பதிப்பு - 1, தொடர்
15LAU101 : வித்யாத் தொடர்

பகுதியானை

அத்திலை I: இணைத்தகாலியம்

தேவதையன்: மாணவர் மாணவர் - வாசகமுக்கு அறிமுகம்.

கல்வியம்: பெற்றியலை முன்னேறி - முன்னேறும்

இயற்கை: பொருளியல் பராமேசுவரம் - அருங்கள் திறன் - சௌரியம்.

சூழல்: கல்வியான சூழல் சூழல் - சூழல் பொருள்

அறிவியல்: கல்வியுடன் முன்னேறி - முன்னேறும்.

பல்விதம்: கல்வியுடன் அதிகாரி - கல்வியுடன் அதிகாரி

ஆசிரியர்: பெண்களால் - பெண்களால்

சூழல்: சூழல் சூழல் - சூழல் சூழல்

தேவதையன்: வித்யாத்தியம் - வித்யாத்தியம்

அத்திலை II: முக்கியமியம்

1. பிரித்துறியல் - பிரித்துறியியியல் துறியியல் 20
2. பாரம்பரியக் கல்வியம் - பாரம்பரியக் கல்வியம்
3. முன்னேறியம் - பாரம்பரியக் கல்வியம்

அத்திலை III: கிளைக்கலியம்

1. கிளைக்கலியம் - கிளைக்கலியம்
2. கிளைக்கலியம் - கிளைக்கலியம்
3. கிளைக்கலியம் - கிளைக்கலியம்

அத்திலை IV: சிற்பங்கற

1. பட்டமுறையலியம் - பட்டமுறையல்
2. சிற்பங்கற பல்கலை - சிற்பங்கற கிளைக்கலியம்
3. அறிவியல் - அறிவியல்
4. மொழியல் - மொழியல்
5. சிற்பங்கற நுட்பங்கற - சிற்பங்கற நுட்பங்கற

அத்திலை V: விகிதாப்பிறங்கற

1. விகிதாப்பிறங்கற மாணவர் - விகிதாப்பிறங்கற மாணவர்
2. விகிதாப்பிறங்கற மாணவர்

பல்விதம்: சிற்பங்கற நுட்பங்கற - சிற்பங்கற நுட்பங்கற

சூழல்: சூழல் சூழல் - சூழல் சூழல்

பெற்றியல்: பெற்றியல் பெற்றியல்

ஆசிரியர்: பெருநூற்று - பெருநூற்று
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:

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 BOOK


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 \( f(x)^n \cdot x^{n-1} \cdot [f(x)]^n \cdot f'(x), F[f(x)]. f'(x) \) – 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 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
MODERN PHYSICS


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
15MCU111  ALLIED PHYSICS-I  -PRACTICAL

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. μ 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 begins
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
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
அதாவது - I: பத்தொன்று பாண்டிய பொருள்
1. கருவியம் - கீழ் காட்சி செய்யவும், கொண்டாட்டம் செய்யும்,
   முதலில் - 15 பாணிகள்
2. மூண்டவியம் - இரண்டு பாண்டிய பொருள் செய்யும், தொன்றிய பாண்டிய பொருள் 11 பாணிகள்

அதாவது - II: குறிப்பிட்டத் தொகுப்பு

இலக்கியத்துடன்
1. முதல் பாண்டியம், கீழ் காட்சி - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே, கொண்டாட்டம் செய்யும்.
2. மூண்டவியங்கள், செய்தியம் - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே.

இலக்கியங்கள்
1. முதல் பாண்டியம், கீழ் காட்சி - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே.
2. மூண்டவியங்கள், செய்தியம் - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே.

பத்து பாண்டியை - கல்லூரி கல்வி, முதலில் - பாண்டிய பொருளை செய்யாமே.

பாண்டியம் - கவனம் - கீழ் காட்சி பாண்டியம் பொருளம், முதலில் - கொண்டாட்டம் செய்யாமே.

கைத்திரட்டக்கு - கல்வி முன்னத்தாக பாண்டியம், கீழ் காட்சி - பாண்டியம், முதலில் - கொண்டாட்டம் செய்யாமே.

அசத்தை நூற்றிலே
1. முதல் பாண்டியம், கீழ் காட்சி - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே.
2. மூண்டவியங்கள், செய்தியம் - நூற்றிலே, முதலில் - கொண்டாட்டம் செய்யாமே.
புத்தாண்டு - 1. மேட்பழ கூட்ட பலகை, விளக்க - பயன்பாட்டு, சுற்றிலுள்ள - ஒட்டுப்படுத்தும் பயன்பாடுகள் உறுதியாக.
2. செயல்பாடு விளையாட்டு கூட்டுப் பராமரிக்கு ஒட்டிரு - சுற்றிலுள்ள - முழுமை.

அழகு - III : சாப்பித்துணர்வு
1. மலைக்காதை - பராமரிக்கு ஒட்டு கற்க - சுற்றிலுள்ள, மலைக்காதையில் விளையாட்டு ஒட்டு;
சுற்றிலுள்ள அறிக்கையாளர் ஒட்டு கற்க - மலைக்காதையில் ஒட்டு;
பராமரிக்கு ஒட்டு, சுற்றிலுள்ள அறிக்கையாளர் ஒட்டு கற்க.

2. கருவப்பாடு - இன்றுவரும் விளையாட்டு, நூறு விளையாட்டுப் பராமரிக்கு 31 பராமரிக்கு.

அழகு - IV : கையெழுச்சு

1. கொடுக்கும் விளையாட்டு ஒட்டுக்கான குறுக்கைகள் - இன்று வரும் விளையாட்டு குறுக்கை.

2. செயல்பாடு விளையாட்டுக்கான குறுக்கை: செயல்பாடு ஒட்டு;
சுற்றிலுள்ள விளையாட்டு;
பராமரிக்கு ஒட்டு;
பராமரிக்கு ஒட்டு;

3. கருவப் பாதுகாப்பு - பராமரிக்கு ஒட்டு;

4. கையெழுச்சு இயங்கும் - ஒட்டு;

5. கையெழுச்சு இன்றுவரும் விளையாட்டு;

அழகு - V: செயல்பாடு விளையாட்டு

1. செயல்பாடு, விளையாட்டு;

2. விளையாட்டு பராமரிக்கு;

பராமரிக்கு: விளையாட்டு விளையாட்டு ஒட்டிரு - கையெழுச்சு விளையாட்டு ஒட்டு;
சுற்றிலுள்ள விளையாட்டு;

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Bachelor of Science, Mathematics 2015, Karpagam Academy of Higher Education, Coimbatore – 21, India. 13
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  
**One-Act Play:** The Referee – W.H. Andrews and Geoffrey Dearmer  
**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

Semester – II
L  T  P  C
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 \( \cos n\theta \), \( \sin n\theta \) - Expansion of \( \tan n\theta \) in terms of \( \tan \theta \) - Expansion of \( \tan(A+B+C+\ldots) \) - Formation of Equations.

**UNIT-II**

Powers of sines and cosines of \( \theta \) in terms of functions of multiples of \( \theta \) - expansions of \( \sin \theta \) and \( \cos \theta \) in a series of ascending powers of \( \theta \) - Expansion of \( \cos^n\theta \), \( \sin^n\theta \) and \( \sin^m\theta \cos^n\theta \)

**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
TEXT BOOKS


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 discreate 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**


Central orbits: Differential equation of a central orbit in polar coordinates- Apse -circular and elliptic orbits- Kepler’s laws of planetary motion.

**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 BOOK


REFERENCES


### Scope:
The scope of this course is to lay down strong foundation on the fundamentals of computer and concepts of C programming including some of the more challenging aspects like pointers, structures, and dynamic memory allocation.

### Objectives:
The objective of this course is to arm the students with sufficient knowledge of the concepts of C programming language and to make them write efficient C programs.

### UNIT-I


### UNIT-II


### UNIT-III


### UNIT-IV

Pointers – Introduction – Declaring Pointer Variables - Pointer and Arrays - Pointers and Strings – Array of Pointers - Functions and Pointers - Function Returning Pointers -Pointers to functions - Pointers and Structures

### UNIT-V

TEXT BOOK


REFERENCE


WEB SITES

http://www.cs.cf.ac.uk/Dave/C/CE.html
http://www2.its.strath.ac.uk/courses/c/
http://www.iu.hio.no/~mark/CTutorial/CTutorial.html
1. Write a program to solve all possible roots in Quadratic Equation
2. Write a program to implement bubble sort
3. Write a program to convert a given number into words
4. Write a program to perform matrix multiplication
5. Write a program to count the vowels in a given sentence
6. Write a program to perform Stack Manipulations
7. Write a program to check the given string is palindrome or not
8. Write a program to find a substring in the main string without using library function
9. Write a program to prepare an employee pay slip using files.
10. Write a program to copy the content of one file to another file using command line arguments.
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

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.

Methodology
Blackboard Teaching and Tutorial.

UNIT-I


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


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**


**REFERENCE**

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


Prescribed Text:

Reference:


Scope: This course is emphasised to enhance the learners knowledge in optimal use 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):($\infty$/FIFO), Single server – Finite Capacity (M/M/1):(N/FIFO), Multi server – Infinite Capacity (M/M/C):($\infty$/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


Scope: This course introduces the concepts of Object Oriented Programming language.

Objectives: The objective of this course is to make students apply the OOPs concept to solve computing problems.

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V

TEXT BOOKS


REFERENCE


WEB SITES

http://www.cplusplus.com/doc/tutorial/
www.cplusplus.com/
www.cppreference.com/
1. Create a class to implement the data structure STACK. Write a constructor to initialize the top of the stack to zero. Write a member function PUSH() to insert an element and a member function POP() to delete an element. Check for overflow and underflow conditions.

2. Create a class ARITH which consists of a FLOAT and an INTEGER variable. Write member functions ADD(), SUB(), MUL(), DIV(), MOD() to perform addition, subtraction, multiplication, division and modulus respectively. Write member functions to get and display MAT() object values.

3. Create a class MAT as a 2D matrix and R, C represents rows and columns of the matrix. Overload the operators +,-,*, to add, subtract, multiply two matrices. Write member functions to get and display MAT() object values.

4. Create a class STRING. Write member functions to initialize to get and display strings. overload the operator + to concatenate two strings, == to compare two strings and a member function to find the length of the strings.

5. Create a class which consist of EMPLOYEE detail like eno, ename, dept, basic salary, grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member functions to calculate da, hra, pf depending on the grade and display the pay slip in a neat format using console I/O.

6. Create a class SHAPE which consist of two virtual functions cal_Area() and cal_Peri() to calculate area & perimeter of various figures. Derive three classes SQUARE, RECTANGLE and TRIANGLE from the class SHAPE and calculate area and perimeter of each class separately and display the result.

7. Create two classes which consist of two private variables, one integer and one float variable in each class. Write member functions to get and display them. Write a FRIEND function common to both classes which takes the object of the above two classes as arguments and the integer and float values of both the objects separately and display the result.

8. Write a user-defined function USERFUN() which has the formatting commands like setw(), showpos(), precision(). Write a program which prints an multiplication table and uses userfun() for formatting using inheritance.

9. Write a program to perform insertion, deletion and updating using files.

10. Write a program which takes a file as arguments and copies into another file with line numbers using command line arguments.
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.

Objective:
- 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


Man Mohan & Goyal. Management Accounting. Sahitya bhavan. New Delhi:

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


REFERENCE

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 CaC₂ 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 KMnO₄, Ozonolysis and oxidation with hot alk. KMnO₄.
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


REFERENCE

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:** 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: 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: This course aims to provide students with comprehensive and in-depth knowledge of architecture and functioning of database management systems and to design and built a database system.

Objectives: The objective of this course is to make the student to understand the role of relational database management systems (RDBMS) and to train the student to translate business requirements into relational database schemas and manipulate databases using the SQL Data Manipulation Language.

UNIT I


UNIT II


UNIT III


UNIT IV

UNIT V


TEXT BOOKS


REFERENCE


WEB SITES

www.compinfo-center.com/apps/rdbms.html
1. Create a table with following fields:

**Employee table:**

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee_no</td>
<td>Primary key</td>
<td>Character</td>
<td>6</td>
</tr>
<tr>
<td>Employee_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Dob</td>
<td></td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Check</td>
<td>Character</td>
<td>1</td>
</tr>
<tr>
<td>Doj</td>
<td></td>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

2. Create table with following fields:

**Student table:**

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll_no</td>
<td>Primary key</td>
<td>Character</td>
<td>6</td>
</tr>
<tr>
<td>Student_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Dob</td>
<td></td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td>Check</td>
<td>Number</td>
<td>2</td>
</tr>
<tr>
<td>Internal</td>
<td>Check</td>
<td>Number</td>
<td>3</td>
</tr>
</tbody>
</table>

Execute the following queries:
1. Insert records for all the students.
2. Select the records for students.
3. Select the students whose name start with S.
4. Update the records.

3. Create a table with following fields:

**Staff table:**

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff_no</td>
<td>Primary key</td>
<td>Character</td>
<td>6</td>
</tr>
<tr>
<td>Staff_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Dob</td>
<td></td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Dept_code</td>
<td>Foreign key</td>
<td>Character</td>
<td>4</td>
</tr>
<tr>
<td>Designation</td>
<td></td>
<td>Character</td>
<td>15</td>
</tr>
<tr>
<td>Basic</td>
<td></td>
<td>Number</td>
<td>7,2</td>
</tr>
</tbody>
</table>
Department table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept_code</td>
<td>Primary key</td>
<td>Character</td>
<td>4</td>
</tr>
<tr>
<td>Dept_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
</tbody>
</table>

Execute the following queries:
1. To list the staff who joined 2 years back.
2. To list the staff in computer science dept.
3. To list the staff_name and the dept_name in which he/she works.
4. To list the maximum and minimum salary in each dept.
5. To list the dept along with the total amount spent on salary
6. To list the name of the employees who draw the salary more than the average salary.

4. Creation of Different types of views.

5. Create a cursor to calculate THE SALARY for Employees.

6. Create a table with the following fields:

Book table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access_no</td>
<td>Primary key</td>
<td>Character</td>
<td>6</td>
</tr>
<tr>
<td>Title</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Author</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Publisher</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Subject</td>
<td></td>
<td>Character</td>
<td>10</td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td>Number</td>
<td>6,2</td>
</tr>
</tbody>
</table>

Execute the following queries:
1. The C and C++ books.
2. The books written by a particular author.
3. The books which costs between Rs.300/- and Rs.500/-
4. The no of books available in each subject.
5. The books in the decreasing order of the cost.

7. Write the PL/SQL program to find the factorial of given numbers.

8. Create a table with the following fields
Account table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc_no</td>
<td>Primary key</td>
<td>Character</td>
<td>4</td>
</tr>
<tr>
<td>Cust_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Branch_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Cust_city</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
</tbody>
</table>

Borrower table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acc_no</td>
<td>Foreign key</td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Branch_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
<td>Number</td>
<td>8,2</td>
</tr>
</tbody>
</table>

Write the procedure to join the two tables.

9. Write the PL/SQL program to calculate the Fibonacci series, factorial, Palindrome string.

10. Create table with following fields:

Product table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product_code</td>
<td>Primary key</td>
<td>Character</td>
<td>7</td>
</tr>
<tr>
<td>Product_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td>Number</td>
<td>6,2</td>
</tr>
<tr>
<td>Quantity</td>
<td></td>
<td>Number</td>
<td>4</td>
</tr>
</tbody>
</table>

Vendor table:

<table>
<thead>
<tr>
<th>Field name</th>
<th>Constraint</th>
<th>Type</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor_name</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Vendor address</td>
<td></td>
<td>Character</td>
<td>30</td>
</tr>
<tr>
<td>Product_code</td>
<td>Foreign key</td>
<td>Character</td>
<td>7</td>
</tr>
</tbody>
</table>

Create a trigger to fire when the Record is deleted.
Scope: The scope of this course is to teach students interface design, content design creation of graphics, animation, audio and video materials, and software development using high level authoring tools, such as Flash.

Objectives:
A student who successfully completes this course should, at a minimum, be able to:
- Understand basic multimedia concepts.
- Acquire basic knowledge 2D animation
- Proficient in audio and video capture and editing with tools
- design different application using flash.

UNIT I

UNIT II

UNIT III
Storage Media & Access – Data Compression Techniques: Some basic compression techniques, JPEG, MPEG, DVI

UNIT IV
**UNIT V**

Handling Events: Mouse Event, Keyboard, Key Objects, Clip Events, MovieClip Objects, Colliding Objects – Properties & Functions: setting properties, property tests, passing Property Values, Functions in Flash, using Substrings, User Defined Functions – Specialized Objects: Color, Date, Math, Number, Sound, XML & XML Socket Objects – Creating a Movie

**TEXT BOOKS**

**REFERENCE**

**WEB SITES**
1. en.wikipedia.org/wiki/Multimedia
2. www.arena-multimedia.com/
3. www.nextwavemultimedia.com/
**15MCU505B**  
**ELECTIVE-I**  
**NUMBER THEORY AND CRYPTOGRAPHY**

<table>
<thead>
<tr>
<th>Semester – V</th>
</tr>
</thead>
<tbody>
<tr>
<td>L T P C</td>
</tr>
<tr>
<td>5 0 0 5</td>
</tr>
</tbody>
</table>

**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: 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, Matrix representation, Eular paths, Hamiltonian paths, Trees, Binary trees simple theorems, and applications.

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 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


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-Covering – Lindelof covering theorem – The Heine Borel covering theorem – Compactness in $\mathbb{R}^n$.

UNIT IV

UNIT V

Connectedness – Components of a metric space – Arcwise connectedness-Uniform continuity and compacts sets- Fixed point theorem for contractions – Monotonic functions

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**

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

**UNIT IV**

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 formula for higher derivatives-Zero’s of A function.

**UNIT V**

Taylor’s series-Laurent’s series –Singularities and Residues-Zero’s-Isolated singularities-Removable singularities-Pole and essential singularity-Residue s-Residue theorem(Statement only)-Problems.
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, Symmetric Group – 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: The scope of this course is to teach students the capabilities and limitations of computer operating systems, process management, processor scheduling, deadlocks, memory management, secondary memory management, file management and I/O systems.

Objectives: The objective of this course to make student familiar with the memory allocation methods, page replacement algorithms, file allocation methods, multi-threading, process synchronization, and CPU scheduling.

UNIT I


UNIT II


UNIT III


UNIT IV


UNIT V

**TEXT BOOK**


**REFERENCES**


**WEBSITES**

www.cs.columbia.edu/~nieh/teaching/e6118_s00/
www.clarkson.edu/~jnm/cs644
pages.cs.wisc.edu/~remzi/Classes/736/Fall2002/
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


3. Balakrishnan, 2011, Graph theory, Springer publications

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

REFERENCES
15MCU605 ADDITIONAL PAPER- PROGRAMMING IN VB .NET

Scope: The course of this course is for developing applications using Visual Basic.NET. Students will also be introduced to Integrated Development Environments (IDE) like Microsoft Visual Studio 2005. Students will design and develop a project using these tools. This course would help prepare the student for a number of IT positions, including computer programmer and software engineer. Students gain an understanding on how to develop applications using an IDE.

Objectives:
After completing this course, students will be able to:
1. Create a simple Visual Basic .NET-based application based on the Windows Application template.
2. Use forms and controls to create a user interface.
3. Create and use Sub and Function procedures, including predefined functions.
4. Implement decision structures and loops by using conditional expressions.
5. Apply object-oriented programming techniques to create classes, add methods, and add properties.
6. Enhance the user interface by adding menus, status bars, and toolbars.
7. Access and manipulate data in a Microsoft Access or Microsoft SQL Server database by using Microsoft ADO.NET.
8. Build, package, and deploy an application.

UNIT I

UNIT II
Writing and Using Procedures: Module Coding – Arguments. Working with Forms:Appearance of Forms- Loading and Showing Forms -Designing Menus. Multiple Document Interface

UNIT III
Basic Windows Controls: Textbox Control- ListBox, CheckedListBox-Scrollbar and TrackBar Controls. More Windows Control: The common Dialog Controls-The Rich TextBox Control-The TreeView and ListView Controls: Examining the Advanced Controls-The TreeView Control-The ListView Control-Content Page Holder
UNIT IV


UNIT V


TEXT BOOK


REFERENCES


WEB SITES

www.microsoft.com/net/
www.w3schools.com/ngws/default.asp
www.gotdotnet.com
<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Semester</th>
<th>L</th>
<th>T</th>
<th>P</th>
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</tr>
</thead>
<tbody>
<tr>
<td>15MCU691</td>
<td>PROJECT</td>
<td>VI</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>
**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**


**UNIT II**


**UNIT III**


**UNIT IV**


**UNIT V**

optimal control
TEXT BOOKS

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


REFERENCE

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**


**REFERENCE**