Government Degree College

ACCREDITED BY NAAC WITH 'B' GRADE

Pattikonda,Kurnool (Dt),A.P.518380.

DEPARTMENT OF COMMERCE

Program Specific Outcomes:

PSO_1 : Students get adapted to rapid changes in courses, tools, technology, ethics and applications of different tools and technology.

PSO_2 : There is creation of an environment of continuous learning to improve good interpersonal skills as a leader in a team.

PSO_3 : The students understand the social responsibility for specific goal achievement, analytical and problem solving skills.

PSO_4 : There is learning of communication skills, presentations in class rooms and conducting mini projects.

PSO_5: Students get used to Internal evaluations, tests, assignments, group discussions for analysing subjects and problems relating to subjects.

B.Com (Regular)

Program Outcome

- This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Warehousing etc., well trained professionals to meet the requirements.

- After completing graduation, students can get skills regarding various aspects like Marketing Manager, Selling Manager, over all Administration abilities of the Company.

- Capability of the students to make decisions at personal & professional level will increase after completion of this course.

- Students can independently start up their own Business.

- Students can get thorough knowledge of finance and commerce.

- The knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization.

Program Specific Outcome

- The students can get the knowledge, skills and attitudes during the end of the B.com degree course.
- By goodness of the preparation they can turn into a Manager, Accountant , Management Accountant, cost Accountant, Bank Manager, Auditor,

Company Secretary, Teacher, Professor, Stock Agents, Governmentemployments and so on.,

- Students will prove themselves in different professional exams like C.A. , C S, CMA, MPSC, UPSC. As well as other coerces.
- The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
- Students will gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer.
- Students can also get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator. As well as other financial supporting services.
- Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
- Students will be able to do their higher education and can make research in the field of finance and commerce.

Course Outcomes

Financial Accounting:

- To enable the students to learn principles and concepts of Accountancy.
- Students are enabled with the Knowledge in the practical applications of accounting.

- To enable the students to learn the basic concepts of Partnership Accounting, and allied aspects of accounting.

- The student will get thorough knowledge on the accounting practice prevailing in partnership firms and other allied aspects.

- To find out the technical expertise in maintaining the books of accounts.

- To encourage the students about maintaining the books of accounts for further reference.

Marketing and Salesmanship

- This course enables the students, the practical knowledge and the tactics in the marketing.
- To study and critically analyze the basic concepts and trends in Marketing.
- To aware of the recent changes in the field of marketing.

Computer Concepts and applications

- To make students familiar with computer environment & operating systems
- To introduce students with accounting packages like tally.
- To develop skill and knowledge among students in applications of internet in education of commerce.

Business Mathematics and Statistics

- To use and understand useful functions in business as well as the concept of EMI.
- To understand the different concept of population and sample and to make students familiar with Calculation of various types of averages and variation.
- To learn the applications of matrices in business.

- To understand the students to solve LPP to maximize the profit and to minimize the cost.
- To use regression analysis to estimate the relationship between two variables and to use frequency distribution to make decision.
- To understand the techniques and concept of different types of index numbers.

Business Environment and Entrepreneurship

- To make the students aware about the Business and Business Environment.
- To develop entrepreneurial awareness among students.
- To motivate students to make their mind set for thinking entrepreneurship as career.

Banking and Finance

- To familiar the students with the fundamentals of banking and thorough knowledge of banking operations.
- To build up the capability of students for knowing banking concepts and operations.
- To make the students aware of banking business and practices.
- To make understandable to the students regarding the new concepts introduced in the banking system.

Compulsory English

- To offer relevant and practically helpful pieces of prose and poetry to students so that they not only get to know the beauty and communicative power of English but also its practical application.

- To expose students to a variety of topics that dominates the contemporary socio-economic and cultural life.

- To develop oral and written communication skills of the students so that their employability enhances.

- To develop overall linguistic competence and communicative skills of students

Functional English

- To expose students to a good blend of old and new literary extracts having various themes that are entertaining and informative so that they realize the beauty ad communicative power of English

- To make students aware of the cultural values and the major problems in the world today.

- To develop literary sensibilities and communicative abilities among students.

Business Economics (Micro)

- To provide students knowledge of Micro Economic concepts and inculcate an analytical approach to the subject matter.
- To arouse the students interest by showing the relevance and use of various economic theories.
- To apply economic reasoning to solve business problems.

Organizational skill development

- To make familiar the students with the emerging changes in the modern office environment and to develop organizational skills.

- To build up the conceptual , analytical , technical and managerial skills of students efficient office organization and records management
- Technical skills among the students for designing and developing effective means to manage records , consistency and efficiency of work flow in the administrative section of an organization will be developed.
- To develop employability skills among the students.

S.Y. B.com

Business Communication

- To make the students aware about the business communication.
- To understand the process and importance of communication.
- To develop awareness regarding new trends in business communication, various media of communication and communication devices.
- To extend business communication skills through the application and exercises

Corporate Accounting

- This course aims to enlighten the students on the accounting procedures followed by the Companies.
- Student's skills about accounting standards will be developed.
- To make aware the students about the valuation of shares.
- To impart knowledge about holding company accounts, amalgamation, absorption and reconstruction of company.

Business Economics (Macro)

- To familiarize the students with the basic concept of Macro Economics and its application.
- To aware students about Gross National Product (GNP), Net National Product (NNP) ,Income at Factor cost or National Income at Factor Prices ,Per Capita Income , Personal Income (PI) ,Disposable Income etc.
- To Study the relationship among broad aggregates.
- To apply economic reasoning to solve the problems of the economy.

Business management

- To understand the concept & functions and importance of management and its application.
- To make the student understand principles, functions and different management theories.

Elements of company law

- To impart students with the knowledge of fundamentals of Company Law and provisions of the Companies Act of 2013.
- To apprise the students of new concepts involving in company law regime.
- To acquaint the students with the duties and responsibilities of Key Managerial Personnel.

Indian Banking System – I

- To make the students aware of Indian banking system.

- To enables students to understand the reforms and other developments in the Indian Banking.
- To impart knowledge about functions and role of Reserve Bank of India.

Cost and works accounting I

- To understand Basic Cost concepts, Elements of cost and cost sheet.
- Providing knowledge about difference between financial accounting and cost accounting.
- Ascertainment of Material and Labor Cost.
- Student's Capability to apply theoretical knowledge in practical situation will be increased.

Computer Programming and Applications l

- To learn the skill how to use VBScript, transform Web pages from static text and images into functional, interactive, and dynamic e-commerce tools.
- To embed VBScript code in an HTML document.
- To use VBScript operators; write code that makes decisions based on existing conditions, using control structures and loops.
- To enable students with a communication of Web page visitor using Message and Input boxes.
- To use the DOM to control the layout of HTML pages, add effects, and get information from users.

A course in environmental studies

- To furnish awareness about environmental problems among people.

- Impart basic knowledge about the environment and its allied problems.
- Developing an attitude of concern for the environment.
- Acquiring skills to help the concerned individuals in identifying and solving environmental problems.

T.Y. B. Com. Business Regulatory Framework

(Mercantile Law)

- The student will well verse in basic provisions regarding legal frame work governing the business world.
- To know the students with the basic concepts, terms & provisions of Mercantile and Business Laws.
- To develop the awareness among the students regarding these laws affecting trade business, and commerce.

Advanced Accounting

- To provide the knowledge of various accounting concepts
- To impart the knowledge about accounting methods, procedures and techniques.
- To acquaint students with practical approach to accounts writing by using software package and by learning various accounts.

Indian & Global Economic Development

- To enable students to understand students to a new approach to the study of the Indian Economy.
- To help the students in analyzing the present status of the Indian Economy.
- To rendering the process of integration of the Indian Economy with other economics of the world.
- To notify students with the emerging issues in policies of India's foreign trade.

Auditing and taxation

- Students will be versed in the fundamental concepts of Auditing and different aspects of tax.
- Students can understand Income Tax system properly, and can get the knowledge of different tax provisions.
- To give knowledge about preparation of Audit report, Submission of Income Tax Return, Advance Tax, and Tax deducted at Source, Tax Collection Authorities under the Income Tax Act, 1961.

Banking & Finance II (Financial Markets and Institutions in India)

- Enable the students with Financial Markets and its various segments.
- To give the students and understanding of the operations and developments in financial markets in India.
- To acquaint them to gain an insight into the functioning and role of financial institutions in the Indian Economy.

Cost and Works Accounting II

- To keep the students conversant with the ever – enlarging frontiers of Cost Accounting knowledge.
- Students can get knowledge of different methods and techniques of cost accounting.
- To impart Knowledge about the concepts and principles application of Overheads.

Computer Programming and Application II (Computer Networking and Cyber Security)

- To make students familiar with computer environment
- To make students familiar with operating systems.
- To make students aware of accounting packages like tally.
- To develop skill among students in applications of internet in commerce education
- To educate students with the networking and different languages of computer.

Cost and Works Accounting III

- To provide knowledge regarding costing techniques.
- To give training as regards concepts, procedures and legal Provisions of cost audit.

Banking & Finance III (Banking Law and Practices in India.)

- To enlighten the students' knowledge on Banking Regulation Acts.
- To give a thorough knowledge on Indian Banking System and Acts pertaining to it.
- To provide understanding of nature, importance, of banking sector.
- To know the structure of finance related areas.

- To impart knowledge regarding source of finance for a business.

Computer Programming and Application III (Software Engineering)

- To learn the different system concepts used in Software Engineering.
- To understand the different types applications of Software Engineering.
- To be acquainted with the facts about Software Development.

Govt. Degree College, Pattikonda

Department of Mathematics

PO's/CO's/PSO's

for

Mathematics Students

DIFFERENTIAL EQUATIONS

Learning Outcomes

1. **Understanding Differential Equations**: Students should understand the concept of a differential equation, its order, and degree, as well as the distinction between ordinary and partial differential equations.
2. **Solving First-Order Differential Equations**: Students should be able to solve various types of first-order differential equations using different methods such as separation of variables, integrating factors, and exact equations.
3. **Integrating Factor Method**: Students should be proficient in using the integrating factor method to solve linear first-order differential equations that are not initially separable.
4. **Exact Equations**: Students should be able to identify exact differential equations and use the appropriate techniques to solve them by finding integrating factors.
5. **Separation of Variables**: Students should be able to apply the separation of variables technique to solve separable first-order differential equations.
6. **Modeling with First-Order Differential Equations**: Students should be able to translate real-world problems into first-order differential equation models and then solve these models to obtain solutions that provide meaningful insights.
7. **Direction Fields and Euler's Method**: Students should understand how to use direction fields and Euler's method to approximate solutions to first-order differential equations numerically.
8. **Applications**: Students should be able to apply first-order differential equations to various disciplines such as physics, biology, economics, and engineering, and understand the significance of these equations in modeling real-world phenomena. **Understanding of Higher Order Differential Equations**: Students should be able to comprehend the concept of higher order differential equations, including their formation and classification based on the highest derivative present.
9. **Solving Linear Homogeneous Equations**: Students should be able to solve linear homogeneous differential equations with constant coefficients, both analytically and using appropriate methods like characteristic equations.
10. **Solving Linear Non-Homogeneous Equations**: Students should understand techniques for solving linear non-homogeneous differential equations with constant coefficients, using methods like undetermined coefficients and variation of parameters.
11. **Solving Systems of Differential Equations**: Students should be able to solve systems of linear differential equations using methods like matrix exponentiation and eigenvalues/eigenvectors.

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Analytical Three Dimensional solid Geometry

Learning Outcomes

- Apply analytical solid geometry concepts to solve practical problems in fields such as engineering, physics, and computer graphics.
- Model and analyze real-world situations involving planes, lines, spheres, and cones.

7. Visualize Geometric Relationships:

- Develop spatial visualization skills to understand and manipulate geometric objects in three dimensions.
- Use computer software and visualization tools to aid in understanding complex 3D structures.

8. Analyze Intersection and Intersection Tests:

- Determine the intersection of geometric objects and calculate the resulting curves, lines, or points.
- Implement intersection tests and algorithms for various combinations of geometric primitives.

9. Develop Mathematical Problem-solving Skills:

- Enhance problem-solving skills by applying mathematical techniques to analyze and solve intricate geometric problems.
- Formulate and solve equations involving distances, angles, and coordinates.

10. Communicate Effectively:

- Express mathematical ideas clearly and coherently through written and oral communication.
- Present solutions to complex geometric problems in a structured and organized manner.

By achieving these course outcomes, students should be well-equipped to understand and analyze a wide range of geometric objects and relationships in three-dimensional space, making them better prepared for further studies in mathematics, engineering, computer science, and related fields.

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Analytical Three Dimensional solid Geometry

Learning Outcomes

Course outcomes for a study of analytical three-dimensional solid geometry, covering topics such as planes, lines, spheres, and cones, could include the following:

1. Understand Fundamental Concepts:

- Define and differentiate between points, lines, planes, spheres, and cones in three-dimensional space.
- Grasp the concepts of distance, angle, and intersection between geometric objects.

2. Analyze Planes and Lines:

- Apply vector equations to represent and analyze planes and lines in 3D space.
- Determine the position, direction, and distance between points, lines, and planes.
- Perform calculations involving parallel and perpendicular lines, skew lines, and the intersection of lines and planes.

3. Explore Spheres:

- Develop a deep understanding of the equation of a sphere and its properties.
- Analyze the center, radius, diameter, and position of spheres.
- Determine intersections, tangents, and distances involving spheres and other geometric objects.

4. Study Cones:

- Define and analyze different types of cones, including right circular cones and general cones.
- Investigate the properties of conic sections formed by the intersection of cones with planes.
- Calculate various parameters of cones, such as slant height, lateral surface area, and volume.

5. Apply Coordinate Systems:

- Work proficiently with Cartesian and parametric equations to represent geometric objects.
- Translate, rotate, and scale objects in 3D space using appropriate coordinate transformations.

6. Solve Real-world Problems:

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Abstract Algebra

Learning Outcomes

Course outcomes for an abstract algebra course typically cover a range of fundamental concepts and techniques in the study of algebraic structures. These outcomes are designed to help students develop a solid understanding of abstract algebra and its applications. The specific outcomes may vary depending on the level of the course (undergraduate or graduate) and the institution offering the course. Here are some common course outcomes for an abstract algebra course:

1. **Understanding Algebraic Structures:** Students should be able to define and recognize various algebraic structures, such as groups, rings, fields, and vector spaces, and understand their fundamental properties and examples.
2. **Group Theory:** Students should be able to define groups, subgroups, and normal subgroups. They should understand concepts like group homomorphisms, isomorphisms, and the isomorphism theorems. Students should also be familiar with group actions and their applications.
3. **Ring Theory:** Students should be able to define rings, ideals, and quotient rings. They should understand concepts like ring homomorphisms, isomorphisms, and the isomorphism theorems for rings. Polynomial rings and factorization in rings may also be covered.
4. **Field Theory:** Students should understand the properties of fields and be able to work with field extensions, including algebraic and transcendental extensions. The concept of algebraic closure and its significance may also be introduced.
5. **Proof-Writing Skills:** The course should help students develop their skills in reading and writing mathematical proofs. They should be able to construct rigorous and clear proofs for various algebraic properties and theorems.
6. **Applications:** Students should be able to identify and apply abstract algebra concepts in various mathematical and scientific contexts. This might include cryptography, coding theory, algebraic geometry, and more.
7. **Problem Solving:** The course should encourage students to solve problems that require the application of abstract algebra concepts. This helps them develop their critical thinking and problem-solving abilities.
8. **Historical and Cultural Context:** Depending on the instructor's approach, the course might also cover some historical development of abstract algebra and its impact on mathematics as a whole.

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Real Analysis

Learning Outcomes

Learning outcomes for a course in real analysis typically include a combination of mathematical skills, conceptual understanding, and problem-solving abilities. Real analysis is a branch of mathematics that deals with the rigorous study of real numbers and their properties. Here are some common learning outcomes for a real analysis course:

1. **Understanding of Real Numbers and Their Properties:**
   - Define and understand the properties of real numbers, including the concepts of order, completeness, and density.
   - Demonstrate knowledge of the Archimedean property and supremum/infimum.
2. **Sequences and Series:**
   - Understand the concepts of sequences and series of real numbers.
   - Analyze the convergence and divergence of sequences and series using various tests.
   - Determine the limits of sequences and series.
3. **Continuity and Differentiability:**
   - Define and analyze continuous functions and their properties.
   - Understand the concept of differentiability and its relationship to continuity.
   - Apply theorems such as the Mean Value Theorem and Rolle's Theorem.
4. **Riemann Integration:**
   - Define and understand the Riemann integral and its properties.
   - Compute definite integrals using the Riemann integral.
   - Analyze the relationships between continuity, inerrability, and differentiability.
5. **Sequences and Series of Functions:**
   - Study the convergence and point wise/uniform convergence of sequences and series of functions.
   - Understand the concept of uniform continuity.

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Linear Algebra

Learning Outcomes

Learning outcomes for a linear algebra course can vary depending on the level and depth of the course. Below are some common learning outcomes that students might achieve upon completing a linear algebra course:

Foundational Concepts:

1. **Vector Spaces:** Understand the fundamental concepts of vector spaces, including vector addition, scalar multiplication, linear independence, and spanning sets.
2. **Matrices and Operations:** Comprehend matrix representation, addition, subtraction, scalar multiplication, matrix multiplication, and transposition.
3. **Linear Transformations:** Recognize and analyze linear transformations, including their properties, kernel, and image.
4. **Basis and Dimension:** Grasp the notions of basis, dimension, and rank of a matrix, and their significance in determining the structure of vector spaces and transformations.
5. **Eigenvalues and Eigenvectors:** Define and compute eigenvalues and eigenvectors of matrices, and understand their applications in various fields.
6. **Determinants:** Calculate determinants of matrices, understand their geometric and algebraic interpretations, and apply them to solving systems of linear equations.
7. **Orthogonality:** Learn about inner products, orthogonality, and orthogonal projections, and their relevance in applications like least squares fitting and orthogonal diagonalization.

Applications:

1. **Solving Systems of Linear Equations:** Apply matrix methods to solve systems of linear equations, both numerically and analytically.
2. **Geometry and Linear Algebra:** Understand the geometric interpretation of vector operations, transformations, and concepts like dot and cross products.
3. **Least Squares Approximations:** Utilize least squares techniques to approximate solutions to over determined systems and model real-world data.
4. **Eigenvalue Applications:** Apply eigenvalues and eigenvectors to diagonalize matrices, solve differential equations, and analyze dynamical systems.
5. **Computer Graphics and Data Visualization:** Understand how linear algebra is used in computer graphics, image processing, and data visualization.

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Linear Algebra

Learning Outcomes

Advanced Topics (if covered):

1. **Singular Value Decomposition (SVD):** Explore the SVD and its applications in data compression, image processing, and dimensionality reduction.
2. **Jordan Canonical Form:** Study the Jordan canonical form as a generalization of diagonalization and its importance in linear systems.
3. **Vector Calculus and Differential Equations:** Apply linear algebra concepts to vector calculus and differential equations in scientific and engineering contexts.
4. **Linear Algebra in Abstract Algebra:** Understand how linear algebra concepts relate to abstract algebraic structures and group theory.

Skills Developed:

1. **Problem Solving:** Develop problem-solving skills by applying linear algebra concepts to various mathematical and real-world problems.
2. **Mathematical Reasoning:** Enhance mathematical reasoning and proof-writing abilities through the study of rigorous concepts.
3. **Abstraction and Generalization:** Learn to abstract and generalize problems, recognizing common structures and patterns.
4. **Computational Skills:** Gain proficiency in using computational tools (such as software packages) to perform matrix computations and solve numerical problems.

Ultimately, the specific learning outcomes can be tailored to the course's level (introductory, intermediate, and advanced), the intended audience, and the institution's educational goals.

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Multiple Integrals & Vector Calculus

Learning Outcomes

Certainly! Here are the learning outcomes typically associated with courses covering multiple integrals and vector calculus. These topics are often found in advanced calculus or calculus-based physics/engineering courses. Students who complete these courses should be able to:

Multiple Integrals:

1. **Understand Double Integrals:**
   - Define and evaluate double integrals over rectangular and non-rectangular regions in the plane.
   - Apply the concept of iterated integrals to solve problems involving double integrals.
2. **Change of Variables:**
   - Apply the change of variables theorem to transform double integrals from one coordinate system to another (e.g., Cartesian to polar, polar to rectangular).
   - Solve problems involving change of variables to simplify integration.
3. **Surface Area and Surface Integrals:**
   - Define and compute surface area for parametrically defined surfaces.
   - Compute surface integrals of scalar and vector fields over surfaces using parametric representations.
4. **Triple Integrals:**
   - Define and evaluate triple integrals over various types of regions in three-dimensional space.
   - Apply iterated integrals in different orders to solve problems involving triple integrals.
5. **Applications:**
   - Apply multiple integrals to compute physical quantities such as mass, center of mass, moments of inertia, and double integrals in probability and statistics.

Vector Calculus:

1. **Vector Fields and Line Integrals:**
   - Define and understand vector fields and their graphical representations.
   - Compute line integrals of scalar and vector fields along curves and paths.
   - Apply line integrals to calculate work done by a force field along a path.
2. **Conservative Fields and Potential Functions:**

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Multiple Integrals & Vector Calculus

Learning Outcomes

- Define conservative vector fields and understand their properties.
- Determine if a vector field is conservative and find potential functions for such fields.
- Apply the Fundamental Theorem of Line Integrals.

3. **Green's Theorem:**
   - State and apply Green's Theorem to evaluate line integrals over closed curves and double integrals over regions in the plane.
   - Understand the relationship between line integrals and double integrals using Green's Theorem.
4. **Divergence and Curl:**
   - Define and compute the divergence and curl of vector fields.
   - Interpret the physical meanings of divergence and curl in terms of flow and rotation.
5. **Stokes' Theorem:**
   - State and apply Stokes' Theorem to relate line integrals of vector fields over closed curves to surface integrals over surfaces bounded by those curves.
6. **Divergence Theorem:**
   - State and apply the Divergence Theorem (Gauss's Theorem) to relate flux integrals of vector fields across closed surfaces to volume integrals over the regions enclosed by those surfaces.
7. **Applications:**
   - Apply vector calculus concepts to solve problems in physics, engineering, and other fields, such as electromagnetism, fluid dynamics, and potential theory.

These learning outcomes should give you a comprehensive understanding of multiple integrals and vector calculus, enabling you to tackle a wide range of mathematical and applied problems in various disciplines.

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Integral transforms

Learning Outcomes

Learning outcomes for Laplace transforms generally cover a range of concepts and skills related to the theory and application of Laplace transforms in mathematics and engineering. Here are some typical learning outcomes for studying Laplace transforms:

Knowledge and Understanding:

1. **Definition and Properties:** Understand the definition of the Laplace transform, including its linearity, shifting, scaling, and differentiation properties.
2. **Region of Convergence (ROC):** Comprehend the concept of the region of convergence and how it determines the validity of the Laplace transform for a given function.
3. **Inverse Laplace Transform:** Understand the concept of the inverse Laplace transform and its relationship with recovering the original function from its Laplace transform.
4. **Partial Fraction Decomposition:** Learn how to perform partial fraction decomposition to simplify complex rational functions in the Laplace domain.

Skills:

1. **Laplace Transform Calculations:** Develop the ability to calculate Laplace transforms using various properties, including piecewise-defined functions, unit step functions, unit impulse functions, and trigonometric functions.
2. **Inverse Laplace Transform Calculations:** Acquire the skill to perform inverse Laplace transforms to find the original function using methods such as partial fraction expansion, completing the square, and convolution.
3. **Solving Differential Equations:** Apply Laplace transforms to solve ordinary differential equations (ODEs) with constant coefficients and initial conditions, transforming them into algebraic equations in the Laplace domain for easier solution.
4. **System Analysis:** Learn to analyze linear time-invariant systems in the Laplace domain, including finding the system response to various input signals such as step, ramp, impulse, and sinusoidal inputs.
5. **Transfer Functions:** Understand the concept of transfer functions and how they relate input and output in the Laplace domain, and be able to use transfer functions for system analysis and control design.

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Integral transforms

Learning Outcomes

Applications:

1. **Engineering and Physics:** Apply Laplace transforms to model and solve real-world problems in fields such as electrical engineering, control systems, mechanical engineering, and physics.
2. **Circuit Analysis:** Use Laplace transforms to analyze and solve electrical circuits with complex components and dynamic behavior.
3. **Control Systems:** Apply Laplace transforms in the analysis and design of control systems to understand stability, transient response, and steady-state behavior.
4. **Signal Processing:** Utilize Laplace transforms for signal analysis, filtering, and system characterization in the frequency domain.
5. **Mechanical Systems:** Apply Laplace transforms to model and analyze mechanical systems with dynamic components and initial conditions.

By achieving these learning outcomes, students and learners will have a solid understanding of Laplace transforms and their applications, enabling them to tackle a wide range of mathematical, engineering, and physical problems efficiently.

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GOVERNMENT DEGREE COLLEGE PATTIKONDA

Department of Aqua Culture Technology-Course Outcomes

Title of the Course: Basic Principles of Aquaculture

CO-1

Understands the concept of blue revolution and different aquaculture systems

CO-2

Understands the pond ecosystem and different types of fish ponds

CO-3

Practices the steps of pond preparation and pond management practices.

Title of the Course:Biology of FIN Fish and SHELL Fish

CO-1

A student learns and understands the nutritional requirements of cultivable fishes and different types of feed and feeding methods of fish.

CO-2

The techniques of fish feed manufacturing and storage method,

CO-3

The concept of fish feed additives, non-nutrient ingredients and different nutritional deficiency symptoms of fish.

CO-4

The students will understand about the poverty in our country. So manypeople have no livelihood. So they are suffering very much. By studying this lession, thestudents will think how to remove this evil from the society.

Title of the Course: Fish Nutrition and Feed Technology

CO-1

Students understands the prospects and scope of fresh water aquaculture at various levels

CO-2

Explain the practices involved in carp culture

CO-3

Understands the culture of cold water and air breathing fish

CO-4

The culture practices of prawn

CO-5

The culture of different brackish water species

Title of the Course: Fresh Water and Brakish Water Aquaculture

CO-1

Students understands the prospects and scope of fresh water aquaculture at various levels

CO-2

Explain the practices involved in carp culture

CO-3

Understands the culture of cold water and air breathing fish

CO-4

The culture practices of prawn

CO-5

The culture of different brackish water species

Title of the Course: Fish Health Management & Fisheries Economics

CO-1

Learns about the diseases of fin fish and shell fish.

CO-2

Learns about the fish health management strategies.

CO-3

Understands and learns different fisheries economic policies.

CO-4

Knows about the various schemes for the welfare of fishermen community.

Department of Botany

Botany-Course Outcomes

Title of the Course: Fundamentals of Microbes and Non-vascular Plants

CO-1 The students will be able to understand the origin of life on the earth.

CO-2 Illustrate diversity among the viruses and prokaryotic organisms and can categorize them.

CO-3 Classify fungi, lichens, algae and bryophytes based on their structure, reproduction and life cycles.

CO-4 Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.

CO-5 Recall and explain the evolutionary trends among amphibians of plant kingdom for their shift to land habitat.

CO-6 Evaluate the ecological and economic value of microbes, thallophytes and bryophytes.

Title of the Course : Basics of Vascular plants and Phytogeography

CO-1 The students will be able to Classify and compare Pteridophytes and Gymnosperms based on their morphology, anatomy, reproduction and life cycles.

CO-2 Justify evolutionary trends in tracheophytes to adapt for land habitat

CO-3 Explain the process of fossilization and compare the characteristics of extinct and extant plants.

CO-4 Critically understand various taxonomical aids for identification of Angiosperms.

CO-5 Analyze the morphology of the most common Angiosperm plants of their localities and recognize their families.

CO-6 Evaluate the ecological, ethnic and economic value of different tracheophytes and summarize their goods and services for human welfare.

Title of the Course : Anatomy and Embryology of Angiosperms, Plant Ecology and Biodiversity

CO-1 Understand on the organization of tissues and tissue systems in plants.

CO-2 Illustrate and interpret various aspects of embryology

CO-3 Discuss the basic concepts of plant ecology, and evaluate the effects of environmental and biotic factors on plant communities.

CO-4 Appraise various qualitative and quantitative parameters to study the population and community ecology.

CO-5 Correlate the importance of biodiversity and consequences due to its loss.

CO-6 Enlist the endemic/endangered flora and fauna from two biodiversity hot spots in India and assess strategies for their conservation.

Title of the Course : Plant Physiology and Metabolism

CO-1 Comprehend the importance of water in plant life and mechanisms for transport of water and solutes in plants.

CO-2 Evaluate the role of minerals in plant nutrition and their deficiency symptoms.

CO-3 Interpret the role of enzymes in plant metabolism.

CO-4 Understand the light reactions and carbon assimilation processes responsible for synthesis of food in plants.

CO-5 Evaluate the physiological factors that regulate growth and development in plants. Examine the role of light on flowering andexplain physiology of plants under stress conditions

Title of the Course : Cell Biology, Genetics and Plant Breeding

CO-1 Can distinguish prokaryotic and eukaryotic cells and design the model of a cell.

CO-2 Understands the organization of a eukaryotic chromosome and the structure of genetic material.

CO-3 Demonstrate techniques to observe the cell and its components under a microscope and techniques to observe the cell and its components under a microscope.

CO-4 Elucidate the role of extra-chromosomal genetic material for inheritance of characters. Evaluate the structure, function and regulation of genetic material.

CO-5 Understand the application of principles and modern techniques in plant breeding.

CO-6 Explain the procedures of selection and hybridization for improvement of crops.

Title of the Course : Plant Ecology & Phytogeography

CO-1 Learner can Collect different soils, study their texture

CO-2 Student can understand the dynamics of Ecosystem

CO-3 Students can observing and identify the polluted water bodies and find remedies for their cleaning.

CO-4 Student can study the man's impact on ecosystem.

CO-5 Learners can understand the value of biodiversity and its conservation methods.

CO-6 Learner can understand different Phytogeographic regions of the world and India and appreciate its value.

Title of the Course : Plant Tissue Culture and its Biotechnological Applications

CO-1 Students can understand the In vitro initiation of callus on artificial medium

CO-2 Students acquire the comprehensive knowledge on rDNA technology.

CO-3 Students are enlightened with the applications of Biotechnology (whether it is a boon or bane to the society)

CO-4 Students can learn the growth patterns, vegetative characteristics of Bt. cotton and identify the features of its pest resistance.

Title of the Course : Biological Instrumentation and Methodology

CO-1 Student understands the image related techniques like Microscopy, chromosomal banding, chromosomal painting, Fish technique

CO-2 Students can understand the Spectrophotometric techniques, Instrumentation: ultraviolet and visible spectrophotometry spectrophotometers), Mass spectroscopy, Infrared spectrometers - Luminometry and densitometry.

CO-3 Learner understands the Chromatographic techniques: Principle and applications

CO-4 Learner understands the principle and working of Electrophoresis technique

CO-5 Student is acquainted with the Knowledge about common toxic chemicals and safety measures in their handling.

CO-6 Students get better understanding regarding Centrifugation: Principles, types of centrifuges

Title of the Course : Mushroom Culture and Technology

CO-1 Identify and collect the naturally growing edible mushrooms

CO-2 Students will be much aware of the poisonous mushrooms and their effect on the health of the consumers

CO-3 Students will understand the spawn production compost preparation, bed preparation and inoculation techniques of spawn.

CO-4 Students will master the art of Mushroom cultivation and Students will assimilate the post harvest storage techniques of mushrooms

CO-5 Identify and understand the Diseases of mushrooms

Course outcomes

B.Sc: Programme Outcomes

Students admitted in to B.Sc. Programme are expected to acquire the following outcomes.

 Students understand the basic scientific principles and theories related to various phenomena in their disciplines and their relevance in the day-to-day life

 Students develop demonstrating comprehensive knowledge and understanding of one or more other disciplines that form a part of an undergraduate programme of study.

 Students acquire skills related to scientific thinking, research, a sense of inquiry and capability for asking relevant and appropriate questions, synthesizing and articulating; ability to recognize cause- and- effect relationships.

 Students develop the team spirit and co-ordination in students through experiential and investigative laboratory learning .

 Students develop social interaction by working with diverse teams effectively and respectfully facilitating cooperative or coordinated effort together as a group or a team in the interests of a common cause.

 Students develop scientific temper, reasoning ability and the ability to act with an informed awareness of issues and participate in civic life through volunteering which can prove to be more beneficial for nation building.

 Students acquire critical thinking and problem solving skills by performing experiments in science laboratories, thinking, analyzing, interpreting the data and reporting the results to draw logical conclusions, thereby inculcates one's learning to real life situations.

 Students inculcate research temper and become self-employed in organic farming, mushroom cultivation, medicinal plant products and vermin composting etc. the basis of science for coherent understanding of the academic field to pursue multi and inter disciplinary.

 Students understand the eco system and its protection by understanding the issues related to nature, environmental contexts, sustainable development with a focus on environmental justice.

 Students after graduation have several career and employment opportunities such as research firms, agriculture industry, health care industry, pharmacy industry, chemical industry, diagnostic laboratories, software companies, banks, higher studies etc.

Programme Specific Outcomes of Botany

PSO-1 Understands the Morphological diversity of plant species in water andSoil of this globe.

PSO-2 Describe Ecological and Evolutionary features of the flora

PSO-3 Understand the different types of plant species and their Economic Importance.

PSO-4 Know the scope of Paleo botany, types of fossils and its role in global Economy.

PSO-5 Knowledge about identify and analyze scientific problems and Environmental issues pertaining to Pollution.

PSO-6 Focus on green initiatives to sustain and conserve the nature.

PSO-7 Students can get employment in Plant based food and Biotechnological Industries

Govt Degree College, PATTIKONDA

Department of Chemistry

Program outcomes: (B.Sc.)

PO1: Understand the Basic Concept of Chemistry, nomenclature, Isomers, Projection formulae & importance of chemistry, solution properties role of essential metal cations in biochemical process

PO2: Perform the practical's in laboratory as per procedure in hand book of chemistry, practical preparation of different concentrations of solution make observation,rogram Outcomes(Pos)calculation, graph plotation & in some cases identification of given compounds by chemical methods.

PO3: Analysis and identification of inorganic acidic and basic radicals and rare earth metals.

PO4: Understanding role of chemistry in everyday of life.

Programme specific outcomes: (B.Sc.)

PSO1: Classification of organic compound in three dimensional way.

PSO2: Identification of acidic, basic radicals.

PSO3: Classification as organic or inorganic compounds.

PSO4: Nomenclature of organic and inorganic compounds.

PSO5: Identification of acidic, basic & neutral compounds.

PSO6: Determination of hardness of water and total dissolve solids.

PSO7: Determination of physical properties of matter such as viscosity, surface tension, magnetic susceptibility, boiling point, melting point, optical density.

Program outcomes(sem-1)

.At the end of the course,the student will be able to;Understand the basic concepts of p- block elements

1.Explain the difference between solid ,liquid andgases in terms of intermolecular interaction.

2.Apply the concepts of gas equations,,pH and electrolytes while studying other chemistry courses

3.Understand the basic concepts of qualitative analysis of inorganic mixture

4.Use glassware ,equipment and chemicals and follow experimental procedures in the laboratory.

5.Apply the concepts of common ion effect,solubility,product,and concepts and related to qualitative analysis

2]Program Outcomes(SEM-2)

1.Understand and expain the differential behaviour of organic compounds based on fundamental concepts learnt

2.formulate the mechanism of organic reaction by recalling and correlating the fundamental properties of the reactants involved

3.Learn and identify many organic reaction mechanism included free radical substitution,electophilic addition and electrophilic aromatic substitution.

4.Correlate and describe the stereochemical properties of organic compounds and reactions.

5.Use glassware,,equipment and chemicals and follow experimental procedures in the laboratory

6.Understand and explain the volumetric analysis based on fundamental concepts learnt in ionic equilibria

7.Learn and identify the concepts of a standard solutions,primary and secondary standards

8.Facilitate the learner to make solutions of various molar concentration.This may incude;The concept of mole;converting moles to grams;converting grams to moles;Defining concentration;dilute of solution

PROGRAM OUTCOMES[SEM-3]

1.Understand preparation ,properties and reaction of haloalkanes,halo arenes and oxugen containing functional groups.

2.use the synthetic chemistry learnt in this course to do functional group transerformation .

3.To propose plausible mechanism for any relavant reaction

4 How to use glassware and chemicals and follow experimrntal procedures in the laboratory

5.How to calculate limiting reagent ,theoretical yield and percent yield

6.How to engage in the safe laboratory practises by handling laboratory glassware ,equipment ,and chemical reagents appropriately

7.How to despose of chemicals in asafe and responsible manner

8.How to performe common laboratory techniques including reflux,distillation,recrystallisation,vaccum filtration

Program outcomes(sem-4)

At the end of the course, the student will be able to;

To learn about the law of of absorption of flight energy biomolecules and the subsequent photo chemical reactions

To understand the concept of quantum efficiency and mechanism of photochemical reactions

Use glassware equipment and chemicals and follow experimental procedures in the laboratory

Determine melting and boiling points of of organic compounds

Understand the the application of concepts of different organic reactions studied in theory part of organic chemistry

<u>Program outcomes (sem- 5)</u>

At the end of the course the student will be able to

Understand concepts of boundary conditions and quantization probability distribution most probable values uncertainty and expectation values

Application of quantization to spectroscopy

Various types of spectra and there use in structure determination

Use glassware equipment and chemicals and follow experimental preceders in the the laboratory

Apply concepts of electrochemistry in experiments

Be familiar with electroanalytical methods and techniques in analytical chemistry which study and analyte by measuring the potential and current it in in an electrochemical cell containing the analyte

Government Degree College
(Accredited By Naac With 'B' Grade)
Pattikonda,Kurnool (Dt),A.P.518380.

Department of Computer Science

Sem-1

PROBLEM SOLVING IN C

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 to write a C ″ language program.

Sem-2

DATA STRUCTURES USING C

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

Sem-3

DATABASE MANAGEMENT SYSTEMS

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 database using ER Diagrams and design database schemas based on the model.

5. Create a small database using SQL.

6. Store, Retrieve data in database.

Sem-4

OBJECT ORIENTATED PROGRAMMING THROUGH JAVA

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

Sem-4

OPERATING SYSTEMS

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. Comprehenddifferent 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

Sem-5

WEB INTERFACE DESIGNING TECHNOLOGIES

Learning Outcomes:

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

1. Understand and appreciate the web architecture and services.
2. Gain knowledge about various components of a website.
3. Demonstrate skills regarding creation of a static website and an interface to dynamic website.
4. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

Sem-5

WEB APPLICATIONS DEVELOPMENT USING PHP & MYSQL

Learning Outcomes:

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

1. Write simple programs in PHP.
2. Understand how to use regular expressions, handle exceptions, and validate data using PHP.
3. Apply In-Built functions and Create User defined functions in PHP programming.
4. Write PHP scripts to handle HTML forms.
5. Write programs to create dynamic and interactive web based applications using PHP and MYSQL.
6. Know how to use PHP with a MySQL database and can write database driven web pages.

PROBLEM SOLVING IN C

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5. Write programs to create dynamic and interactive web based applications using PHP and MYSQL.
6. Know how to use PHP with a MySQL database and can write database driven web pages.

Course I Micr Economic Analysis

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate The following cognitive abilities and psychomotor skills.

1.Remembers and states in a systematic way (Knowledge)

a. differences between microeconomic analysis and Macroeconomic analysis

b..Various laws and principles of microeconomic theory under Consumption,

2.ExplainL(understanding)

a. Various terms and concepts relating to microeconomic analysis With the help of examples of real life

b. equilibrium and consumer's surplus using Indifference curve analysis.

C.various laws and principles of consumption, production, and Income distribution

d.determination. of price and output discriminating different Market conditions in short term and long term

3. examines using data and figures (analysis and Evaluation)

a.Various laws and principles of microeconomic analysis and Market conditions

b.Application of the concept of demand elasticity and its relation With Average and Marginal Revenue

c.The relationship between average and marginal cost/revenue both long term and short term

4. Draws critical diagrams and graphs to explain and examine the application of various laws and principles of microeconomic analysis

MACRO ECONOMIC ANALYSIS

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate The following cognitive abilities and psychomotor skills.

1.Remembers and states in a systematic way (knowledge)

a. Various concepts, definitions, laws and principles of macroeconomic

b.Theory with reference to income, employment, money, Banking and finance

1. Explains (understanding)

a.The difference between various concepts and components of National income with illustrations and methods of measuring National income

b.Various terms, concepts, laws and principles, theories relating to Income, employment, consumption, investment, money, price-level and Phases of trade cycles

c.Functions of commercial banks and central bank, creation and Control of credit

3 . Critically examines using data and figures (analysis and evaluation)

a.In order to understand the interrelationship between various Components of national income

b.The theories of macroeconomics with reference to their Assumptions, implications and applicability

c.Empirical evidences of Consumption and Investment Functions And factors influencing them

2.Draws critical formulae, diagrams and graphs.

a. consumption and investment functions; concepts of multiplier and accelerator

b. price indices, inflation and trade cycles

Development Economics

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the Following cognitive abilities and psychomotor skills.

1.Remembers and states in a systematic way (Knowledge) Various concepts and definitions and indicators relating to economic Growth and Development including recent developments

2.Explains (understanding)

a.Distinction between growth and development with examples

b.characteristics of developing and developing economies and Distinction between the two

c.Factors contributing to development, Choice of Techniques and a Few important models and strategies of growth

3. critically examines using data and figures (analysis and evaluation)

a.The theoretical aspects of a few models and strategies of economic Growth

b.Role and importance of various financial and other institutions in the Context of India’s economic development

4.Draws critical diagrams and graphs.

a . To explain the models and strategies

b.To highlight empirical evidences to support the strategies

ECONOMIC DEVELOPMENT- INDIA AND ANDHRA PRADESH

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the Following cognitive abilities and psychomotor skills.

1.Rember and states in a systematic way (Knowledge)

a. Leading issues of Indian economic development with reference to Potential for growth, obstacles and policy responses

b. outlays and achievements of economic plans and growth Strategies

2. (understanding)

a.available Resources, demographic issues, general problems of Poverty and unemployment and relevant policies

b.sector specific problems, remedial policies and their effectiveness relating to Agriculture and Industrial Sectors of Indian and AP economy and infrastructure issues of AP economy

c.Indian Tax system, recent changes, issues of public expenditure and Public debt, recent finance commissions and devolution of funds

d.Major issues of economic development of Andhra Pradesh after Bifurcation and Central assistance

3.Critically examines using data and figures (analysis and evaluation)

a.leading issues of current importance relating to India and AP Economy, major policies and programmes

4.Uses official statistical data and reports including tables and graphs

à.To explain the achievements of Indian economy with reference to the Objectives of planning and policy and make critical evaluation

STATISTICAL METHODS FOR ECONOMICS

LEARNING OUTCOMES FOR THE COURSE

At the end of the course, the student is expected to demonstrate the following cognitive abilities and psychomotor skills.

1. Remembers and states in a systematic way (Knowledge)

a. the definitions, terms and their meaning relating to statistical methods

b. various formulae used to measure central tendency, correlation regression and Indices

2. Explains (understanding)

a. Importance of statistics and its applications

b. The method of classification of primary data

c. Uses of Correlation and Regression analysis, time series and index numbers in economic analysis

3. Analyses and solves using given data and information (analysis and evaluation)

a. different kinds of statistical problems using various principles and formulae relating to central tendency, correlation, regression, time series and indices

b. to interpret data and suggest solutions to economic problems

4. Draws critical diagrams and graphs.

a. Histogram, Frequency Polygon and Frequency Curve

b. More than cumulative and less than cumulative frequency curves

c.Different types of Bar diagrams

d. Pie Diagram and its uses in economic analysis

Course 6B: **UrbanEntrepreneurship and MSMEs**

(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

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

1.Explain the basic theories and essentials of entrepreneurship

2.Identify and analyze the entrepreneurship opportunities available in local urban area.

3.Apply the theories of entrepreneurship to the conditions of local urban area And formulate appropriate business ideas.

4.Demonstrate practical skills that will enable them to start urban entrepreneurshipCourse

7B: Retail and Digital Marketing

(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

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

1. Explain the concepts and principles about the retail and digital marketing;

2. Identify and analyses the opportunities related to retail and digital marketing available in the local area;

3. Apply the concept to formulate the new strategies related to retail and digital marketing;

4. Demonstrate the practical skills required to get employment in retail and digitalmarketing or to start own digital marketing.

Course Outcomes
English

Title of the Course: English Praxis Course-I

- **CO-1 Use grammar effectively in writing and speaking**
- **CO-2 Demonstrate the use of good vocabulary**
- **CO-3 Demonstrate an understating of writing skills**
- **CO-4 Acquire ability to use Soft Skills in professional and daily life**
- **CO-5 Confidently use the tools of communication skills**

Title of the Course: English Praxis Course-II

- **CO-1 Use reading skills effective**
- **CO-2 Comprehend different texts**
- **CO-3 Interpret different types of texts**
- **CO-4 Analyze what is being read**
- **CO-5 Build up a repository of active vocabulary**

Title of the Course: English Praxis Course-III

CO-1 Speak fluently in English

CO-2 Participate confidently in any social interaction

CO-3 Face any professional discourse

CO-4 Demonstrate critical thinking

CO-5 Enhance conversational skills by observing the professional interviews.

Government Degree College, Pattikonda

Kurnool-A.P-518380

Programme Specific Outcomes of English

PSO-1

Students will gain awareness about the best literary traditions of the world.

PSO-2

Understand India's age old literary and cultural tradition through their exposure to modern Indian vernacular literature in translation.

PSO-3

Students gain an understanding of the relations between culture, history and texts.

PSO-4

An exposure to various social and cultural traditions and through the reading of representative texts from different periods.

PSO-5

Students will be able to recognize and comprehend different varieties of English language and develop a writing style of their own.

PSO-6

Learning various language patterns, sentence structures and dialogue forms can help the students in real life in effectively communicating with others.

History- Course Outcomes

Title of the Course: Ancient Indian History & Culture (from Indus Valley Civil. to 13th AD)

CO-1 Identify and define various kinds of sources and understand how history books are framed.

CO-2 Compare and contrast various stages of progress from IVC to Vedic age and the Jain, Buddhist and Vedic faiths.

CO-3

Critically examines the nature of monarchic rule and develop comprehensive understanding of cultural evolution during ancient period.

CO-4

Increase the awareness and appreciation of Transition from Territorial States to Emergence of Empires.

Title of the Course: Medieval Indian History & Culture (1206 AD to 1764 AD)

CO-1 Understand the socio, economic and cultural conditions of medieval India

CO-2 Describe the advent of Islam in India and study the traces of political and cultural expansion of Turks & Afghans

CO-3 Students will understand the Administration, art and architecture of Vijayanagar Rulers, Mughals and also analyze the rise of the Marathas and the contribution of Shivaji

CO-4 Evaluate the establishment of the British rule in India and understand the dangerous consequences disunity at all levels.

Title of the Course: Modern Indian History & Culture (1764-1947 AD)

CO-1

Unearth the true nature of the British rule and its disastrous impact on Indian economy and society

CO-2

Assess the causes and effects of Reformation movements and also inspire the public to overthrow inequalities of the present day society

CO-3

Rise above petty parochial issues after understanding the sacrificial saga of freedom Struggle

CO-4

Evaluate the undercurrent of communal politics that led to India's partition and identify the enemies of India's integrity and sovereignty

Title of the Course: History & Culture of Andhra (From 1512 to 1956 AD)

CO-1

Students will understands the Interpretation of social and political and cultural transformation from medieval to modern Andhra

CO-2

Relate key historical developments during medieval period occurring in coastal Andhra and Telangana regions and analyze socio - political and economic changes under i rulers

CO-3

Outline the issues related to caste, women, widow remarriage, child marriage, social reforms and the laws and policies of colonial administration towards these issues

CO-4

Apply the knowledge of the regional history to understand the regional, linguistic and other cultural aspirations of the present day society.

Title of the Course: History of Modern World (From 15th Century AD to 1945 AD)

CO-1

Students will be able to demonstrate advanced factual knowledge of world histories, politics, and culture

CO-2

Evaluate the causes for the Glorious Revolution and American Revolution and identify the background for the evolution of human rights movement

CO-3

Know how the world wars affected people all over the world and the destruction they caused

CO-4

Develop the intellectual curiosity and habits of thought that will lead to life-long learning and continued engagement with European history, literature, culture, languages, and current affairs and acquire advanced international and intercultural competency through coursework in international studies.

B.A: Programme Outcomes

Students admitted in to B.A. Programme are expected to acquire the following outcomes.

Students get exposure to varied cultures, customs, traditions, literature, constitution, history, economics, political environment and sense of social service.

Students learn the different skills of effective communication and language competence i.e. reading, writing, listening and speaking another language with fluency.

Students develop analytical and critical thinking skills to the identification and resolution of problems within complex changing social, linguistic and literary contexts.

Students cultivate ethical and human values for the formation of egalitarian society which makes him a responsible citizen.

Students understand the basic concepts of polity and apply their central tenets to contemporary political problems and issues.

Students understand the international relations and its importance for building better society.

Students critically recognize the Social, Political, Economic, religious and cultural aspects of History and understands the background of our religion, custom and diversity of country.

Students acquire knowledge about theories of economic growth, development and issues of economic planning.

Students understands the world around them and it enable them to understand people, businesses, markets and governments and therefore respond to the threats and opportunities that emerge when things change.

Students imbibe leadership qualities that make them able administrators.

Programme Specific Outcomes of History

PSO-1.

After completion of this course they gather knowledge about the socio-cultural heritage of India and World as well.

PSO-2.

Help to grow national and international understanding among history students.

PSO-3.

Careers options for students to engage as educators, archivists, producers of multimedia material and even as researcher in historic Sites and Museums, Cultural Resources etc.

PSO-4.

History helps them in knowing the past people, their culture, their religions and their social systems and transforms them into responsible citizens to make a better future.

GOVERNMENT COLLEGE PATTIKONDA
DEPARTMENT OF PHYSICS

Programme Outcomes (POs)

Bachelor of Science (B. Sc)

PO 1	Demonstrate, understand and solve the major concepts in all disciplines of physics.
PO 2	Solve the problem and also think methodically, independently and draw a logical conclusion
PO 3	Employ critical thinking and the scientific knowledge to design, carry out, record and analyse the results of Physics experiments
PO 4	Create an awareness of the impact of Physics on the society, and development outside the scientific community
PO 5	To inculcate the scientific temperament in the students and outside the scientific community
PO 6	Use modern techniques of learning in both theory and practical

Course Outcomes

The course outcomes (CO) are mapped to the revised Bloom's Taxonomy using the following abbreviations:

R- Remembering, **U** – Understanding, **Ap**- Applying, **An**- Analyzing , **E**- Evaluating, **C**- Creating

Under Graduate Programmes

Bachelor of Science

Programme: BSc (Physics)

Programme Specific Outcomes (PSOs) for BSc (Physics)

Si.No	On completing B.Sc in physics, the student will be able to:
PSO 1	Gain the knowledge of Physics through theory and practical
PSO 2	Understand good laboratory practices and safety
PSO 3	Develop research-oriented skills
PSO 4	Make aware and handle the laboratory instruments/equipment
PSO 5	The students will develop problem-solving skills, experimental and data analysis skills in physics
PSO 6	Students learn various concepts which help them in understanding physical phenomenon in nature

Course Outcomes (COs): BSc Physics

Semester I

Course Title: MECHANICS, WAVES & OSCILLATIONS

Course Code: 20C1307A

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Analyse Newton's laws of motion, motion of variable mass system and its application to rocket motion	PSO6	An
CO 2	Apply the rotational kinematic relations, the principle and working of gyroscope and its applications.	PSO3	Ap
CO 3	Understand postulates of Special theory of relativity and its consequences such as length contraction, time dilation, relativistic mass and mass-energy equivalence.	PSO6 PSO2	U
CO 4	Examine phenomena of simple harmonic motion and the distinction between undamped, damped and forced oscillations and the concepts of resonance and quality factor with reference to damped harmonic oscillator.	PSO4	C
CO 5	Figure out the formation of harmonics and overtones in a stretched string and acquire the knowledge on Ultrasonic waves, their production and detection and their applications in different fields.	PSO1	R

Semester II

Course Title: WAVE OPTICS

Course Code: 20C2307A

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Remember the phenomenon of interference of light and its formation in Lloyd's single mirror due to division of wave front, Thin films, Newton's rings and Michelson interferometer due to division of amplitude.	**PSO2**	**R**
CO 2	Understand the difference between Fresnel's diffraction and Fraunhofer diffraction, observe the diffraction patterns in the case of single slit and the diffraction grating. : Describe the construction and working of zone plate and make the comparison of zone plate with convex lens.	**PSO6**	**U**
CO 3	Understand the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.	**PSO6**	**U**
CO 4	Apply the basic principle of laser, the working of He-Ne laser and Ruby lasers and their applications in different fields.	**PSO3**	**Ap**
CO 5	Apply the different aberrations in lenses and discuss the methods of minimizing them.	**PSO3**	**C**
CO6	Analyse the basic principles of fibre optic communication and explore the field of Holography and optics and their applications.	**PSO1**	**An**

Semester III

Course Title: HEAT AND THERMODYNAMICS

Course Code: 20C3307A

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law and transport phenomenon in gases	PSO2	U
CO 2	Gain knowledge on the first and the second law of thermodynamics, Carnot's engine, principles of refrigeration, concept of entropy.	PSO1	R
CO 3	Understand the various methods of production of plane, circularly and polarized light and their detection and the concept of optical activity.	PSO1 PSO6	R,U
CO 4	Differentiate between principles and methods to produce low temperature, liquefaction of helium gas and to understand the practical applications of substances at low temperatures.	PSO5	An
CO 5	Examine the nature of black body radiations and the basic theories.	PSO4	C

Semester- IV

Course Title: ELECTRICITY, MAGNETISM & ELECTRONICS

Course Code: 20C4307A

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Understand the Gauss law and its application to obtain electric field in different cases.	PSO1 PSO6	G,U
CO 2	Distinguish between the magnetic effect of electric current and electromagnetic induction and apply the related laws in appropriate circumstances.	PSO5	An
CO 3	Develop an understanding on the unification of electric and magnetic fields and Maxwell's equations governing electromagnetic waves.	PSO3	Ap

CO 4	Phenomenon of resonance in LCR AC-circuits, sharpness of resonance ,Q- factor, Power factor and the comparative study of series and parallel resonant circuits.	**PSO5**	**An**
CO 5	Describe the operation of p-n junction diodes, zener diodes, transistors and logic gates.	**PSO2**	**U**

Semester - IV

Course Title: MODERN PHYSICS

Course Code: 20C5307A

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	To understand the concepts of Atomic physics, molecular physics, basic elementary quantum mechanics and nuclear physics.	**PSO6**	**Ap**
CO 2	To familiarize the concepts of matter waves, Uncertainty principle and Schrodinger wave equation.	**PSO1**	**R**
CO 3	To study the properties of nucleus, nuclear models, nuclear detectors and elementary particles.	**PSO6**	**U**
CO 4	To analyse the types of materials, Miller indices and X-ray diffraction.	**PSO5**	**An**
CO 5	To create awareness on superconductors and their applications.	**PSO4**	C

Semester - V
semester - VI

Course Title: LOW TEMPERATURE PHYSICS

Course Code: 20C53076B

Si.No	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
CO 1	Identify various methods and techniques used to produce low temperatures in the Laboratory.	**PSO1**	**R**
CO 2	Acquire a critical knowledge on refrigeration and air conditioning.	**PSO2**	**U**
CO 3	Demonstrate skills of Refrigerators through hands on	**PSO6**	**U**

	experience and learns about refrigeration components and their accessories.		
CO 4	Understand the classification, properties of refrigerants and their effects on environment.	**PSO5**	**An**
CO 5	Comprehend the applications of Low Temperature Physics and refrigeration.	**PSO3**	**Ap**

Course Title: SOLAR ENERGY AND ITS APPLICATIONS

Course Code:20C53077B

Si.No	**On completing the course, the student will be able to:**	**PSOs addressed**	**Cognitive levels**
CO 1	Understand Sun structure, forms of energy coming from the Sun and its measurement.	**PSO1**	**R**
CO 2	Acquire a critical knowledge on the working of thermal and photovoltaic collectors.	**PSO6**	**U**
CO 3	Demonstrate skills related to callus culture through hands on experience.	**PSO1**	**R**
CO 4	Understand testing procedures and fault analysis of thermal collectors and PV modules	**PSO5**	**An**
CO 5	Comprehend applications of thermal collectors and PV modules.	**PSO5**	**C**

Department of Telugu

Title of the Course: Creative writing

CO-1

The skills learned through the study of Telugu literature can be converted into creative skills,

CO-2

Identify essence and importance of language, and also understand language is important to fortify the life of human beings as individuals and to strengthen various structures of the society.

CO-3

Gain knowledge on language and related skills.

CO-4

Can gain knowledge on various modern literary forms like poetry, story, essay as well as ancient poetry.

CO-5

Can obtain excellent employment opportunities in creative and print and electronic media fields. Can obtain skills in translation field.

Title of the Course: Ancient Telugu Poetry

CO-1

Recognize the uniqueness of ancient Telugu poetry. Get knowledge of Telugu culture and language at the time of Nannaya period and political ethics morals at epic period.

CO-2

Understanding the religious situations and languages of the period of Shiva Kavulu and also understand the religious conditions during that period. Can gain knowledge about Telugu nudikaram, proverbs, suktulu and folktales etc.

CO-3

Realizing the religious and philosophical conditions during the period of Tikkana Mahabharata and gain knowledge onTikkana poetic sculpture and drama.

Government Degree College, Pattikonda

Department of Zoology

Program Outcomes (POs):

The Learning Outcomes of the programme could be in consonance with the Bloom's Taxonomy, which includes –

PO1

Critical thinking: Able to understand and utilize the principles of scientific enquiry, think analytically, clearly and evaluate critically while solving problems and making decisions during biological study.

PO2

Effective communication: Able to formally communicate Scientific ideas and investigations of the biology discipline to others using both oral and written communication skills.

PO3

Social interaction: Able to develop individual behavior and influence society and social structure.

PO4

Effective citizenship: Able to work with a sense of responsibility towards social awareness and follow the ethical standards in the society.

PO5

Ethics: Ability to demonstrate and discuss ethical conduct in scientific activities.

PO6

Environment and Sustainability: Able to understand the impact of biological science in societal and environmental contexts and demonstrate the knowledge for sustainable development.

PO7

Self-directed and life-long learning: Able to recognize the need of life-long learning and engage in research and self-education.

Animal Diversity – Biology of Non-Chordata

Course Outcomes:

CO1

Describe general taxonomic rules on animal classification

CO2

Classify Protozoa to Coelenterata with taxonomic keys

CO3 Classify Phylum Platy helminthes to Annelida phylum using examples from parasitic adaptation and vermin composting

CO4

Describe Phylum Athropoda to Mollusca using examples and importance of insects and Mollusca

CO5

Describe Echinodermata to Hemi chordata with suitable examples and larval stages in relation to the phylogeny.

Animal Diversity – Biology of Chordates

Course Outcomes:

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 Protochordata to Mammalia.

Cell Biology, Genetics, Molecular Biology and Evolution

Course Outcomes:

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 several of aspects of genetics involved in sex determination, human karyotyping 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

Animal Physiology, Cellular Metabolism and Embryology

Course Outcomes:

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

CO5

Describe the key events in early embryonic development starting from the formation of gametes up to gastrulation and formation of primary germ layers.

Immunology and Animal Biotechnology

Course Outcomes:

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.

Poultry Management-I: Paper 6C

COURSE OUTCOMES

CO-01

The students having rigorous practical experience in an organized institutional poultry farm for a period of 4-5 months became self-confident to go for entrepreneurship on poultry.

CO-02

Be a good advisor, planner, and policymaker.

CO-03

Development of project involving small scale industries on poultry became easier.

CO-04

Economics of the farm can be better assessed by these professional involved in skill course on poultry.

Poultry Management-II: Paper 7C

COURSE OUTCOMES

CO-01

The students having rigorous practical experience in an organized institutional poultry farm for a period of 4-5 months became self-confident to go for entrepreneurship on poultry.

CO-02

Be a good advisor, planner, and policymaker.

CO-03

Development of project involving small scale industries on poultry became easier.

CO-04

Economics of the farm can be better assessed by these professional involved in skill course on poultry.