and Management systems.

CO 2: To understand various Decomposition and Dissolution techniques of Inorganic and Organic compounds.

CO 3: Acquire the knowledge regarding Oxidant systems and their applications with respect to basic knowledge regarding Electrochemistry.

CO 4: Develop interest in the areas of classification and analysis of Organic Functional groups.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Know how to handle laboratory equipment's by following mandatory protocols.

LO 2: To analyze different metals and Ores using various decomposition methods.

LO 3: To calculate potential values of various compounds.

LO 4: Understand and Analyze Organic Functional groups.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – III

Paper III–APPLIED ANALYSIS - I

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the general techniques of analysis applied to complex materials including Iron, Manganese, Chromite, Phosphate rock and Aluminium ores.

CO 2: Acquire knowledge regarding the analysis of Steel, Refractory materials and fluxes.

CO 3: Develop interest in areas of analysis of Finished products like Soap, Cement, Paints and Oils.

CO 4: To understand various sources, types, effects of Water pollutants and determination of different ions in water.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To analyze different metals and ores using general techniques.

LO 2: To analyze all types of Finished products.

LO 3: To calculate ions concentration by assessing the quality of water sample.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – III

Paper IV–INSTRUMENTAL METHODS OF ANALYSIS - I

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

To make the students,

CO 1: Explain the principle, general aspects, Instrumentation and applications of UV-Visible and Spectro fluorimetry.

CO 2: Explain the principle, Instrumentation and applications of IR and Raman spectroscopy.

CO 3: Acquire knowledge regarding NMR and ESR Spectroscopies.

CO 4: Develop interest in the areas of Mass and X-Ray spectroscopies.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To apply different spectroscopic methods.

LO 2: To acquire knowledge in handling Instrumentations like NMR and Mass spectrometers.

LO 3: To calculate frequencies and m/z values.

LO 4: To understand and analyze applications of spectroscopies.

LO 5: To know about shielding and De-shielding effects along with chemical shift values.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – IV

Paper I –MODERN SYNTHETIC METHODOLGY IN ORGANIC CHEMISTRY

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the modern synthetic methods in organic synthesis.

CO 2: Explain the importance of oxidizing agents in organic synthesis.

CO 3: Explain the Importance of reducing agents in organic synthesis.

CO 4: Explain the Newer methods in organic synthesis.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Learn about the some important named reactions like Ugireaction , Heck , Ullmanns coupling rection.Etc..

LO 2: Learn about some important oxidizing agents like Peroxides,Osmiumtetraoxide,Seliniumoxide,Chromium oxides. Etc.

LO 3:Learn about some important reducing agents like Metal catalyzed, Hydride transfer and Metal based redictions.

LO 4: Learn about Green chemistry, Microwave induced reactions , Nanomaterials , Phase transfer reactions.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – IV

Paper II–ORGANIC SPECTROSCOPY AND STRUCTURAL DETERMINATION OF NATURAL PRODUCTS

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the concepts in C^{13}NMR and Hetero nuclear couplings

CO 2: Understand various 2D-NMR experiments & explain ESR derivative curves.

CO 3: Explain the concepts of ORD & CD Spectroscopy & its classification.

CO 4: Explain the structural elucidation ofnatural products by spectral methods.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Learn the Spectroscopic methods of C^{13} and Heteronuclear.

LO 2: Understand, Predict & use data from 2D-NMR experiments and Hyperfine splitting.

LO 3: : Learn the Spectroscopic methods: ORD & CD; Circular Birefringence & Cotton effect; difference between ORD & CD.

LO 4: Understand & Predict the structural elucidation of natural products.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – IV

Paper III – DESIGNING ORGANIC SYNTHESIS AND SYNTHETIC APPLICATIONS OF ORGANO BORANES AND ORGANO SILANES -II

Course Objectives: To make the students

CO 1: Functional group interconversion & protective group methodology.

CO 2: Synthetic strategies in One group c-c,c-x and Two group c-c, c-x disconnections .

CO 3: Acquire the knowledge of organoboranes preparation by using hydroboration.

CO 4: Acquire the knowledge of preparation & synthetic applications of organo-silanes.

Learning outcomes: At the end of the course, the learners should be able to:

LO 1: Identify, analyze & evaluate synthetic route to target molecules using retrosynthesis.

LO 2: Learn about Diels Alder reaction, Michael addition and Robinson Annulation.

LO 3: Analyze preparation of organoboranes by using hydroboration.

LO 4: Apply the knowledge of preparation & synthetic applications of organo-silanes.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) O.C semester – IV

Paper IV – DRUG DESIGN AND DRUG CHEMISTRY -II

Course Objectives: To make the students

CO 1: Explain the basic consideration of Drugs.

CO 2 : Explain the Antineoplastic agents.

CO 3: Explain the Cardiovascular drugs and oral Hypoglycemic drugs.

CO 4: Explain the Local Anti-infective drugs and Antiviral drugs

Learning outcomes: At the end of the course, the learners should be able to:

LO 1: Learn about basic considerations of Drugs.

LO 2: Learn aboutAntineoplastic agents.

LO 3: Learn about Cardiovascular drugs and oral Hypoglycemic drugs.

LO 4: Learn aboutLocal Anti-infective drugs and Antiviral drugs

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – IV

Paper I –SEPERATION METHODS - II

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Acquire knowledge regarding Ion Exchange Chromatography and their applications in different fields.

CO 2: Acquire knowledge regarding types of liquid chromatographies.

CO 3: To understand various sampling techniques, samplers and types of sampling in solids, liquids and gases.

CO 4: Develop interest in the areas of Analytical chemistry by explaining its importance in industries and research through solvent extraction.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To analyze cations and anions in different samples using Ion Exchange Chromatography.

LO 2: To calculate R_f values using Liquid Chromatography.

LO 3: Understand and analyze types of samplers used for analysis of solids, liquids and gases.

LO 4: To understand special extraction systems and their applications.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – IV

Paper II–QUALITY CONTROL & TRADITIONAL METHODS OF ANALYSIS - II

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: To explain different precipitation methods like co-precipitation, post-precipitation and re-precipitation.

CO 2: To explain gravimetric determinations and Electro-Gravimetric Analysis.

CO 3: Acquire knowledge regarding reductant systems and their applications with respect to basic knowledge regarding electrochemistry.

CO 4: Develop interest in the areas of classification and determination of different types of drugs.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To acquire knowledge regarding precipitation titrations.

LO 2: To understand the concepts like over potential, decomposition potential and their importance.

LO 3: To analyze different drugs using spectroscopic methods.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – IV

Paper III–APPLIED ANALYSIS - II

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

Up on completion of the course the students will be able to,

CO 1: Explain the general techniques of analysis applied to complex materials including Ferro and Non-Ferro Alloys.

CO 2: Acquire knowledge regarding the analysis of soils, Fertilizers and Fuels.

CO 3: To understand the composition, classification, sources, effects, control and Analysis of Air pollutants.

CO 4: Acquire knowledge regarding kinetic methods of Analysis and Non-Aqueous Titrimetry.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: Distinguish between Ferro and Non-Ferro Alloys.

LO 2: To know different types of fertilizers and fuels used along with their composition and grading.

LO 3: To assess Air quality using standard ambient air quality table as reference.

LO 4: To understand types of solvents and indicators in Non-Aqueous Titrimetry.

A.M.A.L COLLEGE, Anakapalle

Department of P.G Chemistry 2020 – 2021

M.Sc. (Final) A.C semester – IV

Paper IV–INSTRUMENTAL METHODS OF ANALYSIS - II

Course Outcomes (Cos) / Course Specific Outcomes (CSOs):

To make the students,

CO 1: Explain the principle, Theory, Instrumentation and applications of AAS, ICP-AES, ICP-MS and flame photometry.

CO 2: Explain the principle, Instrumentation and applications of TG, DTA and DSC.

CO 3: Acquire knowledge regarding polarography, anode shipping voltammetry and coulometric analysis.

CO 4: To understand different types of ion selective electrodes and their uses along with radio chemical methods of analysis.

Learning Outcomes (Los):

Up on completion of the course the student will be able

LO 1: To analyze concentration of alkali and alkaline earth metals using flame photometry.

LO 2: Quantitative determination of compounds can be done by TG and DTA.

LO 3: Understand different types of currents like residual current, migration current and diffusion current.

LO 4: Acquire knowledge regarding types of electrodes.

PRINCIPAL
A.M.A.L. COLLEGE
ANAKAPALLE

A.M.A.L.COLLEGE, ANAKAPALLE
B. Vocational course AGRICULTURE
2020-21 Admitted Batch I Year – Semester I

HUMAN VALUES AND PROFESSIONAL ETHICS

(CREDITS 2+0=2)

Learning Outcome:

On completion of this course, the UG students will be able to

- Understand the significance of value inputs in a classroom and start applying them in their life andprofession
- Distinguish between values and skills, happiness and accumulation of physical facilities, the self and the Body, Intention and Competence of an individual,etc.
- Understand the value of harmonious relationship based on trust and respect in their life and profession
- Understand the role of a human being in ensuring harmony in society andnature.
- Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever theywork.

PLANT NURSERY

(CREDITS 2+0=2)

Learning Outcomes :

On successful completion of this course students will be able to;

- Understand the importance of a plant nursery and basic infrastructure to establishit.
- Explain the basic material, tools and techniques required fornursery.
- Demonstrate expertise related to various practices in anursery.
- Comprehend knowledge and skills to get an employment or to become an entrepreneur in plant nurserysector.

INFORMATION AND COMMUNICATIONTECHNOLOGY

(CREDITS 2+0=2)

Learning outcomes:

- Understand the literature of social networks and theirproperties.
- Explain which network is suitable forwhom.
- Develop skills to use various social networking sites like twitter, flickr,etc.
- Learn few GOI digital initiatives in highereducation.
- Apply skills to use online forums, docs, spreadsheets, etc for communication,collaboration research.
- Get acquainted with internet threats and securitymechanisms.

A.M.A.L.COLLEGE, ANAKAPALLE

B.Vocationalcourse

AGRICULTURE

2020-21 Admitted Batch

I Year Semester- II

FRUITS AND VEGETABLES PRESERVATION

(CREDITS 2+0=2)

Learning Outcomes:

On successful completion of this course the students will be able to;

- Identify various types of fruits and vegetables and explain their nutritive value.
- Understand the fragile nature of fruits and vegetables and causes for their damage.
- Explain various methods of preservation for fresh fruits and vegetables.
- Get to know the value-added products made from fruits and vegetables.

A.M.A.L.COLLEGE, ANAKAPALLE
B. Vocational course
AGRICULTURE
I Year – Semester II
2020-21 Admitted batch

AGRICULTURE MARKETING
(CREDITS 2+0=2)

Learning Outcomes:
By the successful completion of this course, the student will be able to;

- Know the kinds of agricultural products and their movement
- Understand the types, structure and functioning of agricultural marketing system
- Comprehend related skills and apply them in sample situations
- Extend this knowledge and skills to their production/consumption environment

HEALTH & HYGIENE
(CREDITS 2+0=2)

Learning / Course Outcomes: On completion of this course, the students will be able tounderstand -

- What is a healthydiet
- How can we use available information to optimize ourdiet?
- Can nutrition be used for a healthylife?
- Is there a one-size-fits-all "good" diet or should we individualize our dietarygoals?
- Disastermanagementandresponsivenessofpublicinpandemicandepidemicdiseases
- Assess the impact of policies on health and hygiene Health measures to considerwhile travelling
- Awareness in public through digital media viz., mobileapps

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

ANDHRAUNIVERSITY
B.Vocational courseDairying & Animal husbandry
I Year –
Semester
I2020-
21Admittedb
atchTelugu
(Credits3+0=3)

✦ **అభ్యసన ఫలితాలు:-**

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ప్రాచీన తెలుగుసాహిత్యం యొక్క ప్రాచీనతను, విశిష్టతను గుర్తిస్తారు. తెలుగుసాహిత్యంలో ఆదికవి నన్నయ కాలంనాటి భాషాసంస్కృతులను, ఇతిహాసకాలం నాటి రాజనీతి విషయాలపట్ల పరిజ్ఞానాన్ని సంపాదించగలరు.

2. శివకవుల కాలంనాటి మతపరిస్థితులను, భాషావిశేషాలను గ్రహిస్తారు. తెలుగు నుడికారం, సామెతలు, లోకోక్తులు మొదలైన భాషాంశాల పట్ల పరిజ్ఞానాన్ని పొందగలరు.

3. తిక్కన భారతంనాటి మత, ధార్మిక పరిస్థితులను, తిక్కన కవితాశిల్పాన్ని, నాటకీయతను అవగాహన చేసుకోగలరు.

4. ఎఱ్ఱన సూక్తివైచిత్రిని, ఇతిహాస కవిత్వంలోని విభిన్న రీతులపట్ల అభిరుచిని పొందగలరు. శ్రీనాథుని కాలం నాటి కవితావిశేషాలను, మొల్ల కవితా విశిష్టతను గుర్తించగలరు.

5. తెలుగు పద్యం స్వరూప-స్వభావాలను, సాహిత్యాభిరుచిని పెంపొందించుకుంటారు. ప్రాచీన కావ్యభాషలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం ద్వారా భాషాసామర్థ్యాన్ని, రచనల మెళకువలను గ్రహించగలరు.

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE

A.M.A.L. COLLEGE, ANAKAPALLE

AFFLIATED TO ANDHRA UNVERSITY, VISAKHAPATNAM

B. VOCATIONAL – DAIRYING AND ANIMAL HUSBANDRY

Programme Objectives:

B. VOCATIONAL – DAIRYING AND ANIMAL HUSBANDRY

1. Preparing in qualifying skillful veterinary assistants to enable them to support animal wealth sector.
2. To continuously support livestock keepers in animal health and breeding and to provide veterinary services to farmers through the departments of veterinary health centers
3. Protecting animals from common diseases and in turn diseases transmitted to humans from products of animal origin
4. Design and implement prevention and control programs for common animal disorders.
5. Develop treatment, diagnostic and prognostic recommendations that consider animal and client needs
6. Apply a professional, ethical and socially responsible approach to all aspects of veterinary professional activity to advocate for and improve animal health, welfare, production and performance.
7. Attend to and promote the health, well-being and professional development of themselves and others in order to provide care of the highest standard.
8. Communicate with, educate, collaborate and lead colleagues, clients and the public, effectively and with compassion, in diverse social and cultural contexts.

Programme Outcomes:

By the end of the study programme of Vocational - DAH, graduate will be able to:

1. Precisely apply knowledge and professional skills in veterinary medicine to maintain animal health and obtain maximal productivity in livestock.
2. Keep abreast with recent advances in veterinary medicine.
3. Commit to continuing education, training and seeking for knowledge.
4. Conduct oneself in a professional manner, appreciate the ethical and legal obligations of the veterinary profession and understand and apply the ethical codes within the field of veterinary medicine.
5. Be able to communicate effectively with lay public, colleagues and responsible authorities.
6. Know the actual situation of the livestock sector in the nation, and recognise endemic and exotic diseases.
7. Have a working knowledge of the control of zoonotic diseases and demonstrate the importance of their role in safeguarding public health.
8. Give soundly-based advice when presented with a problem related to veterinary medicine.
9. Be aware of personal limitations and demonstrate awareness of when and from where to seek professional advice, assistance and support.
10. Work effectively as a member of a multi-disciplinary team in the delivery of services to clients.

COURSE OBJECTIVES AND OUTCOMES

Course 1: BASICS OF VETERINARY ANATOMY

Course Objective:

To study various anatomical terms, planes, various bones, muscles, joints, body cavities, sense organs and different systems of animal body.

Course Outcomes:

CO 1: Will be able to define anatomy and is knowledgeable with regards to main concepts of anatomy

CO 2: Has an overall understanding of the standard terms used in anatomy

CO 3: Has the basic understanding of body cavities of mammals and the serous membranes that covers those cavities.

CO 4: Becomes familiar with the skeleton that forms the framework of the body and learns about the bones forming the skeleton and their connection

CO 5: Has a general knowledge about muscles in the body

CO 6: Has a general knowledge about various organs and systems of the body

CO 7: Has a general knowledge about the organs of sensation

CO 8: Has a general knowledge about anatomy of domestic birds

Course 2: BASICS OF VETERINARY PHYSIOLOGY

Course Objective:

1. To Acquire a fundamental knowledge of "how animals work".
2. Recognize how prior and new knowledge relate to current/future work.
3. Appreciate the importance of animal physiology.

Course Outcomes:

CO 1: Describe the anatomy and physiological processes of domestic species using proper terminology.

CO 2: Describe the gross anatomical and histological structures of the body systems covered in vertebrates with an emphasis on domestic species.

CO 3: Describe normal physiological functions of vertebrates with an emphasis on domestic species.

CO 4: Demonstrate practical dissection skills.

CO 5: Collect, analyse and interpret data on normal physiological processes.

CO 6: Apply theoretical knowledge of anatomy and physiology

CO 7: Apply the scientific method and critical thinking as it relates to body system structure and function

Course 3: VETERINARIAN IN SOCIETY

Course Objectives:

To study the relation between man, animal and society. Client dealing. Veterinarians interaction with health, drug and food regulatory authorities. Role of veterinarian in food safety and natural calamities.

Course Outcomes:

CO 1: Contribute generally to public health through herd health programs, including disease treatment and prevention; husbandry, handling, and environmental advice; reproductive efficiency; vaccination regimens; nutrition; stress reduction; commodity group protocols.

CO 2: Appropriate and judicious use of antimicrobials, disease surveillance, outbreak investigation and mitigation, vaccination against specific high-consequence or high-prevalence pathogens.

Course 4: HUMAN VALUES AND PROFESSIONAL ETHICS

Course Objectives:

To impart knowledge on values and skills as a part of their life and being competent as an individual and to ability to distinguish between ethical and unethical practices and leading a harmonious relationship based on trust.

Course Outcomes:

CO 1: Understand the significance of value inputs in a classroom and start applying them in their life and profession

CO 2: Distinguish between values and skills, happiness and accumulation of physical facilities, the self and the Body, Intention and Competence of an individual, etc

CO 3: Understand the value of harmonious relationship based on trust and respect in their life and profession

CO 4: Understand the role of a human being in ensuring harmony in society and nature.

CO 5: Distinguish between ethical and unethical practices, and start working out the strateg to actualize a harmonious environment wherever they work.

Course 5: VETERINARY BIOCHEMISTRY

Course Objectives:

1. To study disorders of carbohydrate metabolism
2. Know the significance of proteins
3. Understand the liver function and renal function tests
4. Learn the disturbance in acid base balance, digestive disorders and fluid therapy

Course Outcomes:

CO 1: Predict the carbohydrate metabolism disorders

CO 2: Learn the clinical significance of proteins and dysproteinemias

CO 3: Predict the lipid profile by different tests

CO 4: Gain the knowledge about liver and renal function tests

CO 5: Know the digestive disorders, oxidative stress and fluid therapy

Course 6: LIVESTOCK PRODUCTION MANAGEMENT

Course Objectives:

To impart knowledge on importance of livestock in Indian Economy. basic livestock farm business principles. Familiar with communication and interpersonal skills to effectively work with individuals in the livestock industry.

Course Outcomes:

CO 1: Understand livestock production and management practices

CO 2: Understand basic livestock farm business principles

CO 3: Appreciate the importance of collecting accurate information and using sound logic in decision making and problem solving in herd management

CO 4: Become familiar with communication and interpersonal skills to effectively work with individuals in the livestock industry

CO 5: Able to understand the association of livestock to Indian society during different era

CO 6: the contribution of livestock to man and deals in detail the role of animal husbandry and also the species wise livestock population in the country

Course 7: PET AND ZOO ANIMAL MANAGEMENT

Course Objectives:

1. To study about various breeds of dog and cat.
2. Understand the feeding behavior of dog, cat, wild and zoo animals
3. Importance of wild life sanctuary, national parks and zoo.
4. Achieve the specific human goals by means of wildlife resource.

Course Outcomes:

CO 1: Become familiar with various breeds of dogs and cats

CO 2: Understand the feeding behaviour and principles of feeding dogs and cats

CO 3: Aware of vaccination and deworming schedules of dogs and cats

CO 4: Understand classification of dogs based on their utility

CO 5: To understand the conservation practices of wild life, their housing and basic principles of habitat in India.

CO 6: Able to know various feeding habits. Feeds and feeding schedule of captive animals.

CO 7: Management of sanctuaries, national parks and zoo for the welfare of wild animals.

Course 8: DAIRY FARM GENERAL MANAGEMENT

Course Objectives:

1. The General objective of this course is to establish basic knowledge of how to manage and operate dairy farm.
2. This course is designed to impart basic technical knowledge and skills required for entry level positions or to successfully run a dairy farm enterprise by developing competencies concerning the breeding of dairy cattle, housing and health care.
3. To provide hands-on experiences with Artificial insemination and other dairy husbandry practices.

Course Outcomes:

CO 1: Become familiar with role of livestock in Indian economy and reasons for failure in dairying

CO 2: Get well versed with housing of dairy animals and general principles of design of livestock animals

CO 3: Aware of common farm animal practices, various buildings required for dairy farm and various dairy farm practices.

CO 4: Acquaintance with regard to care and management of new born calf, heifers, pregnant animals, dry stock and breeding bulls.
CO 5: Knowledge of clean milk production, milking methods and determination of age of dairy animals.

Course 9: AVIAN PRODUCTION AND MANGEMENT

Course Objectives:
To impart knowledge on different system of poultry rearing, factors responsible for growth and development of poultry industry, Marketing of poultry and poultry products

To learn formation of egg, their structure and incubation of eggs.

Course Outcomes:
CO 1: Various factors responsible for growth and development of Poultry Industry,
CO 2: Common breeds of poultry including duck, quail, turkey & guinea fowl and indigenous fowls.
CO 3: Male and female reproductive systems, formation of eggs
CO 4: Important economic traits of poultry
CO 5: Backyard poultry rearing
CO 6: Marketing of poultry and poultry products
CO 7: Management practices - Brooding and rearing practices for chicken
CO 8: Optimum conditions for Incubation of eggs
CO 9: Systems of poultry rearing

Course 10: ANIMAL GENETICS AND BREEDING

Course Objectives:
To know about methods to increase animal yield, improve the desirable quality of animal produce and produce disease-resistant varieties of animals

Course Outcomes:
CO 1: Introduction to animal breeding

CO 2: Importance of animal production in economy of India

CO 3: Domestication of livestock

CO 4: Methods of Improved growth rate, Increased production of milk, meat, egg, wool, etc., Superior quality of milk, meat, eggs, wool, etc., and Improved resistance to various diseases.

Course 11: INFORMATION AND COMMUNICATION TECHNOLOGY

Course Objectives:

To impart knowledge and develop skills on literature, use of various social networking sites , use of online forums, docs etc for better communication.

Course Outcomes:

CO 1: Understand the literature of social networks and their properties.

CO 2: Explain which network is suitable for whom.

CO 3: Develop skills to use various social networking sites like twitter, etc.

CO 4: Learn few GOI digital initiatives in higher education.

CO 5: Apply skills to use online forums, docs, spreadsheets, etc for communication, collaboration and research.

CO 6: Get acquainted with internet threats and security mechanisms.

Course 12: BASICS OF ANIMAL NUTRITION

Course Objectives:

1. Basic understanding of nutrients, digestibility, evaluation and composition of feeds.
2. Appreciation for nutrient function and requirements for growth, maintenance, reproduction and lactation
3. Understanding for ration formulation
4. Describe the categories of dietary requirements for adequate nutrition in animals

Course Outcomes:

CO 1: Identify and evaluate different foods, in terms of chemical composition.

CO 2: To estimate the components that determine the nutritional needs of domestic animals ir their different physiological phases.

CO 3: Understand the role of food in meeting the needs of animals, and in preventing metaboli or health problems.

CO 4: Understand the impact of food on the quality of animal products.

CO 5: To know the different systems of feeding of the domestic animals

CO 6: Able to recall, integrate and apply essential core information about the key componen of animal nutrition as nutrition is basic part of animal science

Course 13: FODDER PRODUCTION AND CONSERVATION

Course Objectives:

1. To study about grasslands and fodder crops.
2. Types of feed, their collection and preservation.
3. To know about scarcity fodders

Course Outcomes:

CO 1: Importance of grasslands and fodder in livestock production

CO 2: Important leguminous and non-leguminous fodders in different seasons

CO 3: Familiarization with the various types of fodders in the state and India

CO 4: Collection, preservation and storage of feed and fodder

CO 5: Damages or loss during transfer and storage; methods to prevent them

CO 6: Fodder production for small livestock units

CO 7: Scarcity fodders and preservation of green fodder

Course 14: VETERINARY PUBLIC HEALTH AND FOOD SAFETY

Course Objectives:

1. To impart training in food hygiene and public health
2. To impart knowledge on one health concept, food borne diseases, zoonosis, HACCP in industry

Course Outcomes:

CO 1: Recognise the interdependency between human, animal and environmental health, as captured by the One Health concept, and describe the roles of veterinarians in protecting and promoting One Health in animal production and management, food safety management, humane slaughter of livestock for food, and disease outbreak investigations

CO 2: Define emerging, re-emerging and transboundary diseases, as well as an 'emergency animal disease' and describe why these diseases are arising, how they are combatted, and their impacts on people, animals and the environment

CO 3: Explain how the design of modern abattoirs, and the processes that take place within them, help to maintain high levels of animal welfare, worker safety, food safety and food quality

CO 4: Describe how safe food is achieved throughout the 'farm to fork' process, including how food safety programs, food technology processes and on-farm practices help to prevent food-borne disease and promote food security

Course 15: ORGANIC CHEMISTRY

Couse objectives:

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, bonding and stability.

Course outcomes:

CO 1: Identify the importance of reagents used in the synthesis of organic compounds.

CO 2: Acquire knowledge on basic concepts in different types of pericyclic reactions.

CO 3: Understand the importance of retro synthesis in organic chemistry.

CO 4: comprehend the applications of different reactions in synthetic organic chemistry.

Course 16: HEALTH AND HYGIENE

Course objectives:

To impart knowledge and importance of health and hygiene in terms of healthy diet with balanced nutrition and how implies in our daily lives and also creating awareness in public through media.

Course outcomes:

On completion of this course, the students will be able to understand -

CO 1: What is a healthy diet?

CO 2: How can we use available information to optimize our diet?

O 3: Can nutrition be used for a healthy life?

O 4: Is there a one-size-fits-all "good" diet or should we individualize our dietary goals?

O 5: Disaster management and responsiveness of public in pandemic and epidemic diseases

O 6: Assess the impact of policies on health and hygiene and its measures to consider whil travelling.

O 7: Awareness in public through digital media viz., mobile apps.

Course 17: ENVIRONMENTAL EDUCATION

Course objectives:

To impart knowledge and to understand nature and its components and humans being an integral part of it, importance of environment, interdependence of humans and environment , laws and policies formed by government to protect environment as a whole and role of citizens in protecting biodiversity.

Course outcomes:

On completion of this course the students will be able to

CO 1: Understand the nature, components of an ecosystem and that humans are an integral part of nature

CO 2: Realize the importance of environment, the goods and services of a healthy biodiversity, dependence of humans on environment.

CO 3: Evaluate the ways and ill effects of destruction of environment, population explosion on ecosystems and global problems consequent to anthropogenic activities.

CO 4: Discuss the laws/ acts made by government to prevent pollution, to protect biodiversity and environment as a whole.

CO 5: Acquaint with international agreements and national movements, and realize citizen's role in protecting environment and nature.

Course 18: DISASTER MANAGEMENT

Course objectives:

To Impart knowledge on nature, what are disasters and their causes, effects and its management prior to and after occurrence of disaster and role of volunteers in service activities at the time of disasters.

Course outcomes:

After successful completion of the course, the students are able to;

CO 1: Understand the nature, cause and effects of disasters

CO 2: Comprehend the importance of Disaster Management and the need of awareness

CO 3: Acquire knowledge on disaster preparedness, recovery remedial measures and personal precautions

CO 4: Volunteer in pre and post disaster management service activities

Course 19: INFECTIOUS DISEASES OF LIVESTOCK ANF POULTRY

Course Objectives:

1. Acquaintance with various infectious and non infectious diseases.
2. To impart knowledge on synonyms, etiology, transmission, symptoms, diagnosis, prevention and control of various bacterial, viral, fungal and parasitic diseases

Course Outcomes:

CO 1: Distinguish between infectious and noninfectious diseases;

CO 2: Describe the characteristics of parasites, bacteria, and viruses;

CO 3: Provide examples of different infectious agents and describe their modes of transmission and the diseases they cause;

CO 4: Explain the differences among outbreaks, epidemics, and pandemics and provide examples of each

Course 20: VETERINARY IMMUNOLOGY AND VACCINES

Course Objectives:

To impart knowledge of history and theories of immunology, immune system, hypersensitivity reactions, auto-immunity, concept of immunity to microbes and vaccines.

Course Outcomes:

CO 1: Will have knowledge on history and various theories of immunology, scientists and their contributions

CO 2: Aware of role of lymphoid organs, tissues and cells in immunity

CO 3: Develop knowledge on various hypersensitivity reactions, their clinical manifestations, diagnosis and treatment

CO 4: Knowledge on preparation of vaccines, storage, cold chain maintenance, handling and different types of vaccines.

Course 21: MILK AND MILK PRODUCTS TECHNOLOGY

Course Objectives:

To study about milk, its composition and physiochemical properties and preparation of various milk products.

Course Outcomes:

CO 1: The formation of milk and its components

CO 2: Know the physiochemical properties of milk

CO 3: Importance of pasteurization processes

CO 4: Preparation of various milk products such as butter, ghee, paneer, dahi, ice cream, khoa, cheese.

CO 5: Various tests to detect the quality of milk and milk products

Course 22: MEAT PRODUCTION AND ABATTOIR MANAGEMENT

Course Objectives:

To study about importance of meat and preparation of various meat products and its preservation.

Course Outcomes:

CO 1: To produce hygienically prepared meat through humane handling of animal using hygienic techniques for slaughtering and dressing

CO 2: Providing wholesome meat for human consumption and preventing danger to public health.

CO 3: Importance of meat in the diet is as a concentrated source of protein

CO 4: Preservative methods of meat products

Course 23: PRINCIPLES OF DAIRY CHEMISTRY AND DAIRY MICROBIOLOGY

Course Objectives:

1. To understand the physiochemical components present in milk
2. To study the structure, role, and chemical interactions of milk
3. To understand about various microbes and their characters
4. To understand on merits and demerits of microbes in field of dairy
5. To gain knowledge on various test for estimation of microbes

Course Outcomes:

CO 1: Students will gain knowledge on various components present in milk.

CO 2: Will acquire knowledge on various physical and chemical properties of milk.

CO 3: Learn various methods to analysis the proximate composition of milk.

CO 4: Will learn various microbes, their characters and taxonomy nomenclature.

CO 5: Learn about various methods to detect the microorganisms.

CO 6: Get knowledge about importance of microbes in dairy processing.

CO 7: Gain practical knowledge on proximate, adulterants and preservatives in milk.

O 8: Knowledge on handling of equipments and devices in chemical analysis.

Course 24: LABORATORY DIAGNOSTIC TECHNIQUES

Course Objectives:

Describe sample collection methods necessary for identifying agents of infectious disease.

Discuss the diagnostic testing methods available to the laboratory investigator.

Demonstrates proper handling of patients/specimens and evaluates situations that may cause adverse issues in the diagnostic division.

Course Outcomes:

CO 1: Will have knowledge about sample collection methods

CO 2: Identify approaches for maintaining sample integrity during a disease outbreak investigation.

CO 3: Know all the diagnostic techniques that are used to diagnose an infectious disease.

CO 4: Will have skill with the microscope, centrifuge, and other laboratory equipment.

CO 5: Have Basic understanding and analysis of the excretory products and other body fluids.

CO 6: Basic understanding of haematology, immunology, clinical biochemistry, and microbiology with emphasis placed on point of care testing in all areas of the laboratory.

Course 25: VETERINARY PHARMACOLOGY

Course Objectives:

1. The aim of this course is to provide students with an understanding and knowledge of clinical pharmacology, toxicology and therapeutic.
2. Describe the drugs administration routes, effects and disposition of the drugs in the body along with drug interactions and side-harmful effects

Course Outcomes:

CO 1: Show knowledge and understanding of the terms relating to pharmacology and the *pharmacokinetics and pharmacodynamics.*

CO 2: Understand aspects of clinical pharmacology & therapeutics to support veterinary *practice*

CO 3: Assess appropriate drug selection for various animal species

CO 4: Understand aspects of clinical toxicology in relation to veterinary practice

CO 5: Able to the list and classify common drugs used in veterinary medicine and understa actions, mechanism of action, adverse effects and precautions for use of each drug.

Course 26: DAIRY PLANT MANAGEMENT

Course Objectives:

1. In-depth knowledge of dairy production and processing techniques
2. Emphasis on quality control and food safety standards
3. To enlighten the students about the market available processed/special milk.
4. To make up the basic knowledge of management and maintenance of dairy plant and mechanics followed in dairy industry.
5. To make up the basic knowledge of layout facilitates in dairy industries.

Course Outcomes:

CO 1: Exposure to modern dairy machinery and equipment

CO 2: Understanding of business and management practices in the dairy industry

CO 3: Students will get to know about the various sources of contamination and the process of cleaning and sanitization at farm.

CO 4: Provides details about the manufacturing process of different market milks.

CO 5: Students will learn about the process flow of market milk and difference between manufacture milk.

Course 27: FUNDAMENTALS OF VETERINARY MEDICINE

Course Objectives:

1. Develop knowledge and skills on clinical and preventive medicine.
2. Gain knowledge and understanding of disease process
3. Design and implement prevention and control programs for common animal disorders.

Course Outcomes:

CO 1: Identify infectious and metabolic diseases of animals

CO 2: Develop treatment, diagnostic and prognostic recommendations that consider animal and client needs

Course 28: VETERINARY CLINICAL PRACTICE

Course Objectives:

To impart knowledge on various diseases of ruminants which includes symptoms, diagnosis, treatment and preventive measures. Also care and management of certain conditions while handling a case clinically, measures taken while preparing an animal for surgery along with pre and post operative care.

Course Outcomes:

CO 1: Knowledge of the important diseases of ruminants

CO 2: Able to design a diagnostic approach to herd / flock-level investigations, including appropriate sampling strategies

CO 3: Able to describe the appropriate diagnostic procedures

CO 4: Skill to competently handle and examine ruminants

CO 5: Skills to competently perform a range of common procedures

CO 6: Hands-on training on diagnosis and treatment of reproductive disorders in animals.

Course 29: BASICS OF VETERINARY SURGERY

Course Objectives:

To impart the basic knowledge of principles of surgery.

To impart practical training in anaesthesia, diagnostic imaging techniques and surgery.
To impart the basic and practical knowledge of principles of diagnostic imaging techniques and interpretation of radiographs

Course Outcomes:

CO 1: Will get complete knowledge of principles of surgery

CO 2: Gain knowledge of principles of diagnostic imaging techniques and interpretation of radiographs

CO 3: Basic and practical knowledge of principles of farm animal anaesthesia and mechanism of pain

CO 4: Knowledge of diagnosis and treatment of diseases of eye and teeth in domestic animals

CO 5: Familiarize with various surgical affections of different body systems and their treatment

Course 30: VETERINARY GYNAECOLOGY, OBSTETRICS AND AI

Course Objectives:

1. To understand hormonal regulation of female reproduction and therapeutic management of infertility in males and female animals
2. To impart knowledge and training in diagnosis and treatment of infertility in male and female domestic animals.
3. To impart knowledge and training about collection, evaluation and preservation of semen and artificial insemination (AI) in domestic animals.

Course Outcomes:

CO 1: Gain knowledge on hormonal regulation of female reproduction

CO 2: Know about therapeutic management of infertility in males and female animals

CO 3: Acquaintance about collection, evaluation and preservation of semen and artificial insemination (AI) in domestic animals.

CO 4: Knowledge and training on biotechniques in animal reproduction

CO 5: Learn about advances in endocrine, ovarian and uterine functions and effect of nutrition, season and immunological factors on female fertility.

CO 6: Processing and cryopreservation of semen and insemination techniques to obtain high fertility.

PRINCIPAL
A.M.A.L.COLLEGE
ANAKAPALLE