அத்தி-1: விளக்க விளக்கம்

தேசியாசை: மகாநாட்டு பாலியார்த்து - பாலியார் பாலியார் அருங்காட்சியால்.

கல்லறை படிப்புருத்தி - சிலிகோலின்

மூலத்தை: பரவலாக பரவலாக - அபிஷேகாளி - கருப்பு.

சுற்றுக்கை: கல்லறை வசதியை வசதியை - கிளையமை விளை

அறிவியல்: காலம் காலம் பரவலாக முழுக்காகவும் - குறுகிய.

பார்வைணவச்: காலம் சிற்றவான - சமநிலை சிற்றவானத்தின்

அறிவியல்: அறியப்படுகிற - மறுந்த குறுகிய சிற்றவானத்தின்

காலம்: சமநிலை சிற்றவான - சமநிலை சிற்றவானத்தின்

கருப்பு மூலத்தை குறுகிய - கருப்பு மூலத்தை

அத்தி-2: அற குறிப்பிட்டு

1. குறுகியம் - சூர்ய நிற்செம்பாது நூற்றாண்டு 20

2. சுற்றுக்கையிலுக்குக் - சூர்ய நிற்செம்பாது நூற்றாண்டு

3. விளக்கம் - சூர்ய நிற்செம்பாது நூற்றாண்டு

அத்தி-3: குறிப்பிட்டு

1. விளக்கம் - அபிஷேகாளி

2. முற்புள்ள செய்ய - செய்ய விளக்கங்கள்

3. முற்புள்ள செய்ய விளக்கங்கள் - விளக்கங்கள் செய்ய விளக்கங்கள்

அத்தி-4: விளக்கம்

1. பரவலாக முற்புள்ள செய்ய - விளக்கம்

2. முற்புள்ள செய்ய விளக்கங்களும் - விளக்கங்கள் விளக்கம்

3. விளக்கம் - விளக்கம்

4. விளக்கம் - விளக்கம்

5. விளக்கம் - விளக்கம்

அத்தி-5: விளக்கம்

1. விளக்கம் - விளக்கம்

2. விளக்கம் விளக்கம்

பார்வைணவச்: குறுகிய சிற்றவான - குறுகிய சிற்றவான - குறுகிய சிற்றவான - குறுகிய சிற்றவான - குறுகிய சிற்றவான.
Objectives: To enable the learners to acquire English language skills at a faster pace.
To train the learners to reflect on the literary works and communicate flexibly.

UNIT I:
Prose: Google Guys (Extract) – Richard L Brandt
Poetry: The Blind Pedlar – Osbert Sitwell
Short Story: A Garden So Rich – Christie Craig
Vocabulary: Prefixes, Antonyms, Sentence Completion
Grammar: Articles, Adverbs, Pronouns
Composition: Proverb Expansion

UNIT II:
Prose: Happiness 101 – Geeta Padmanabhan
Poetry: An Old Woman – Arun Kolatkar
Vocabulary: Suffixes, Analogies
Grammar: Nouns, Adjectives
Composition: Dialogue Writing

UNIT III:
Prose: Structured Procrastination – John Perry
Short Story: The Umbrella Man – Roald Dahl
One-Act Play: The Boy Who Stopped Smiling – Ramu Ramanathan
Vocabulary: Synonyms, Euphemisms, Word Definitions
Grammar: Verbs, Conjunctions and Interjection, Indirect/Reported Speech

UNIT IV:
Poetry: No Sentence – Anjum Hassan
One-Act Play: While the Auto Waits- O’ Henry
Vocabulary: Words Often Confused, Anagrams
Grammar: Prepositions, Voice- Active and Passive
Composition: Letter Writing- Informal

UNIT V:
Short Story: The Bird – Amar Jalil
One-Act Play: The Cellphone Epidemic – Claudia I. Haas
Vocabulary: Portmanteau Words, One Word Substitute
Grammar: Questions, Pronunciation
Composition: Letter Writing- Formal

Prescribed Texts:

Reference
Syamala, V. English for Communication. 2006. Emerald Publishers: Chennai
**Scope:** On successful completion of this course the students gain clear knowledge about the matrices, convergence, uniform convergence and Summation of series etc which provides the basics for Analysis.

**Objectives:** To enable the students to learn about the matrices, convergence and divergence of the series and to find the roots for the different types of the equation.

**UNIT I**
Basic concept – Eigen values and eigen vectors- Properties of eigen values and eigen vectors – Diagonalisation of a matrix – Orthogonal Matrices – Cayley-Hamilton theorem (Statement only) – Verification.

**UNIT II**
Convergency and Divergeny of series – Series of positive terms – Comparison tests – Cauchy’s condensation test - D’Alemberts Ratio test –Uniform convergence.

**UNIT III**

**UNIT IV**
Theory of equations: Remainder theorem – Roots of an equation – Relations between the roots and coefficients of equation – Symmetric function of roots

**UNIT V**
Descarte’s rule of signs – Rolle’s theorem – Multiple roots –Integral roots.

**TEXT BOOKS**


**REFERENCES**


Scope: On successful completion of course the learners gain about the evolutes and envelopes, different types of integrations, its geometrical application, proper and improper Integration etc which play a vital role in applied Mathematics.

Objectives: To enable the students to learn and gain knowledge about curvatures, integrations and its geometrical applications.

UNIT I


UNIT II

Curvature and Radius of curvature – Radius of curvature in Cartesian co-ordinates – Radius of curvature in parametric co-ordinates – Centre and circle of curvature– Evolutes and Envelopes

UNIT III

Integration: Introduction – Definite Integral – Methods of Integration – Integrals of functions containing linear functions of X – Integrals of functions involving $a^2 \pm x^2$ – Integrals of functions of the form $f(x)^n \cdot x^{n-1}$, $[f(x)]^n \cdot f'(x)$, $F[f(x)] \cdot f'(x)$ – properties of Definite Integral – Integration by parts.

UNIT IV

Multiple Integral: Introduction – Evaluation of Double and Triple integrals – Change of order of integration from Cartesian coordinates to polar coordinates.

UNIT V

Beta and Gamma integrals-their properties, relation between them- evaluation of multiple integrals using Beta and Gamma functions.

TEXT BOOKS


REFERENCES


Scope: A good grasp in Physics opens up vistas in technology, Astrophysics, Astronomy etc. There are number of cancer opportunities in astrophysics, geophysics, and meteorology by acquiring specialized knowledge. The course provides employability skills such as ability to work with details, credibility, logical reasoning etc.

Objectives: Many basic natural processes in nature can be explained by physics. So it is essential to know basic physics any science student. This paper is aimed at giving some insight into the basic physics, theory as well as experiment.

UNIT – I
MODERN PHYSICS
Debroglie’s concept of matter waves- Debroglie’s wavelength – Characteristics of Debroglie’s matter waves- calculation of Debroglie’s wavelength of material particles like electrons – experimental study of matter waves- Thomson’s experiment

UNIT – II
ANALOG ELECTRONICS
Construction, characteristics and applications of Zener diode, Photo diode, Light emitting diode (LED); working, efficiency, ripple factor and advantages of a full wave rectifier- Qualitative analysis of a common emitter amplifier; Phase reversal of the output voltage; advantage of common emitter amplification circuit.

UNIT – III
AMPLIFIERS
Circuit symbol polarity conventions and virtual ground or summing point of an operational amplifier; characteristics of an ideal operational amplifier; amplifier as an adder, subtractor, differentiator and integrator.

UNIT – IV
DIGITAL ELECTRONICS
Number systems-Binary Octal-Hexa decimal-ASCII and EBCDIC- Redundant coding for error detection and correction. Basic logic design using digital integrated circuits. Truth tables, Boolean algebra, Simple arithmetic circuits-exclusive half adder-full adder-half subtractor, full subtractor. NAND AND NOR As Universal Building Block-De Morgan’s theorem and its proof.

UNIT – V
OPTICS
TEXT BOOKS
1. Murugesan. R., Modern Physics, S.Chand & CO, New Delhi


REFERENCES:


Any 8 Experiments

1. Young’s Modulus-Non Uniform bending-Optic lever
2. Young’s Modulus-Static cantilever
3. Rigidity modulus- Dynamic method
4. Acceleration due to gravity-Compound pendulum
5. Refractive Index of a liquid prism-Spectrometer
6. Refractive Index of a solid prism (I-d) curve-Spectrometer
7. Co-efficient of thermal conductivity-Lee’s disc method
8. Wavelength of spectral lines -Grating-minimum deviation method-Spectrometer.
9. Characteristics of a Junction diode
10. \( \mu \) of a lens-Newton’s ring method
11. Thickness of a thin wire-Air wedge method
12. Frequency of tuning fork and density of solid and liquid – Melde’s String
Scope

The students fit for the future time and to develop a sense of competitive spirit, co-operation, leadership, diligence, punctuality, and team-spirit as well as to provide a backdrop for the development of their creative talents.

Objectives

To improve the integral development of human beings
To train the students towards sustainable lifestyle
To create awareness about the values and their significance and role
To imbibe the concept of discipline and freedom

UNIT – I

Concept of Self, self-esteem and self-confidence. Concept of personality, determinants and disorganisation of it. Personality development – meaning.

UNIT – II

Goal setting – meaning and importance; steps in goal setting Manners and Etiquette – meaning need and importance; means to improve. Positive thinking.

UNIT – III

Discipline – meaning. Concept of Roles and Responsibility Time Management – Meaning and steps for effective time management.

UNIT – IV

Interpersonal relationship – meaning and importance; means to improve it. Healthy friendship.

UNIT – V

Family Relationship importance of it; Means to improve. Spirituality – meaning. Its relationship with Altruism, sacrifice, self control, tolerance and truthfulness.

TEXT BOOKS

15SSD101  SOFT SKILL DEVELOPMENT-I  

SCOPE

To achieve the analytical and reasoning competencies and to improve their communication and presentation skills

OBJECTIVES

➢ To impact knowledge on both Aptitude and Soft skills to the students
➢ To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
➢ Reinforcing competencies in soft skills which are crucial in a social setting

UNIT - I

Introduction to Quantitative Aptitude, Speed Maths, Problems on Numbers, Averages, Ratios and Proportions, Problems on Ages

UNIT – II

Number Series, Blood Relation, Image Analysis, Direction Sense, Syllogism, Coding and Decoding

UNIT – III

Percentages, Data Interpretation, Profit and Loss, Simple Interest and Compound Interest

UNIT – IV

Parts of Speech, Tense, Subject Verb Agreement, Active and Passive Voice, Articles, Prepositions

UNIT – V

Conditional Clause, Degrees of Comparison, Goal Setting, Interpersonal Skills
பதிப்பு – I, கதிரு

15LAU201 : கதிரு பெரியசார் கல்லூரி

பதிப்பு – II

5-H, 5-C

அதி - I : பகுதி விளக்கம்

1. காலம் - பொன்ற சூக்குக்குறிக்கை வைத்து விளக்கம் பின்வரும் 15 பாகங்கள்
2. சான்றுபாலம் - சூத்தியர் தருக்கப்பட்டுள்ள கோட்டாச்சுருக்கிகள் 11 பாகங்கள்

அதி - II : காங்கிற கிடைக்க

அ). வங்கிக்கற்க

முதல் பகுதி : 1. விளக்க தொடர் பிள்ளை, கிளிக்கா - விளக்கம்,
அறிவியல் - முற்றிலும் பொருளியடைந்த விளக்கவிளக்கங்கள்.
2. மேம்பான நுழைவு, தொடர் - திருத்தம், அறிவியல் - மேம்பான நுழைவு.

இரண்டாம் பகுதி : 1. முன்பான விளங்கும், தொடர் - திருத்தம், அறிவியல் - விளங்கும்.
2. அளவியமை தொடர், தொடர் - திருத்தம், அறிவியல் - விளங்கும்.

முதல் பகுதி - வெளிப்புற காரணி, அறிவியல் - மேம்பான விளக்கவிளக்கங்கள்.

முன்பான - காலம் - திருத்த விளக்கம் பொருள் பிள்ளை, அறிவியல் - விளங்கும் விளக்கங்கள்.

இரண்டாம் பகுதி - வொம்பான மருந்து பாது, தொடர் - பாது, அறிவியல் - விளங்கும் விளக்கங்கள்.

அடுத்ததம் - 1. முன்பான காலம் - திருத்தம், தொடர் - திருத்தம், அறிவியல் - விளக்கம்.
2. மேம்பான நுழைவு விளக்கம், தொடர் - பாது, அறிவியல் - விளங்கும் விளக்கங்கள்.
புதியவர்

1. உயிரியின் கால வளையம், விளைவு - பர்வவுரு, விளைவு - பர்வவுரு

2. உயிரியின் கால வளையம், விளைவு - பர்வவுரு - சுற்று.

அல்லது - உயிரியின் கால வளையம் - சுற்று விளைவு

1. முன்னேற்றம் - கால வளையம் - விளைவு, உயிரியின் கால வளையம் - விளைவு - பர்வவுரு

2. முன்னேற்றம் - விளைவு - விளைவு, உயிரியின் கால வளையம் - விளைவு - பர்வவுரு

அல்லது - IV: நூற்றாண்டுகள்

1. குறிப்பிட்டும் பயிற்சி வழிபாட்டு நூற்றாண்டுகள் - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

2. நூற்றாண்டுகள் பயிற்சி வழிபாட்டு: குறிப்பிட்டும் பயிற்சி வழிபாட்டு - நூற்றாண்டு பயிற்சி வழிபாட்டு

3. குறிப்பிட்டும் பயிற்சி - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

4. குறிப்பிட்டும் பயிற்சி - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

5. குறிப்பிட்டும் பயிற்சி வழிபாட்டு - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

அல்லது - V: நூற்றாண்டுகள் பயிற்சி வழிபாட்டு

1. குறிப்பிட்டும் பயிற்சி வழிபாட்டு - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

2. குறிப்பிட்டும் பயிற்சி வழிபாட்டு - குறிப்பிட்டும் பயிற்சி வழிபாட்டு

Bachelors of Science, Mathematics, 2015, Karpagam Academy of Higher Education, Coimbatore – 21, India.
Objectives:
- To train the students in acquiring proficiency in English by reading different kinds of genres in literature.
- To provide aesthetic pleasure through literature.

UNIT I
Prose: The Unexpected- Robert Lynd
Poetry: The Village Schoolmaster – Oliver Goldsmith
Short Story: The Lion’s Share – Arnold Bennett
Vocabulary: Homonyms
Grammar: Irregular Verbs

UNIT II
Prose: Travel by Train – J. B. Priestly
Poetry: The Gift of India – Sarojini Naidu
Grammar: Sentence patterns
Composition: Reading Comprehension

UNIT III
Prose: Women’s Education is Almost More Important than the Education of Boys and Men – Indira Gandhi
Short Story: The Necklace – Guy De Maupassant
Vocabulary: Similes
Grammar: Discourse Markers
Composition: Report Writing

UNIT IV
Poetry: Ozymandias – P.B. Shelley
One-Act Play: The Pot of Broth- W.B. Yeats
Vocabulary: Collective Nouns
Grammar: Correction of Sentences
Composition: Picture Reading

UNIT V
Short Story: The Silver Butterfly– Pearl S. Buck
One-Act Play: The Bear – Anton Chekov
Vocabulary: Acronyms
Grammar: Question Tags
Composition: Drafting Advertisement
Prescribed Texts


Reference
Syamala, V. English for Communication. 2006. Emerald Publishers: Chennai
Scope: This course enables the students to learn the various methods of solving Differential Equations and Laplace Transforms which are very much used in the field of Engineering.

Objectives: To make the learners to get the knowledge about forming the differential equations, the various types of their solutions and properties, importance of Laplace transforms.

UNIT I


UNIT II

Exact differential equations – First order higher degree equations – Clairaut’s form – Equations do not contain X explicitly – Equations do not contain Y explicitly – Equations Homogeneous in X and Y – Linear differential equations with constant coefficients.

UNIT III


UNIT IV

Laplace transforms: Definition-Sufficient conditions for the existence of the Laplace Transform- Laplace Transform of periodic functions- Some general theorems-Evaluation of integrals using Laplace Transform.

UNIT V


TEXT BOOK

REFERENCES


**Scope:** On successful completion of this course the learner gain wide knowledge of trigonometric identities, the expansion of trigonometric functions, hyperbolic functions, inverse hyperbolic functions, logarithmic functions etc which plays a crucial role in pure and applied Mathematics.

**Objectives:** To enable the students to learn about the basic concepts, techniques, expansions of trigonometrical functions and its applications.

**UNIT-I**

Expansions of cos nθ, sin nθ - Expansion of tan nθ in terms of tan θ - Expansion of tan(A+B+C+….) - Formation of Equations.

**UNIT-II**

Powers of sines and cosines of θ in terms of functions of multiples of θ - expansions of sin θ and cos θ in a series of ascending powers of θ - Expansion of cosⁿθ, sinⁿθ and sinᵐθcosⁿθ

**UNIT-III**

Hyperbolic functions: Definition - Relation between Hyperbolic Functions - Periods of hyperbolic functions – Separation into real and imaginary parts – Inverse hyperbolic function.

**UNIT-IV**

Logarithms of complex quantities: Express log(x+iy) in the form (A+iB) – The general exponential function – Real and imaginary part of Exponential functions.

**UNIT-V**


**TEXT BOOK**


**REFERENCES**


**Scope:** A good grasp in Physics opens up vistas in technology, Astrophysics, Astronomy etc. There are number of cancer opportunities in astrophysics, geophysics, and meteorology by acquiring specialized knowledge. The course provides employability skills such as ability to work with details, credibility, logical reasoning etc.

**Objectives:** Many basic natural processes in nature can be explained by physics. So it is essential to know basic physics any science student. This paper is aimed at giving some insight into the basic physics, theory as well as experiment.

**UNIT-I**  
**ELASTICITY OF SOLIDS**  
Elastic constants of an isotropic solid - Relations connecting them - Poisson’s ratio - Bending of beams - Uniform and non-uniform bending - Bending moment of a bent beam - cantilever - Static and dynamic methods - Torsion in a wire - Rigidity modulus determination by Static and dynamic methods.

**UNIT-II**  
**SURFACE TENSION**  
Surface tension and Surface energy- Pressure difference across a spherical surface- Pressure difference across a curved surface - Angle of contact - Angle of contact for water in a glass - Vapour pressure over a flat and curved surface - Variation of Surface tension with temperature - Jaeger’s method - Quinke’s method.

**UNIT-III**  
**MODERN PHYSICS:** Photo electric effect – Einstein’s photo electric equation – verification of Einstein’s photo electric equation by Millican’s experiment – photo electric cells – applications  
Nuclear physics : characteristics of nuclear forces – nuclear structure by liquid drop model – Binding energy – mass defect – particle accelerators – cyclotron and betatron  
nuclear Fission and nuclear Fusion.

**UNIT-IV**  

**UNIT-V**  
**SOLAR PHYSICS:** solar constant – measurement of solar radiations by Pyroheliometer and Pyranometer – general applications of solar energy – flat-plate collector - box type cooker - solar water heaters – solar photo – voltaic cells – general applications of solar cells.
TEXT BOOKS
1. Murugesan. R., Modern Physics, S.Chand & CO, New Delhi


REFERENCES:


ANY TEN EXPERIMENTS

1. Field Intensity-Circular coil- Vibration magnetometer
2. Co-efficient of thermal conductivity-Lee’s disc method
3. Refractive Index of a prism (I-I’) curve-Spectrometer
4. Moment of a magnet-Circular coil-Deflection Magnetometer
5. Temperature coefficient of resistance of a thermistor-Post office box
6. Comparison of viscosities of two liquids
7. Study of logic gates using IC’s
8. Study of NOR gate as Universal building block.
9. Study of NAND gate as Universal building block.
10. Verification of Basic logic gates using discrete components.
11. Determination of Cauchy’s constant – Spectrometer
12. AC frequency - Sonometer
Scope
The study creates awareness among the people to know about various renewable and nonrenewable resources of the region, enables environmentally literate citizens (by knowing the environmental acts, rights, rules, legislation, etc.) to make appropriate judgments and decisions for the protection and improvement of the earth.

Objectives
- Creating the awareness about environmental problems among people.
- Developing an attitude of concern for the environment.
- Motivating public to participate in environment protection and improvement.

UNIT - I: Eco system and natural resources: Environment – Definition – components - Ecosystem -Definition, Concept, Scope, importance, structure and functions of ecosystem. Energy flow, Ecological succession. Food chains and food webs. Classification of ecosystem. Natural resources: Forest resources; water resources

UNIT - II: Environmental pollution: Cause, effects and control measures of Air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and nuclear hazards pollution. Solid waste management.


UNIT - V: Environment ethics: Environmental Ethics - Gender equity, ethical basis of environment education and awareness, conservation ethic and traditional value systems of India. Valuing nature, cultures, social justice, Human heritage, equitable use of resources, preserving resources for future generation, common property resources, Ecology and its uses and its degradation, Introduction to Environmental Protection Act (EPA).
TEXT BOOKS


REFERENCES

SCOPE

To achieve the analytical and reasoning competencies and to improve their communication and presentation skills

OBJECTIVES

➢ To impact knowledge on both Aptitude and Soft skills to the students
➢ To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
➢ Reinforcing competencies in soft skills which are crucial in a social setting

UNIT - I
Introduction to Quantitative Aptitude, Speed Maths, Problems on Numbers, Averages, Ratios and Proportions, Problems on Ages

UNIT - II
Number Series, Blood Relation, Image Analysis, Direction Sense, Syllogism, Coding and Decoding

UNIT – III
Percentages, Data Interpretation, Profit and Loss, Simple Interest and Compound Interest

UNIT – IV
Parts of Speech, Tense, Subject Verb Agreement, Active and Passive Voice, Articles, Prepositions

UNIT - V
Conditional Clause, Degrees of Comparison, Goal Setting, Interpersonal Skills
OBJECTIVES:
- To develop confidence to respond in English during situations where the use of English is imperative.
- To develop fluency in actual conversation in the English language.
- To develop speech skills necessary for confident and intelligent participations in Group Discussions and develop skills related to teamwork in work places.

UNIT I
Listening: Listening comprehension – Listening for Specific Information – Note Taking – Interpreting Charts and Diagrams.

UNIT II

Telephone Skills – Understanding telephone conversation – handling calls – leaving messages – making requests - giving instructions and orders

(Completing dialogues)

UNIT III
Reading: Reading – Reading with a purpose – Skimming and Scanning – locating main points – reading critically – Sequencing of sentences – Reading comprehension.

UNIT IV

Translation - Translating short sentences and passages from English to Tamil and from Tamil to English.

UNIT V
Vocabulary: Improve English vocabulary: Synonyms – Antonyms – Prefixes – Suffixes – Idioms – Collocations – Different types of English – British and American (Choose the best answer type from a database of 50 words each for each topic)
**Functional Grammar:** Forming questions, getting answers – Articles – Parts of Speech – Punctuation – Common mistakes in English (Homophones)(Exercise based)

**Reference Books**


Spoken English Part I & II (for Tamil speakers), Orient Longman Pvt. Ltd.

**Scope:** This course provides a strong foundation in the concepts of mechanics to know how the friction is regulating the motion of objects, deep knowledge about the motion of particles under the influence of various forces like gravitational force, central force, impulsive force etc., which plays an essential role in Applied Mathematics.

**Objectives:** To enable the students to realize the nature of forces and resultant forces when more than one force acting on a particle and to apply Laws, Principles, Postulates governing the mechanics in physical reality.

**UNIT I**
Force acting at a Point: Parallelogram of Force – Analytical Expression for the Resultant of two forces acting at a point – Perpendicular Triangle of Forces – Converse of Triangle of Force – Polygon of Forces Parallel Forces- To find the Resultant of two like parallel forces acting on a Rigid body – To find Resultant of two unlike and unequal Forces acting on a Rigid body – Resultant of number of parallel forces acting on a rigid body – Condition of Equilibrium of three Coplanar parallel forces – Center of two parallel forces.

**UNIT II**

**UNIT III**

**UNIT IV**
Simple harmonic motion : Amplitude, periodic time, phase – composition of two simple harmonic motions of the same period in a straight line and in two perpendicular lines – Simple harmonic motion as the projection of uniform circular motion – The simple pendulum – The seconds pendulum-Compound Pendulum.

**UNIT V**
TEXT BOOKS


REFERENCES


**Scope:** On successful completion of this course the learner gains a clear knowledge about the fundamental, various aspects of Statistics, various measures and application of Statistics.

**Objectives:** To enable the students to understand the meaning, definition and functions of statistics through collection, representation, finding various measures such as mean, median, mode etc of statistics.

**UNIT I**

**UNIT II**

**UNIT III**

**UNIT IV**
Test of Significance: Basic concepts – Z-test for two means – Small sample tests- t- test for single mean, two means – Chi Square Test.

**UNIT V**
Probability (Concept only) – Binomial distribution – Poisson Distribution – Normal distribution– Exponential Distribution (No derivations) and simple problems.

**TEXT BOOK**

**REFERENCES**

1. Using SPSS Package, draw bar diagram and pie diagram for discrete series.
2. Using SPSS Package, calculate the Mean for individual, discrete and continuous series.
3. Using SPSS Package, calculate the Median for individual and discrete series.
4. Using SPSS Package, calculate the Mode for individual and discrete series.
5. Using SPSS Package, calculate the Standard deviation.
6. Using SPSS Package, calculate the Karl Pearson’s Correlation.
7. Using SPSS Package, calculate the Rank Correlation Coefficient for Untied Rank.
8. Using SPSS Package, calculate the Rank Correlation Coefficient for Tied Rank.
10. Using SPSS Package, test the significance of hypothesis using Chi Square Test.
ALLIED ELECTIVE-1
INTRODUCTION TO ACCOUNTING

Scope:
- To familiarize the students with the concept of accounting.
- To create accounting consciousness among the students.
- To create deep thinking about the subject and create awareness about various outline of accounting

Objectives:
- To make the students learn the basic Concepts and Conventions of Accounting
- To know about the Final Accounts of the company
- Helps in promoting students to know the various accounts systems.

UNIT I


UNIT II


UNIT III


UNIT IV

Depreciation- Definition- Methods of depreciation- straight line method- written down value method- annuity value method- sinking fund method- provisions and reserves

UNIT V

Accounts for Non Profit organization- Receipts and Payments and income and expenditure account and Balance sheet – Difference between Receipts and Payments and income and expenditure account and Balance sheet

Note: Distribution of Marks between problems and theory shall be 75% and 25%.
TEXT BOOK


REFERENCES

Scope: Principles and Practices of banking represents the origin or banks, classification functions, Types of bank accounts, service banking and Indian money market. This paper provides the functioning and process of various banks.

Objectives:
- To imparting knowledge about the Banking.
- To know the process of Banking.
- To know the practices of Banking.

UNIT I
Banks: Origin of Banks – Definition of Bank – Classification of Banks – Banking system – Unit Banking – Branch Banking – Functions of Modern Commercial Banks – Credit Creation by Commercial Banks.

UNIT II

UNIT III
Central Banking: Functions – Credit Control Measures – Qualitative and quantitative credit control measures – Role of RBI in regulating and controlling banks.

UNIT IV

UNIT V

TEXT BOOK
1. Natarajan, Parameswaran. (2002), Indian Banking,: Sultan Chand and sons, New Delhi
REFERENCES

**Scope:** This paper presents the basic principles of basic physical and inorganic chemistry. It enables the students to gain knowledge of chemistry involved in industries.

**Objectives:**
1. To learn about the atomic structure.
2. To understand the quantum numbers and electronic configuration.
3. To learn the different types of bonding.

**UNIT-I**
**Atomic Structure:** Bohr’s theory and its limitations, dual behaviour of matter and radiation, de-Broglie’s relation, Heisenberg Uncertainty principle. Hydrogen atom spectra. Need of a new approach to Atomic structure. Time independent Schrodinger equation and meaning of various terms in it. Significance of $\psi$ and $\psi^2$, Schrödinger equation for hydrogen atom.

**UNIT-II**
**Quantum numbers:** Significance of quantum numbers, orbital angular momentum and quantum numbers $ml$ and $ms$. Shapes of $s$, $p$ and $d$ atomic orbitals, nodal planes. Discovery of spin, spin quantum number ($s$) and magnetic spin quantum number ($ms$). Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbitals, Anomalous electronic configurations.

**UNIT-III**
**Ionic Bonding:** General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan’s rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

**UNIT-IV**
**Covalent bonding:** VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds.

**UNIT-V**
**MO Approach:** Rules for the LCAO method, bonding and antibonding MOs and their characteristics for $s-s$, $s-p$ and $p-p$ combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of $s-p$ mixing) and heteronuclear diatomic molecules such as CO, NO and NO+. Comparison of VB and MO approaches.
TEXT BOOKS

REFERENCES
15FCC301A  INTRODUCTION TO COMPUTERS  4 0 0 2

Scope
This course provides student with a comprehensive study of the introduction to computers. It provides the knowledge of office package. This course also intends to teach the usage of internet.

Objectives

- Know the basic concept of computers.
- Understand the concept of Ms-word, Ms-Excel.
- Be able to work in Ms-PowerPoint.
- Knowledge about internet and the usage of E-Mail services.

UNIT I
Introduction- Characteristics of computers- development of computers- generations of computers-classification of computers-the computer system- types of Input/ Output and memory devices-computer software-categories of software.

UNIT II

UNIT III

UNIT IV
Starting with MS Office PowerPoint – Working with PowerPoint- Working with different views-Designing Presentations- Slide Show- Printing in PowerPoint.

UNIT V
The Internet-Evolution of Internet-Owner of Internet- Anatomy of Internet – Internet Terminology-Getting Connected to Internet- Web Brower- Electronic Mail- Search engines- Uses of internet to society.

TEXT BOOK

REFERENCES
15FCC301B         INTRODUCTION TO MULTIMEDIA         Semester III
                       L  T  P  C
                       4   0  0   2

Scope
Acquire basic knowledge on Multimedia devices. Understand current trends in multimedia by experiencing a variety of applications and development packages.

Objectives
- This course in curriculum is an introduction to the multimedia and its applications.
- This course enables students to understand how the web pages are designed interactively.
- How to critically evaluate website quality, learn how to create and maintain quality web pages learn to create and manipulate images.
- To gain the skills and project-based experience needed for entry into web design and development careers.

UNIT I

UNIT II

UNIT III

UNIT IV
UNIT V

TEXT BOOKS
2. Nick Vandome, 2011, Photoshop Elements 9, Tata McGraw hill. (Unit III)

REFERENCES
SCOPE

To achieve the analytical and reasoning competencies and to improve their communication and presentation skills

OBJECTIVES

- To impact knowledge on both Aptitude and Soft skills to the students
- To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
- Reinforcing competencies in soft skills which are crucial in a social setting

UNIT - I
Time, Speed and Distance, Time and Work, Pipes and Cisterns, Geometry, Data Arrangement

UNIT – II
Analogy, Logic based Venn diagram, Probability, Permutation and Combination, Logarithms

UNIT – III
Data Sufficiency, Clocks, Calendar, Reading Comprehension, Sentence Correction, Sentence Completion, Spotting the Errors, Jumbled Sentences

UNIT – IV
Synonyms, Antonyms, Verbal Analogy, Statements and Assumptions, Group Discussion

UNIT - V
Resume Writing, Introduction to HR rounds, Time Management, Attitude and Behaviour
Objectives:

- To train the students in understanding the concepts of communication.
- To train the students in developing their written communication and presentation skills.

**UNIT I** – Concept of Communication – Barrier to Communication – Body language – Personality Development – Etiquette and Manners – Soft Skills – Emotional Intelligence

**UNIT II** – Listening Comprehension – Reading Comprehension – Paragraph writing – Precis Writing – Writing Resume and Covering Letter – Speaking – Welcome Address, Vote of Thanks, Compering, Debates, Role Play, Dialogues – Vocal Communication Techniques. Voice, Quality, Volume, Pitch

**UNIT III** – Dicto Composition – Letter Writing (Informal, Letters to the Editor etc) – Term paper – Book reviews


**UNIT V** – Effective Presentation – Planning – Audience Analysis – Logical Sequencing – Timing of the Presentation – Conclusion – Answering Queries – Group Discussion – Interview.

**Prescribed Text:**


**Reference:**


Scope: On successful completion of this course the learner gain knowledge about the fundamental concepts on Vectors, the relation between line surface and volume integrals and the various concepts of Fourier series, Fourier transforms and z – transforms with respect to the applications.

Objectives: To enable the students to gain knowledge about vectors which will help them to solve the analytical geometry problems using vectors and transforms.

UNIT I


UNIT II


UNIT III

Fourier series – Definition – Finding Fourier coefficients for a given periodic function with period $2\pi$ – Odd and Even functions – Half Range Series

UNIT IV

Definition of Fourier Transform-Properties of Fourier Transform- Inverse Fourier transform- Convolution theorem-Finite Fourier Sine &Cosine Transform –Parseval’s theorem.

UNIT V


TEXT BOOKS


REFERENCES


Scope: This course is emphasized to enhance the learners knowledge in optimal use of resources, concepts of game theory, performance measures of queues, optimal use of Inventory and Network scheduling with various applications of Mathematics in real times.

Objectives: To enable the students to use the mathematical knowledge in optimal use of resources like LPP, TP, Assignment problems etc.

UNIT I
Linear Programming: Formulation of LPP – Graphical solution to LPP – Simplex method – Big M method - Duality in LPP.

UNIT II


UNIT III
Queuing theory: Introduction – Characteristics of queuing system. Poisson process and Exponential Distribution – Classification of Queues. Single server – Infinite Capacity (M/M/1): (∞/FIFO), Single server – Finite Capacity (M/M/1):(N/FIFO), Multi server – Infinite Capacity (M/M/C): (∞/FIFO) and Multi server – Finite Capacity (M/M/C):(N/FIFO) models


UNIT IV
Inventory Control: Introduction – Costs involved in inventory – Deterministic EOQ models – Purchasing Model without and with shortage, Manufacturing Model without and with shortage – Stochastic Model - Price break.

UNIT V
PERT and CPM: Network representation – Calculation of Earliest expected time, latest allowable occurrence time. CPM - various floats for activities – critical path. PERT – Time estimates in PERT- Probability of meeting scheduled date of completion of projects.

TEXT BOOK
REFERENCES


15MMU403  ANALYTICAL GEOMETRY

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Scope: On successful completion of this course student will gain knowledge about fundamental concepts of three dimensional plane, straight lines, sphere, tangent, cone etc which provides the basis for modeling.

Objectives: To enable the students to learn and visualize the fundamental ideas about co-ordinate geometry.

UNIT I

Rectangular Cartesian co-ordinates – Distance between points – Direction cosines – Direction ratios – Angle between the lines – Conditions for perpendicularity and parallelism.

UNIT II

Straight line: Symmetrical form of the equations of a line – The plane and the straight line – Coplanar lines – The shortest distance between two given lines.

UNIT III

Sphere: Definition – Equation of the sphere – Length of the tangent – The plane section of a sphere – Equation of a circle on a sphere – Intersection of two spheres.

UNIT IV

Cone: Definition – Quadric cone – Cone whose vertex is at the origin.
Right circular cone: Definition – Equation of a right circular cone with vertex at the origin – Enveloping cone.

UNIT V

Cylinder: Definition – Equation of the cylinder – Right circular cylinder.

TEXT BOOK

REFERENCES
Scope:
- To provide the student knowledge about the use of costing data for planning, control and decision making.
- To complete the Management accounting line with complete profession line.
- To know the value of auditing values of accounting systems.

Objectives:
- To create cost consciousness among the students, to provide the student knowledge about use of costing data for planning, control and decision making.
- It helps the student to prepare management reports by using funds flow and cash flow statement.
- And to support management in planning decision-making in a variety of business contexts.

UNIT I

UNIT II
Management Accounting – meaning, nature and Scope and functions of management accounting – relationship between management accounting, and financial accounting - role of management in decision making

UNIT III
Working Capital- concepts, kinds, importance of working capital-working capital requirements and their computation- sources of working capital - forecasting of working capital requirements

UNIT IV
Budget, Budgeting and budgetary control – definition, importance, essentials, classification of budgets, master budgets, preparation of different budgets – steps in budgetary control.

UNIT V
Standard costing – Advantages and disadvantages- Difference between budgetary control and standard costing- Variance- Types of variance- material and labor variances only.

TEXT BOOK

REFERENCES
Scope: Human resource management deals with the various function, personal principles and policies, human resource planning, selection process, wage and salary administration, job evaluation systems. This paper presents the employees welfare and safety measures, motivation, personal records and reports.

Objectives:

- To know about the HR principles on an organization
- To impart the knowledge on wage and salary administration and other benefits avail by the employees

UNIT I

Introduction to HRM: Definition, Objectives and Functions of HRM –Role and Structure of Personnel Functions in Organization, Personal Principles and Policies.

UNIT II


UNIT III


UNIT IV

Employee Maintenance and Integration:- Welfare and Safety, Accident Prevention, Administration of Discipline, Employee Motivation, Need and Measures.

UNIT V

Personnel Records and Reports: - Personnel Research and Personnel Audit, Objectives, Scope and Importance.

TEXT BOOK

REFERENCES

1. CS. Venkataraman and BK. Srivastva:- Personnel Management and Human Resources.


3. Prasad, Lallan and A.M. Banerjee – Management of HR
Scope: This paper presents the fundamentals of organic chemistry. It enables the students to gain knowledge in organic chemistry involved in industries.

Objectives:
1. To learn about the fundamentals of Organic Chemistry.
2. To understand the Stereochemistry.
3. To learn about saturated and unsaturated hydrocarbons.

UNIT I

UNIT II
Reactive Intermediates and Aromaticity:
Reactive Intermediates: Carbocations, Carbanions and free radicals.
Strength of organic acids and bases: Comparative study with emphasis on factors affecting pK values.
Aromaticity: Benzenoids and Hückel’s rule.

UNIT III
Stereochemistry: Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (upto two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism and Diastereomerism. Threo and erythro; D and L; cis – trans nomenclature; CIP Rules: R/S (for upto 2 chiral carbon atoms) and E/Z Nomenclature (for upto two C=C systems).

UNIT IV
Alkanes and Alkynes:

Alkynes: (Upto 5 Carbons) Preparation: Acetylene from CaC$_2$ and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. Reactions: formation of metal acetylides, addition of bromine and alkaline KMnO$_4$, Ozonolysis and oxidation with hot alk. KMnO$_4$.

UNIT V
Alkenes: (Upto 5 Carbons) Preparation: Elimination reactions: Dehydration of alkenes and dehydrohalogenation of alkyl halides (Saytzeff’s rule); cis alkenes (Partial catalytic hydrogenation) and trans alkenes (Birch reduction).
Reactions: cis-addition (alk. KMnO₄) and trans-addition (bromine), Addition of HX (Markownikoff’s and anti-Markownikoff’s addition), Hydration, Ozonolysis, oxymecuration-demercuration, Hydroboration-oxidation.

TEXT BOOKS


REFERENCES

SCOPE

To achieve the analytical and reasoning competencies and to improve their communication and presentation skills

OBJECTIVES

➢ To impact knowledge on both Aptitude and Soft skills to the students
➢ To critically evaluate and demonstrate various principles involved in solving mathematical problems and to adopt new and faster methods of calculations.
➢ Reinforcing competencies in soft skills which are crucial in a social setting

UNIT - I
Time, Speed and Distance, Time and Work, Pipes and Cisterns, Geometry, Data Arrangement

UNIT – II
Analogy, Logic based Venn diagram, Probability, Permutation and Combination, Logarithms

UNIT – III
Data Sufficiency, Clocks, Calendar, Reading Comprehension, Sentence Correction, Sentence Completion, Spotting the Errors, Jumbled Sentences

UNIT – IV
Synonyms, Antonyms, Verbal Analogy, Statements and Assumptions, Group Discussion

UNIT - V
Resume Writing, Introduction to HR rounds, Time Management, Attitude and Behaviour
**Scope:** After the completion of this course, the learner get a clear knowledge in the foundational concepts of analysis which is the motivating tool in the study of pure Mathematics. The learner understands the functional relationships between the variables which have more applications in expressing the laws of Physics, Chemistry, Mechanics etc.

**Objectives:** To introduce the different concepts of Real and Complex number systems and to provide a strong base in the analysis part of Mathematics such as ordered pairs, Cartesian product of two sets, open balls and open sets, Completeness sequences etc.

**UNIT I**

The Real and Complex number systems the field axioms, the order axioms –integers –the unique Factorization theorem for integers –Rational numbers –Irrational numbers –Upper bounds, maximum Elements, least upper bound –the completeness axiom –some properties of the supremum –properties of the integers deduced from the completeness axiom- The Archimedean property of the real number system .

**UNIT II**


**UNIT III**

Elements of point set topology: Euclidean space $\mathbb{R}^n$ –open balls and open sets in $\mathbb{R}^n$. The structure of open Sets in $\mathbb{R}^n$ –closed sets and adherent points –The Bolzano –Weierstrass theorem–the Cantor intersection Theorem.

**UNIT IV**


**UNIT V**

TEXT BOOK


REFERENCES


Scope: This course will enhance the learner to understand the important concepts such as complex number system, complex plane analyticity of a function, function of complex variables etc which plays a crucial role in the application of two dimensional problems in Science.

Objectives: To enable the students to learn various aspects complex number system, complex function and complex integration

UNIT I

Complex number system: Complex number-Field of a complex numbers-Conjugation –Absolute value of a complex number. Complex plane: Complex number by points- \( n^{th}\) root of a complex number-Angle between two rays-Elementary transformation- Stereographic projection.

UNIT II


UNIT III


UNIT IV

Bilinear transformation-Circles and Inverse points-Transformation mappings \( w=Z^2 \), \( w=Z^{1/2} \), \( w=e^Z \), \( w = \sin Z \), and \( w=\cos Z \)-Conformal mapping-isogonal mapping.

UNIT V

Complex integration: Simple rectifiable oriented curves –Integration of complex functions- Definite integral-Interior and Exterior of a closed curve-Simply connected region-Cauchy’s fundamental theorem-Cauchy’s’s formula for higher derivatives- Morera’s theorem.

TEXT BOOK
REFERENCES


**Scope:** This course provides a deep knowledge to the learners to understand the basic concepts of Numerical Methods which utilize computers to solve Engineering Problems that are not easily solved or even impossible to solve by analytical means.

**Objectives:** To enable the students to study numerical techniques as powerful tool in scientific computing.

**UNIT I**


**UNIT II**


**UNIT III**


**UNIT IV**

Interpolation: Gregory Newton Forward and Newton Backward interpolation formula – Equidistant terms with one or more missing values – Interpolation with unequal intervals – Divided differences – Newton’s divided difference formula – Lagrange’s interpolation formula – Inverse interpolation formula.

**UNIT V**


**TEXT BOOK**

REFERENCES


1. Roots of a given Algebraic Equation using Bisection method.

2. Roots of a given Algebraic Equation using Newton Raphson method.


5. Solution of linear algebraic equations using Gauss Seidal method.


8. Interpolation using Lagrange’s method.


10. Derivative using Newton’s backward difference formula.

11. The value of the given integral using Simpson’s one third rule.

12. The value of the given integral using Trapezoidal rule.
Scope: This course will introduce a comprehensive introduction to fundamental programming concepts using a block-structured language (MATLAB).

Objectives: To enable the students to learn about the Mathematical software MATLAB for high-performance numerical computations and visualizations.

UNIT I

UNIT II

UNIT III

UNIT IV
Applications – Linear Algebra - Solving a linear system – Finding Eigen values and Eigen vectors – Matrix Factorizations.

UNIT V

TEXT BOOK

REFERENCES


Scope: On successful completion of this course the learner gain a complete knowledge about the Formal languages, Automata Theory, Lattices & Boolean Algebra and Graph Theory which plays a crucial role in the field of computers.

Objectives: To enable the students to learn about the interesting branches of Mathematics such as Mathematical logic, Formal languages and Automata, Lattices and Boolean algebra, Directed and undirected graphs etc.

UNIT-I


UNIT-II

Relations and functions: Composition of relations, Composition of functions, Inverse functions, one-to-one, onto, one-to-one & onto, onto functions, Hashing functions, Permutation function.

UNIT-III

Formal languages and Automata: Grammars: Phrase–structure grammar, context-sensitive grammar, context-free grammar, regular grammar. Finite state automata- Deterministic finite automata and Non deterministic finite automata-conversion of non deterministic finite automata to deterministic finite automata.

UNIT-IV

Lattices and Boolean algebra: Partial ordering, Poset, Lattices, Boolean algebra, Boolean functions, Theorems, Minimization of Boolean functions.

UNIT-V

Graph Theory: Directed and undirected graphs, Paths, Reachability, Connectedness, Matric representation, Eular paths, Hamiltonian paths, Trees, Binary trees simple theorems, and applications.

TEXT BOOK

REFERENCES


Scope: On successful completion of this course the learner gain a complete knowledge about the fundamental concepts of number theory and cryptography which have wide applications in network security.

Objectives: To enable the students to learn about the Divisibility theory in integers, Euler’s phi function, Primitive roots and indices and cryptography.

UNIT -I
Divisibility theory in integers, g.c.d, prime, fundamental theorem of Arithmetic, the theory of congruence.

UNIT -II

UNIT -III
Euler’s generalization of Fermat’s theorem – Euler’s phi function – Euler’s theorem – some properties of phi function.

UNIT -IV

UNIT -V
Cryptography – classical cryptography – some simple crypto system-Shannon’s theory

TEXT BOOK

REFERENCES
Scope: This course aims to give essential ideas on stochastic process which have wide applications with differential equations.

Objectives: To enable the students to understand the stochastic models for many real life probabilistic situations.

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V


TEXT BOOK
REFERENCES


Scope: The main objective of this paper is to compute the arithmetical operations using the Vedic sutras, which are intended to develop the learner’s logical reasoning.

Objectives: To enable the students to learn about the Vedic sutras and its applications.

UNIT I

Actual Applications of the Vedic sutras- Arithmetical Computations – Multiplication – Practical Application in Compound Multiplication.

UNIT II

Division by the Nikhilam method – Division by the Paravartya method – Argumental Division – Linking note -Recapitulation and conclusion.

UNIT III

Factorization of Simple Quadratics- Factorization of Harder Quadratics.

UNIT IV


UNIT V

Factorization and Differential Calculus – Partial Fractions – Integration by Partial fractions.

TEXT BOOK:

**Scope:** On successful completion of this course the students gain knowledge about the quality aspects and quality control measures and its practical applications in real life.

**Objectives:** To enable the students to know the concepts of process control and product control

**UNIT I**

Total quality control in an industry. Quality planning, quality conformance, quality adherence. Quality assurance and quality management functions.

**UNIT II**


**UNIT III**

Different types of control charts. Concept of process capability and its comparison with design specifications, CUSUM charts.

**UNIT IV**

Acceptance sampling. Sampling inspection versus 100 percent inspection. Basic concepts of attributes and variables inspection.

**UNIT V**

OC curve, Single, double, multiple and sequential sampling plans, Management and organization of quality control.

**TEXT BOOK**


**REFERENCES**


Scope: After the completion of this course, the learner get a clear knowledge in the concept of analysis which is the motivating tool in the study of applied Mathematics.

Objectives: To introduce the concepts which provide a strong base to understand and analysis mathematics.

UNIT I

Examples of continuous functions –continuity and inverse images of open or closed sets –functions continuous on compact sets –Topological mappings –Bolzano’s theorem.

UNIT II

Connectedness –components of a metric space – Uniform continuity : Uniform continuity and compact sets –fixed point theorem for contractions –monotonic functions.

UNIT III


UNIT IV

Properties of monotonic functions –functions of bounded variation –total Variation –additive properties of total variation on (a, x) as a function of x – functions of bounded variation expressed as the difference of increasing functions.

UNIT V


TEXT BOOK

REFERENCES


**Scope:** This course will enhance the learner to understand the extended concepts of analytic function of complex variables and the application of residues etc which plays a crucial role in the field of applied mathematics.

**Objectives:** To enable the students to learn complex number system, complex function and complex integration, Singularitie, real definite integrals, Meromorphic functions etc.

**UNIT I**

Zero’s of a function-Cauchy’s inequality-Liouville’s theorem-Fundamental theorem of Algebra-Maximum modulus theorem- Gauss mean value theorem- Mean value of the value of a harmonic function on a circle- Term by term differentiation and integration of uniformly convergent series.

**UNIT II**

Taylor’s series and Laurent’s series: Taylor’s series-Theorems and some related problems- Zero’s of an analytic function- Laurent’s series – Theorems and some related problems- Cauchy product and division.

**UNIT III**

Singularities – Isolated Singularities- Removable Singularity- Pole-Essential Singularity-Behaviour of a function at an isolated Singularity-Determination of the nature of Singularity-Problems- Residues- Residues theorem(statement only)- Problems.

**UNIT IV**

Real definite integrals: Evaluation using the calculus of residues – Integration on the unit circle – Integral with - ∞ and + ∞ as lower and upper limits with the following integrals:

i) \( \frac{P(x)}{Q(x)} \) where the degree of \( Q(x) \) exceeds that of \( P(x) \) at least 2.

ii) \( (\sin ax).f(x), (\cos ax).f(x) \), where \( a > 0 \) and \( f(z) \to 0 \) as \( z \to \infty \) and \( f(z) \) does not have a pole on the real axis.

iii) \( f(x) \) where \( f(z) \) has a finite number of poles on the real axis.

**UNIT V**

Meromorphic functions: Theorem on number of zeros minus number of poles –Principle of argument: Rouche’s theorem – Theorem that a function which is meromorphic in the extended plane is a rational function.
TEXT BOOK


REFERENCES


Scope: After completing this course, the student will be enriched with the knowledge of concepts of groups, rings and fields etc which are very useful for their future study in accordance with research.

Objectives: To enable the students to understand the concepts of sets, groups, rings and various properties of those structures.

UNIT I

Sets – Mappings – Binary operations and Relations. Groups – Abelian group, SymmetricGroup – Definitions and Examples – Basic properties.

UNIT II


UNIT III

Homomorphisms – Cauchy’s theorem for Abelian groups – Sylow’s theorem for Abelian groups Automorphisms – Inner automorphism - Cayley’s theorem, permutation groups.

UNIT IV

Rings: Definition and Examples – Some Special Classes of Rings – Commutative ring – Field – Integral domain - Homomorphisms of Rings.

UNIT V


TEXT BOOK

REFERENCES
**Scope:** This course is intended to introduce the area of structural graph theory to the learners. Basic principles underlying this theory and algorithmic applications are also surveyed.

**Objectives:** To enable the students to understand the basic concepts of Graph Theory and its applications.

**UNIT I**


**UNIT II**


**UNIT III**


**UNIT IV**


**UNIT V**


**TEXT BOOK**

REFERENCES


Scope: To make the students understand the notion of fuzzy sets and to make them to understand the importance, applications of these techniques in real time problems.

Objectives: To enable the students to understand the basic concepts of Fuzzy sets and its applications.

UNIT I
Crisp sets and fuzzy sets - basic concept of fuzzy set - fuzzy logic - operations on fuzzy sets - general discussion fuzzy complements.

UNIT II
Fuzzy union - fuzzy intersection - combinations operations.

UNIT III
Fuzzy relations and fuzzy graphs - fuzzy relation on sets and fuzzy sets - composition of fuzzy relations - properties of the min-max composition - fuzzy graphs - special fuzzy relations.

UNIT IV
Fuzzy measures - general discussion - belief and plausibility measures - probability measures - possibility and necessity measures.

UNIT V
Fuzzy decision making - individual decision making - fuzzy ranking methods - fuzzy linear programming.

TEXTBOOK

REFERENCES


Scope: On successful completion of this course the learners gain a clear knowledge about the concept Lattice as a creative model by the means of an operator of a complex system.

Objectives: To enable the students to learn about the lattices and its applications.

UNIT I


UNIT II


UNIT III

Dual Ideals – Principal Ideals – Principal Dual Ideals – Prime Ideals.

UNIT IV

Complements-Length and Covering Conditions–Homomorphism–Quotient Lattices.

UNIT V

Direct Products-Ideal Lattice-Isomorphism Theorem-Distributive Lattices-Direct Products.

TEXT BOOK


REFERENCE

Scope: On successful completion of this course the learners gain a clear knowledge about Astronomy and its applications to the real world.

Objectives: To enable the students to understand the Astronomical aspects and about the laws governing the planet movements.

UNIT I

UNIT II
Celestial sphere – Celestial co – ordinates – Diurnal motion – Variation in length of the day.

UNIT III
Dip – Twilight – Geocentric parallax

UNIT IV
Refration – Tangent formula – Cassinis formula.

UNIT V
Kepler’s laws – Relation between true eccentric and mean anamolies

TEXT BOOK

REFERENCE
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**Scope:** On successful completion of this course the learner gain a clear knowledge about Scalar Product, Backlash, stability analysis and calculus of variations which play an important role in the problems of differential systems.

**Objectives:** To be familiar with linear transformations, time state equations, properties of non linear systems and to be exposed with optimal control.

**UNIT I**
Mathematical preliminaries: Fields, Vectors and Vector Spaces – Linear combinations and Bases – Linear Transformations and Matrices – Scalar Product and Norms – Eigen-values, Eigen Vectors and a Canonical form representation of linear operators

**UNIT II**

**UNIT III**

**UNIT IV**

**UNIT V**

**TEXT BOOKS**
1. Modern Control System Theory by M.Gopal – New Age International -1984

**REFERENCES**
1. Optimal control by Kircks
**Scope:** On successful completion of this course the learner gain clear knowledge about Sphere, Cone, Cylinder and Enveloping cone of a coinicoid etc which provide a strong basis for Modeling.

**Objectives:** To be familiar with Tracing of conics, Central Conicoids and Paraboloids with the respective applications.

**UNIT I**

General equation of second degree. Tracing of conics. Tangent at any point to the conic, chord of contact, pole of line to the conic, director circle of conic. System of conics. Confocal conics. Polar equation of a conic, tangent and normal to the conic.

**UNIT II**

Sphere: Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, radical plane of two spheres. Co-axal system of spheres

**UNIT III**


**UNIT IV**


**UNIT V**


**TEXT BOOK**


**REFERENCES**