



SHRIMATI INDIRA GANDHI COLLEGE

(Affiliated to Bharathidasan University)

Nationally Accredited at 'A' Grade (3rd Cycle) by NAAC | An ISO 9001 : 2015 Certified Institution

Tiruchirappalli - 620 002

1.3.2- Programme / Curriculum / Syllabus of the courses

The following department have Syllabus for experiential learning through project work/field work/internship

1. B.A Economics
2. B.A English
3. B.B.A
4. B.Com
5. B.Com C.A
6. B.ComB.M
7. B.Sc Biochemistry
8. B.Sc Chemistry
9. BCA
10. B.Sc., Computer Science
11. B.Sc Fashion Technology and Costume Designing
12. B.Sc Information technology
13. B.Sc Microbiology
14. B.Sc Physics
15. M.A Tamil
16. MBA
17. M.COM
18. M.Sc Biochemistry
19. M.Sc Computer Science
20. M.Sc Hospital Administration
21. M.Sc Information Technology
22. M.Sc Mathematics
23. M.Sc Microbiology
24. M.Sc Physics
25. MSW

Major-Based Elective II

JOURNALISM

Objectives:

- To initiate learners into the history of journalism
- To expose learners to various aspects of journalism

Unit – I

Definition of Journalism – Role of Journalism – Ethics – Press Laws – Press Council

Unit-II

News – Definition – Kinds – Elements – Source – News Agencies

Unit- III

Reporting – Qualities of Reporters – Beats – Kinds of Reporting with Special Reference to Court, Crime, Election, Sport – Investigative Reporting

Unit – IV

Editing – News Editor – Sub Editors – Anatomy of Editing.

Unit – V

Language of Journalism – Writing a News Story – Writing Opinion Pieces – Writing Leads – Headlines.

Books for Reference:

- Mehta, D.S. *Mass Communication and Journalism in India*. Bombay: Allied, 1979.
- Shrivastava, K. M. *News Reporting and Editing*. New Delhi: Sterling Publishers, 2003.

M. Rema

M. REMA
Head Department of English
Shrimati Indira Gandhi College
Trichy-2 -

CORE COURSE IV

FICTION

Objectives:

To make learners understand different forms of novel from the Age of Tennyson to the 20th century

To enable learners to identify diverse fictional themes and techniques

To help learners improve their creative and imaginative faculties through the novels of major British writers

Unit – I

Charles Dickens

: *David Copperfield*

Unit– II

R.L. Stevenson

: *Treasure Island*

Unit– III

Joseph Conrad

: *Heart of Darkness*

Unit – IV

Virginia Woolf

: *To the Light House*

Unit – V

Aldous Huxley

: *Brave New World*

M. Rema

M. REMA

Head Department of English
Shrimati Indira Gandhi College
Trichy-2. -

CORE COURSE XIII
INDIAN WRITING IN ENGLISH

Objectives:

- To make learners aware of the history and the growth of Indian Writing in English
- To introduce learners to the rich literary tradition in Indian Writing in English
- To enable learners to appreciate the changing trends in Indian literature in English from pre to post-Independence era

Unit- I: Poetry

- Henry Derozio : "The Harp of India"
Sarojini Naidu : "Love and Death"

Unit- II: Poetry

- Nissim Ezekiel : "Poet, Lover, Birdwatcher"
A. K. Ramanujan : "Of Mothers, Among Other Things"

Unit - III: Prose

- M. K. Gandhi : "Playing the English Gentleman" (Chapter 15 from *The Story of My Experiments with Truth*)
A. P. J. Abdul Kalam : "The Power of Prayer"

Unit- IV: Drama

- Girish Karnad : *Nagamandala*

Unit- V: Fiction

- Mulk Raj Anand : *Coolie*

M. Renu

M. KEMA

Head Department of English
Shrimati Indira Gandhi College

Vijay-2, -

CORE COURSE XV

ENGLISH LANGUAGE TEACHING

Objectives:

To expose learners to various approaches and methods, aspects and strategies of teaching English

To help learners understand the essential components and concepts of language teaching

Unit – I

Place of English in India – Issues Involved in the Teaching of English – English as Foreign Language, Second Language, and English for Specific Purposes

Unit – II

Approaches and Methods – Grammar Translation Method – Audio-lingual Method – Communicative Approach – Natural Approach – Content-based Instruction – Task-based Language Teaching

Unit– III

Teaching of Prose, Poetry, Drama, Grammar, Composition – Teaching LSRW Skills

Unit – IV

Testing – Types of Tests – Characteristics of a Good Test – Preparation of Model Exercises and Questions

Unit – V

Use of Audio-Visual Aids – Television and Language Lab in Teaching English

Books for Reference:

Baruah, T C. *The English Teacher's Handbook*. New Delhi: Sterling Publishers, 1991.

Bright, John A., and G. P. McGregor. *Teaching English as a Second Language*. Longmans, 1970.

Richards, Jack C, and Theodore S. Rodgers. *Approaches and Methods in Language Teaching: A Description and Analysis*. Cambridge: Cambridge UP, 1986.

Varghese, Paul. *Teaching English as a Second Language*. New Delhi: Sterling Publishers, 1990.

M. Kema

M. KEMA

Head Department of English
Shrimati Indira Gandhi College
Trichy-2.

CORE COURSE IX

SHAKESPEARE

Objectives:

- To introduce learners to the dramatic and theatrical conventions of Shakespeare
- To make learners understand the characterization, dramatic and poetic techniques in Shakespearean plays
- To enhance learners' appreciation and enjoyment of select plays of Shakespeare

Unit – I

A Midsummer Night's Dream

Unit – II

Julius Ceasar

Unit- III

King Lear

Unit – IV

Twelfth Night

Unit – V

- Shakespearean Theatre and Audience
- Shakespearean Fools and Clowns
- Shakespearean Women
- Supernatural Elements in Shakespearean Plays
- Shakespearean Soliloquies
- Shakespeare as a Sonneteer and a Narrative Poet

M. Rema

M. REMA
Head Department of English
Shrimati Indira Gandhi College
Trichy-2. -

CORE COURSE V

POETRY II

Objectives:

To enable learners to comprehend the salient features of various types of poetry from the Romantics up to T.S. Eliot

To make learners sharpen their poetic sensibility and stylistic skills

Unit – I

William Wordsworth

: “The Solitary Reaper”

S. T Coleridge

: “Dejection: An Ode”

Unit – II

John Keats

: “Ode to Nightingale”

P. B Shelley

: “Ozymandias”

Unit – III

Robert Browning

: “Andrea del Sarto”

Alfred Tennyson

: “Break, Break, Break”

Unit – IV

W. B. Yeats

: “Sailing to Byzantium”

Philip Larkin

: “Ambulances”

Unit – V

T. S. Eliot

: “Marina”

Ted Hughes

: “Hawk Roosting”

M. Rema

M. REMA

Head Department of English
Shrimati Indira Gandhi College

Trichy-2. -

Second Year

**CORE COURSE-V
MACRO ECONOMICS -I**

Semester-III

Code:

(Theory)

Credits: 5

OBJECTIVES:

- To know the scope of Macro Economics.
- To understand the measurement of National Income.
- To gain knowledge about the classical theory of employment.
- To learn about the determination of effective demand.
- To make the students understand the theories of consumption.
- To become cognizant of the Contemporary Developments in Macroeconomic theory.

UNIT- I THE NATURE AND SCOPE OF MACRO ECONOMICS:

Introduction - Nature and Scope of Macro Economics- Limitations- Macro Statics – Macro Dynamics –Comparative Statics - Stock and Flow Concepts.

UNIT -II NATIONAL INCOME ACCOUNTING:

National Income – Concepts- Meaning –Measurement –Importance –Limitations – Circular Flow of Income and Expenditure – Social Accounting.

UNIT –III THE CLASSICAL THEORY EMPLOYMENT:

Introduction – Classical Theory of Employment –Keynes’ criticism of Classical Theory- Say’s Law of Markets- Meaning, Propositions and Implications of the Law – Criticism.

UNIT –IV THE PRINCIPLES OF EFFECTIVE DEMAND:

Effective Demand –Meaning – Aggregate Demand Price – Aggregate Supply Price – Determination of Effective Demand – Importance of Effective Demand – Keynesian Theory of Employment.

UNIT –V CONSUMPTION FUNCTION:

Meaning- Significance of MPC, Keynes’ Psychological Law of Consumption- Determinants of Consumption Function – Theories of Consumption Function- The Absolute Income Hypothesis – The Relative Income Hypothesis – Permanent Income Hypothesis.

UNIT VI CURRENT CONTOURS (For Continuous Internal Assessment Only):

Contemporary Developments in Macroeconomic theory

Third Year

**CORE COURSE-IX
PUBLIC FINANCE
(Theory)**

Semester-V

Code:

Credits: 5

OBJECTIVES:

- To identify and discuss the role and importance of public finance.
- To know the various sources of public revenue and avenues of public expenditure.
- To understand the different kinds of taxation in India.
- To study the causes and effects of public debt.
- To impart awareness regarding the recent Finance Commission and its report.
- To familiarize students with the recent developments in Public Finance.

UNIT –I PUBLIC FINANCE:

Meaning and Scope – Uses and Role of Public Finance in the economy – Public finance and private finance – The principle of maximum social advantage.

UNIT –II PUBLIC REVENUE AND PUBLIC EXPENDITURE:

Sources of revenue of the centre and states – Recent trends – Tax Revenues – Non-tax Revenues – Role of Direct taxes – Income Tax – Corporate Tax - GST– Excise duty and customs duty – Wealth Tax – Capital gains Tax – gift Tax – Public Expenditure – general growth of public expenditure – causes, effects and control of expenditure.

UNIT- III TAXATION:

Principles of taxation – The cost of Service – The benefit – The ability to pay – The progressive and proportional Taxation – Direct and Indirect Taxes – Merits and demerits – VAT – shifting and incidence of taxation – effects of Taxation.

UNIT –IV PUBLIC DEBT:

Need for Public debt – Public debt and private debt – causes and effects of public debt – public debt redemption – recent trends – Public debt of the State Governments.

UNIT -V FEDERAL FINANCE AND BUDGET:

Evolution – Principles – Central – State Financial Relationship – Finance Commission – functions – The Recent Finance Commission and its report – Local Finance – Its trend in India – Fiscal policy –OBJECTIVES, uses and limitations – Fiscal policy in India – Budget – basic structure.

UNIT –VI CURRENT CONTOURS (For Continuous Internal Assessment Only):

Recent developments in Public Finance

Third Year

**CORE COURSE-XIV
HUMAN RESOURCE MANAGEMENT**

Semester-VI

Code:

(Theory)

Credits: 5

OBJECTIVES:

- Understand the concept of Human capital.
- Study the methods of Human capital formation
- Acquire knowledge about Human resource planning.
- Examine the various gender issues.
- Gain knowledge about the human development index in India.
- Give an idea about the recent developments in Human Resource Management.

UNIT –I APPROACHES TO HUMAN CAPITAL:

Evolution of the Concept of Human Capital- Meaning- Nature – Significance – Schultz’s Approach- Becker’s Theory.

UNIT –II METHODS OF HUMAN CAPITAL FORMATION:

Education and Economic Growth- Health and Nutrition – Information about Job Market – Elimination of Social Discrimination- Brain Drain Development Indicators.

UNIT –III HUMAN RESOURCE PLANNING:

Meaning-OBJECTIVES- Need-Process- Benefits- Problems.

UNIT –IV GENDER ISSUES:

Role of Women in Economic Development - Gender and Inequality – Gender Disparities in Education, Occupation and Earnings - Development of Women Entrepreneurship in India.

UNIT –V POPULATION AND DEVELOPMENT:

Work Participation Rate – Male & Female Work Participation Rate – Decadal Variations – Human Development Index in India.

UNIT -VI CURRENT CONTOURS (For Continuous Internal Assessment Only) :

Recent Developments in Human Resource Management

REFERENCES :

1. Memoria, C.B., Gankar S.V.(2001), Personnel Management, Text& Cases. Himalaya Publishing House, Mumbai.
2. Mira,S.& Saiyandain(2009), Human Resources Management, McGraw –Hill Education Pvt Ltd, New Delhi.
3. Gupta, C.B.(2013), Human Resource Management, Sultan Chand & Sons, New Delhi.

CORE COURSE – XIII

HUMAN RESOURCE MANAGEMENT

SUBJECT CODE :16CCBB13

OBJECTIVE:

To help students

- understand of the basic elements of HRM
- gain knowledge on various facets.the policies and practices of HRM and
- acquire knowledge on the recent trends in HRM.

UNIT - I

Human Resource - Definition – Characteristics and Objectives – Principles of HRM– Functions of Personnel Department – Managerial and Operative Functions.

UNIT - II

HR Planning - Basics and needs – Factors - Steps in HR Planning – Job Analysis, Job Description and Job Specification - Recruitment-Selection- Interviews and Tests and Placement of Personnel.

UNIT - III

Training – Objectives – Methods – Importance of Executive Development – Methods – Promotion- Criteria and types – Transfer - Types - Career Planning.

UNIT - IV

Wages– Different methods of wage payments – Time and Piece rate system – Incentive Schemes - Fringe benefits.

UNIT - V

Performance Evaluation- Importance – Methods– Discipline and Disciplinary procedure
– Grievances - Steps in Grievance Handling.

RECOMMENDED TEXTBOOK:

Human Resource Management – C. B. GUPTA – Sultan Chand
Human Resource Management- S.S. Khanka - Himalaya publishing
House Human Resource Management – P.S. SUBBORAO

BOOKS FOR REFERENCE:

1. Personnel Management – C.B. MAMORIA, Himalaya Publishing House.
2. Human Resource Management – L. NATARAJAN – Margam Publications
3. Human Resource Management - S.M. SHAW-Himalaya Publishing House.4th Edition 2013.
4. Personnel Management and Industrial Relations – K.K. AHUJA, Kalyani Publishers.

The Head

Dept Of Business Administration

CORE COURSE - III
MARKETING MANAGEMENT

SUBJECT CODE: 16CCBB3

OBJECTIVES:

- To expose students to marketing concepts and trends in the market.
- To promote the ability to relate consumer behaviour and market trends
- To make students realize the relationship between marketing channels and corresponding strategies.

UNIT - I

Market and Marketing: Distinction between marketing and selling - Types of market - Concepts - Functions - Marketing management - Objectives - Importance - Marketing Environment - Marketing Information System.

UNIT - II

Market Segmentation: Criteria of effective segmentation - Benefits - Bases for market segmentation - Factors influencing consumer behavior - Buyer motives - Buying process.

UNIT - III

Marketing Mix - Product planning and development - Product mix decisions - New product development - Product life cycle and strategies - Pricing - Meaning - Influencing factors - Objectives - Pricing methods.

UNIT - IV

Marketing channels - Need and importance - Classification - Types of Intermediaries - Wholesalers - Functions - Retailers - Functions - Physical distribution - Elements of physical distribution (logistics)

UNIT - V

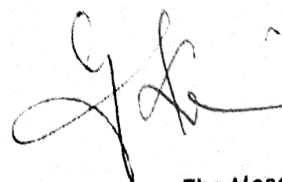
Promotion mix - Personal selling - Process - Advertising - Objectives - Types - Sales promotion - Objectives - Sales promotion methods, publicity and public relations.

TEXT BOOK RECOMMENDED:

1. Ramaswamy and Namakumari, Marketing Management 3/e Revised MacMillan I Ltd

BOOKS FOR REFERENCE:

1. Philip Kotler, Marketing Management, Prentice Hall of India.
2. Philip Kotler and Armstrong, Marketing Management
3. Rajan Nair, Marketing
4. Saxena, Marketing Management, Tata McGraw Hill Pub
5. Pillai & Bhagavathi, Modern Marketing
6. Sherlekar, Marketing Management



The Head
Dept Of Business Administration
Shrimati Indra Gandhi College
Tiruchirapalli - 620 002.

CORE COURSE – VII
ORGANIZATIONAL BEHAVIOUR

OBJECTIVES:

- To provide basic knowledge on various models of organizational behavior
- To expose them to the concepts of motivation and group dynamics
- To help them acquire interpersonal skills.

UNIT - I

Organizational Behaviour – Concept – Nature - Models - Other similar fields of study – Disciplines contributing to Organizational Behaviour - Individual Behaviour – Perception.

UNIT - II

Personality – Definition - Determinants - Group Dynamics – Formal and Informal Groups, Group Norms, Group Cohesiveness, Group Behaviour and Group Decision – making.

UNIT - III

Leadership – Concept – Qualities of effective Leadership – Leadership Styles - Definition of Power – Types of Power - Sources of power – Power and Politics.

UNIT - IV

Definition of Authority – Characteristics – Types of Authority - Morale – Concept – importance – Measurement of Morale – Steps to improve Morale in an organization.

UNIT - V

Motivation – Concept – Nature – significance - Theories of Motivation – Maslow's need hierarchy theory – Mc Gregor's Theory X and Theory Y – Herzberg Two Factor Theory - Stress Management – Concept - Sources - Effects of stress - Management of Stress.

TEXT BOOK RECOMMENDED:

Organizational Behaviour – L.M. PRASAD

BOOKS FOR REFERENCES:

1. Organization Theory and Behaviour – V.S.P. RAO & D.S. Narayana
2. Elements of Organizational Behaviour – K. SUNDAR J. SRINIVASAN
3. Organizational Behaviour – FRED LUTHENS.
4. Organizational Behaviour - Uma Sekaran
5. Organizational Behaviour - K. Aswathappa
6. Organizational Behaviour – Dr. P.C. SEKAR
7. Organizational Behaviour – Sharma



Department of Management Studies
Shrimati Indira Gandhi College
Tiruchirappalli - 620 002.

CORE COURSE – XV**ENTREPRENEURIAL DEVELOPMENT****SUBJECT CODE : 16CCBB15****OBJECTIVES:****To help students**

- understand the concepts of entrepreneurship development
- acquire requisite knowledge and skills for becoming successful entrepreneurs and
- formulate and develop business projects.

UNIT - I

Entrepreneurship – Evolution of entrepreneurship - Traits of an Entrepreneur – Functions

- Types of Entrepreneurs – Role of Entrepreneurship in Economic Development
- Distinction between Entrepreneur, Intrapreneur and Entrepreneurship.

UNIT - II

Entrepreneurial Environment – Factors affecting Entrepreneurial Growth – Entrepreneurial Motivation – Need for Achievement Motivation – Barriers to Entrepreneurship Development.

UNIT - III

Entrepreneurship Development Programme (EDP) – Need for EDP – Objectives, Phases of EDP – Course Content and Curriculum of EDP – Problems of women entrepreneurs – EDP Institutions in India, their functions and financial support for entrepreneurs – DIC, TIIC, SISI, SIPCOT and SIDBI.

UNIT - IV

Project Management – Concept of Project and Classification – Sources of a Business Idea
-Project Identification – Project Formulation – Project Appraisal Methods - Preparation of Project Reports.

UNIT - V

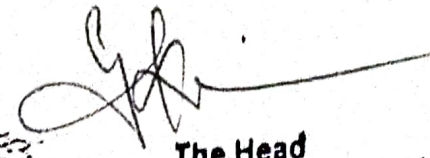
Incentives and Subsidies – Incentives to Small Scale Industries – Problems of Small Scale Industries – Merits and Demerits of Family Business - Benefits to Industrial Units located in Backward Areas – Industrial Estates.

TEXT BOOK RECOMMENDED:

C.B. Gupta & Srinivasan, Entrepreneurial Development, Sultan Chand & Sons

BOOKS FOR REFERENCE:

1. Vasant Desai, Dynamics of Entrepreneurial Development.
2. P.Saravanavel, Entrepreneurship Development Principles, Policies and Programmes.


The Head
Dept Of Business Administration
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002.

Third Year

**CORE COURSE-XIII
DIGITAL BANKING
(Theory)**

Semester-VI

Code:

Credit: 5

OBJECTIVES:

- To learn e-banking and its features.
- To acquire knowledge about electronic delivery channels.
- To impart regulations of e-banking cards
- To understand digital banking cards
- To understand the genesis and concept of Online-Banking

UNIT -I ELECTRONIC BANKING:

E-Banking – Meaning - Benefits – Internet Banking Services – Drawbacks – Mobile Banking – Features – Drawbacks – Call Centre Banking – Features – Challenges – Traditional Vs e-banking - e-banking in India.

UNIT- II DIGITAL CARDS:

Introduction –concept and meaning-the electronic delivery channels- need for computerization-ATM – Types - Features – Benefits – Challenges – Credit Cards – Benefits – Constraints – Debit Card – Benefits– Smart Card – Features – Benefits of Smart cards -Biometric Cards – Features.

UNIT -III MODERN BANKING OPERATIONS:

National Electronic Fund Transfer (NEFT) - RBI Guidelines – Benefits of Electronic Clearing Systems – E- Cheques – E-Money – Real Time Gross Settlement (RTGS) – Benefits to Banker and Customer – Cheque Transaction – Core Banking Solutions (CBS) – Benefits – Single Window Concepts – Features- CIBIL (Credit Information Bureau (India) Ltd – MICR Cheques .

UNIT -IV E-BANKING SECURITY:

Introduction need for security –Security concepts-Privacy – Survey. Findings on security Attack-Cyber crimes-Reasons for Privacy-Tampering- Encryption –Meaning-The encryption process-may appear as follows -Cryptogram- Cryptanalyst-cryptography-Types of Cipher systems –Code systems-Cryptography- Cipher- Decipher-Jumbling-Asymmetric-Crypto system Data Encryption Standard (DES).

UNIT- V E-BUILDER SOLUTIONS:

Digital certificate-Digital Signature & Electronic Signature-E- Security solutions—solutions providers-E-locking technique-E-locking services-Netscape security solutions-Pry Zone -E software security Internet-Transactions-Transaction security-PKI-Sierras Internet solutions inc –security devices-Public Key Infrastructure- (PKI)-Firewalls Secure Ledger-(FSL)-Secure Electronic Transaction(SET).

UNIT -VI CURRENT CONTOURS: (For Continuous Internal Assessment only)

Quiz and Self reading on Current developments related to the Digital Banking during the semester through collection, discussion and evaluation. To be sourced from multiple reliable informative sources- Print, Internet, Interaction, Social Media, Webinars and so on.

K. Sujatha

The Head

Dept Of B.Com Bank management
Shrimati Indira Gandhi College
Tiruchirappalli - 620 000

MAJOR BASED ELECTIVE -- I

(A) ENTREPRENEURIAL DEVELOPMENT

Objectives:

To enable the students to understand the conceptual and applied knowledge about Entrepreneurship.

Unit – I

Entrepreneurship – Definition, Concept, Nature , Characteristics , functions , types and phases of EDP, Development of women and rural entrepreneurs – Women Council Scheme.

Unit – II

The start-up process, Project identification – selection of the project – project formulation and evaluation – feasibility analysis, Project Report.

Unit – III

Institutions in the development of entrepreneurs – DIC, SIDO, NSIC, MSMEDI – SSIC, SIDCO – ITCOT, IIC – KVIC.

Unit – IV

Institutional finance to entrepreneurs: IFCI, SFC, TIIC, LIC and GIC, SIPCOT – SIDBI – Commercial banks - Venture capital.

Unit – V

Incentives and subsidies – Subsidised services – seed capital assistance – Taxation benefit to SSI. Role of entrepreneur in export promotion and import substitution.

Text and Reference Books (Latest revised edition only)

1. Dynamics of Entrepreneurial Development by Vasant Desai – Himalaya Publishing House.
2. Entrepreneurship & Small Business Management by Dr.C.B. Gupta and Dr.S.S.Khanka-Sultan Chand & Sons.
3. Fundamentals of Entrepreneurship and Small Business by Renu Arora & S.KI.Sood – Kalyani Publishers.
4. Entrepreneurial Development by Dr.S.S. Khanka – S.Chand & Co.,
5. Entrepreneurial Development by Dr. P. Saravanavel, Learntech Press Trichy.
6. Entrepreneurial Development by Dr.S.G. Bhanushali- Himalaya Publishing House

MAJOR BASED ELECTIVE II

(A) HUMAN RESOURCE MANAGEMENT

Objective:

To enable the students to understand the concepts and principles of Human Resource Management.

Unit - I

Human Resource Management- Meaning and Definition-Objectives-Functions-Qualities and Changing role of Human Resource Managers-Meaning, Process, Advantages and Disadvantages of HRIS(Human Resource Information System).

Unit - II

Concept of Human Resource Planning-Characteristics-Steps in Human Resource Planning. Job Analysis- succession planning- Job Description and Job specification.

Unit - III

Definition- Objectives- Factors affecting Recruitment- Source of Recruitment- e-recruitment- Selection process- Types of Testing- Kinds of Employee Interview- Medical Screening-Appointment order.

Unit - IV

Definition and purposes of Training- Distinction between Training and Development- Assessing Training Needs- Steps in Training- On the Job and Off the Job Training- Evaluation of Training Effectiveness- Methods of executive development.

Unit - V

Definition and Objectives of Performance Appraisal –Steps in Appraisal- Traditional and Non traditional methods of Performance Appraisal- Pre-requisites of a Good Appraisal System- Defects in Performance Appraisal.

Text and Reference Books (Latest revised edition only)

1. Gupta C.B- Human Resource Management, Sultan Chand and Sons, New Delhi.
2. P G Aquinas-Human Resource Management Principles and Practice, Vikas Publication, New Delhi.
3. ChitraAtmaramNaik-Human Resource Management-Ane Publisher, New Delhi.
4. Memoria C.B- Personal Management, Himalayan Publications, New Delhi.

MAJOR BASED ELECTIVE – III

(A) INSURANCE MANAGEMENT

Objective:

To make the students to understand the principles and practices of Insurance Management.

Unit - I

Introduction : Savings and investment schemes like shares, units, capital, markets, mutual funds, etc. vis - a -vis insurance; Tax benefits under insurance policies; Life cycle needs - including solutions, matching of the customer's needs and requirements to available products; Comparison between different products offered vis a vis chargeable premium, and coverage.

Unit - II

Computation of premiums/Bonus: Premium calculation -including rebates, modes, large-sum assured policies; Extra premium, under premium, Computation of benefits, Surrender value, Paid- up value.

Unit - III

Insurance Documents: Insurance documents, including proposal forms and other relevant forms; First premium receipt/renewal premium receipt; Policy contract; Endorsements; Renewal notice/bonus notices; other insurance documents related to receipt

Unit - IV

Life insurance Product - Traditional unit Linked Policies: Individual and group policies; with- profit and without profit policies; Different types of insurance products - Whole life products, interest sensitive products, term- assurance annuities, Endowment, Assurance.

Unit - V

Options and Guarantees- Group Insurance, pension plans, & health insurance.

Text and Reference Books (Latest revised edition only)

- 1 Mishra M.N: Insurance Principles and practice; S. Chand and co, New Delhi.
2. Periasamy P, Fundamentals of Insurance; Vijay Nicole Imprints (P) Ltd
3. Insurance Regulatory Development Act 1999 3 Life Insurance Corporation Act 1956.

MAJOR BASED ELECTIVE - III

(A) BANKING THEORY LAW & PRACTICE

Objectives:

To impart knowledge on the theory and practice of Banking and to understand the process of banking activities.

(Theory only)

UNIT I:

Definition of the term banker and customer – General relationship – special relationship – main functions and subsidiary services rendered by banker – agency services and general utility services – safe custody deposit – letters of credit – issue and payment of demand drafts and foreign bills, Merchant Banking.

UNIT II:

Operations of Bank Accounts – Fixed Deposits – Fixed Deposit Receipt and its implications – Savings Deposit accounts – Current accounts – Recurring Deposit accounts- New Deposit savings schemes introduced by Banks – Super Savings Package – Cash Certificate, Annuity Deposit – Reinvestment plans – Perennial Premium plan – Non Resident (External) accounts Scheme.

UNIT III:

Types of Customers – Account holders – Procedure and proactive for opening and closing of accounts of Customers- particulars of individuals including Minor, illiterate persons- Married women – Lunatics – Drunkards – Joint Stock Companies – Non-Trading Associations – Registered and Unregistered Clubs – Societies, Attorney - Executive and administration – Charitable institutions – trustees – Liquidators – Receivers – Local authorities – steps to be taken on death, Lunacy, Bankruptcy – winding up in case of Garnishee Order.

UNIT IV:

Paying and collecting bankers – rights responsibilities and duties of paying and collecting banker – precautions to be taken in payment and collection of cheques – protection provided to them – nature of protection and conditions to get protection – meaning of terms – such as payment in due course – recovery of money paid at mistake.

UNIT V:

Pass book and Issue of duplicate pass book – cheques - Definition of a cheque – requisites of a cheque – drawing of a cheque - types of cheque – alteration – marking – crossing – different forms of crossing and their significance – loss of cheques in transit – legal effect.

Syllabus for Mini project III B.Sc Biochemistry

Clinical biochemistry

Sub. Code 16SCCBC9

Unit I Basic concepts of Clinical Biochemistry: A brief review of units and abbreviations used in expressing concentrations and standard solutions. Specimen collection and processing (Blood, urine, faeces). Anticoagulant preservatives for blood and urine. Transport of specimens. Blood coagulation - disturbances in blood clotting - haemophilia A and haemophilia B. Blood groups, haemoglobin in anaemias, sickle cell anemia, thalassemia, Porphyrias and porphyrinurias. Blood banking.

Unit II Homeostasis, Disorders of fluids, electrolyte balance and gastrointestinal system, disorder involving change in hydrogen ion concentration. Liver function tests, jaundice, haemolytic, hepatic and obstructive jaundice. Renal function tests, normal and abnormal constituents of urine.

Unit III Disorders of carbohydrate metabolism: Sugar level in normal blood, maintenance of blood sugar concentration – endocrine influence on carbohydrate metabolism, hypoglycemia, glycosuria, renal threshold value, diabetes mellitus – classification, complications, glucose tolerance test (GTT), diabetic coma, diabetic ketoacidosis, glycogen storage diseases, fructosuria, galactosemia, and hypoglycemic agents.

Unit IV Disorders of protein, amino acid and nucleic acid metabolism: plasma proteins, their origin, significance and variation in diseases. Nitrogen balance, proteinuria, multiple myeloma, Wilson's disease. Phenylketonuria, alkaptonuria, tyrosinosis, albinism, Hartnups disease. Fanconi syndrome, cystinuria, Gout.

Unit V Disorders of lipid metabolism: lipid metabolism in liver and adipose tissue, plasma lipoproteins, cholesterol triglycerides and phospholipids in health and diseases, fatty liver, atherosclerosis, lipid storage diseases, hypolipoproteinemia and hyperlipoproteinemia.

Reference Books:

1. Clinical Chemistry in diagnosis and treatment, Philip, 6th ed ELBS. D. Mayne & Edward Arnold, 1994.
2. Textbook of Clinical Chemistry, 3rd ed, Burtis & Ashwood, Tietz WB Saunders, 1999.
3. Text book of Medical Biochemistry 2nd Edition, M.N. Chatterjee and Rana Shinde, Jaypee Brothers Medical publishers Private limited, New Delhi 1995.
4. Clinical Biochemistry – Metabolic & Clinical Aspects, William J. Marshall, Stephen K. Bansert, Churchill Livingstone, 1995.
5. Clinical Chemistry – Principles, procedures, correlations – Bishop, Lippincott. 2000. 6. Fundamentals of Biochemistry - Ambika shanmugam, S.Chand, by Publishers 1986.

ANALYTICAL CHEMISTRY**OBJECTIVES**

1. To know the storage and handling of various chemicals and first aid procedures.
2. To learn data analysis, various separation techniques.
3. To learn gravimetric analysis and various thermo analytical methods.
4. To learn visible spectrophotometry and colorimetry.
5. To know the various electroanalytical techniques.

UNIT I LABORATORY HYGIENE AND SAFETY

- 1.1. Storage and handling of chemicals-corrosion, flammable, explosive, toxic, carcinogenic and poisonous chemicals.
- 1.2. Simple first aid procedures for accidents involving acids, alkalies, bromine, burns and cut by glass.
- 1.3. Precautions to avoid poisoning-treatment for specific poisons, threshold vapour concentrations-safe limits-laboratory safety measures.
- 1.4. Waste disposal-fume disposal-precautions for avoiding accidents.

UNIT II DATA ANALYSIS

- 2.1. The Mean-significant numbers, the median-precision, accuracy- confidence limits, standard deviation.
- 2.2. Errors-method for improving accuracy-rejection of data-presentation of tabulated data-Scatter diagram -method of least squares- S.I. units.
- 2.3. Separation techniques: Precipitation-solvent extraction-chromatography - types, column chromatography-thin layer chromatography.
- 2.4. Paper chromatography - paper electrophoresis -Ion exchange chromatography -Gas liquid chromatography.

UNIT III GRAVIMETRIC ANALYSIS AND THERMO ANALYTICAL METHODS

- 3.1. Gravimetric analysis - principles-methods of gravimetric analysis - requirement of gravimetric analysis-precipitation-theories of precipitation.
- 3.2. Types of precipitation - co-precipitation, post precipitation - and precipitation from homogeneous solution-digestion, filtration and washing, drying and ignition. Inorganic and organic precipitating agents.
- 3.2. Thermo analytical techniques - types-TGA principle-Instrumentation - TGA analysis of $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$.
- 3.3. Differential thermal analysis-principle-DTA of $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$ -factors affecting TGA & DTA

UNIT IV VISIBLE SPECTROPHOTOMETRY AND COLORIMETRY

- 4.1. Theory of spectrophotometry and colorimetry, Beer-Lambert's law (statement only), Molar absorptivity and absorbance.
- 4.2. Visual comparators-multiple standard methods, duplication and dilution method, balance method, photoelectric colorimeter, spectrophotometer.
- 4.3. Criteria for satisfactory colorimetric estimation-advantages of colorimetric estimation, determination of composition of complexes, colorimetric estimation of iron.

UNIT V ELECTROANALYTICAL TECHNIQUES

- 5.1. Electro gravimetry –theory - electro gravimetric analysis of Fe and Cu.
- 5.2. Electrolytic separation of metals: principle –separation of copper and nickel, Electro deposition- principle –overvoltage.
- 5.3. Coulometry -Principle of coulometric analysis –coulometry at controlled potential- apparatus and technique-separation of nickel and cobalt. Amperometry titrations-principle –Instruments –types-applications.

REFERENCES

1. Gopalan R, Subramanian PS and Rengarajan K (1993) "Elements of analytical chemistry" second revised edition, Sultan Chand.
2. Gurdeep R Chatwal, Sham K. Anand (2005) "Instrumental methods of chemical analysis", Himalaya publishing house.
3. Vogel A.I. "Text Book of Quantitative Inorganic analysis," The English Language Book Society, Fourth edition.
4. Douglas A. Skoog, Donald M. West and F. J. Holler, Fundamentals of Analytical chemistry, 7th edition, Harcourt College Publishers.
5. Mendham J., Denny R. C., Barnes J.D., Thomas M., Vogel's Test book of Quantitative Chemical analysis 6th edition, Pearson education.
6. Sharma, B. K., Instrumental methods of chemical analysis, Goel Publishing House, Merrut (1997).

CORE COURSE VII

EXPORT DOCUMENTATION

Objectives:

1. To expose the learners to international export markets.
2. To impart knowledge on trading policies.

Unit I Export Market

Export Marketing of apparel, global scene, prospects for Indian apparel in overseas market, Globalization.

Unit II Credit

Export credit – short term, anticipatory Letter of Credit (L/C), packing credit, negotiation of bills, short, medium & long term export credits, methods, role of terms of payment in international trading. Factors responsible for counter trade growth.

Unit III Trade

Domestic trade vs international trade, regional trade blocks, nature of foreign exchange market, main functions, business & environment – social & logical. Business ethics.

Unit IV Document

Major documents for exports – International codes for products & services, principle, auxilliary documents, documents for claiming export assistance.

Unit V Policies

Standard policies – Indian trade policies, India's foreign trade policy: Export & import policy.

Reference:

1. Jeannette Jarnow, Dickerson, Inside the Fashion Business, Prentice hall, USA.
2. Richard Hill, Ralph & James, Industrial Marketing, AITBS Pub., 1998.
3. Philip Kotler, Marketing Management, Prentice Hall, New Delhi 2000.
4. Dickerson, Textiles & Apparel, in the Global economy, Prentice Hall, 3rd ed, 1998.
5. Darlie Koshy, Effective export marketing of Apparel, Global business press, 1996.

CORE COURSE VIII
QUALITY AND COST CONTROL

Objectives:

1. To know about raw material quality control Specifications.
2. To understand the importance of quality control in textiles and apparel industries.

Unit I Basics of Quality Control

Definition and Scope of Quality Control – Establishing Merchandising Standards – Establishing Raw Material Quality Control specifications – Quality Control of Raw Material.

Unit II Quality Control System

Establishing Processing quality specification – Training Quality Control Personnel – The Quality Standard Control – Quality Control Inspection, Procedures for processing – Quality control of finished garments – Quality control and Government contacts – Quality Control for Packaging, Warehousing and shipping – Statistical Quality Control, Sampling plans – industry – wide quality standards.

Unit III Basics of Production control

Function of Production control – Production, Analysis – Quality Specifications – Quantitative specifications – Scope of Apparel Manufacturing Activity – Co-ordinating departmental Activities – Distribution of Documents and Records.

Unit IV Production Control System

Type of Control forms – Basic Production Systems –Principles for Choosing a Production System – Evaluating Production Systems – Flow Process Grids and Charts – Basic Flow Process Grid Construction – Flow Process Grids for Production control – Scheduling Calculation; Graph Methods. Scheduling, bundles of varying amounts. Mathematical formulas for scheduling – Producing many styles simultaneously, producing many styles consecutively in one line.

Unit V Cost Control

Function of Cost Control: Types of Costs and Expenses – Apparel Manufacturing Cost Categories – Sales Cost Control – Purchasing Cost Control – Production Cost Control – Administration cost control – Cost Ration Policies – the manufacturing Budget – Cash flow Control – Standard Cost Sheet, Break-Even Charts.

References:

1. Patty Brown, Janett Rice,-Ready to wear apparel analysis, Prentice Hall,1998.
2. Salinger, Jacob Apparel, "Manufacturing Analysis", New York, Textile Books Futs, 2001.
3. Introduction to Clothing Production Management, A.J. Chuter, Second Edition, Black Well Publishing, Second Edition, 2004.
4. Apparel Merchandising, Robin Mathew, First Edition, Book Enclave Publishing, 2008.
5. Textile Industry Development and Growth, Satish Tiwari, First Edition, Anmol Publications Pvt. Ltd., 2000.

MAJOR BASED ELECTIVE II
FABRIC STRUCTURE AND DESIGN

OBJECTIVES:

1. To understand types of weave.
2. To develop new weave design.

Unit I

Elements of woven design-methods of fabric representation-weave repeat unit-draft and lifting plan- construction for elementary weaves-plain warp rib-weft rib-twill-modification of twills-satin & sateen weaves-their derivatives.

Unit II

Ordinary and brighten comb-its modification- huck a back-its modification-crepe weave –mock leno.

Unit III

Extra warp & extra weft figuring-single & live colours—backed fabrics-warp and weft backed fabrics.

Unit IV

Pile fabrics-basic structure-twill back & satin back-weft pile length density-and fastness of pile-teny pile-3pile-4pile-and 6 pile.

Unit V

Double cloth-classification-self stitched-face to back-back to face-stitched double cloth warp and weft center stitched double cloth.

References:

1. Watsons textile design and colour grosichkli newness butter wath 1980.
2. Watsons advanced textile design grosichkli new
3. Krutteirp technology,spencer d.j pergalianbros,oxford 1982

CORE COURSE IV

TEXTILE TESTING

Objectives:

1. To impart knowledge on fibre, yarn and fabric testing.
2. To make the learners understand the working principles of textile testing equipment.

Unit I Quality control: Definition and its importance.

Humidity: Definition and its influence on fiber properties Standard atmospheric condition, Standard testing atmosphere. Standard regain, Moisture content and regain. Measurement of atmospheric condition – wet and dry bulb Hygrometer and sling Hygrometer.

Unit II

Fiber Testing: Fiber length – Baer sorter and Fibrograph, Fiber strength – Stelometer, Fiber fineness – Micronaire, Fiber maturity, Trash content - determination – Trash analyzer.

Unit III

Yarn testing: Determination of yarn count – quadrant, Analytical & Beesley balance. Twist – Direction of twist and amount of twist, Twist effect on fabric properties. Strength of yarn-Single yarn strength tester. Crimp – Shirley crimp tester. Yarn appearance tester. Evenness – Uster Evenness tester, Hairiness – Uster Hairiness tester.

Unit IV

Fabric Testing: Fabric strength tester – Tensile strength, tearing strength & bursting strength. Abrasion – Types of abrasion – pilling – Martindale pill box tester.

Unit V

Drape – Drape meter, Fabric stiffness - Shirley stiffness Tester, crease recovery – Shirley crease recovery tester.

References:

1. Principles of textile testing by J.E. Booth., C.B.S., publishers & distributors, New Delhi, 1996.
2. Mishra S.P and Kesavan B.K, "Fibre Science", Kumarapalayam, S.S.M. Institute of Textile Technology

CORE COURSE IX
PROGRAMMING IN PHP

Objective : To understand the Concepts of PHP and Ajax.

Unit I

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

Unit II

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

Unit III

Object-Oriented Programming –Advanced Object-Oriented Programming .

Unit IV

File Handling –Working with Databases – Sessions, Cookies, and FTP

Unit V

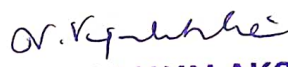
Ajax – Advanced Ajax – Drawing Images on the Server.

Text Book:

1. The PHP Complete Reference, Steven Holzner, McGraw Hill Education, 2007

Reference Books:

1. PHP: A Beginner's Guide, Vikram Vaswani, McGraw Hill Education, 2008


Ms. N. VIJAYALAKSHMI,
M.Sc.,M.Phil.,NET,SET,
Head, Dept. of Computer Science,
I.T. and Computer Applications,
Shrimati Indira Gandhi College,
Trichy-2.

CORE PRACTICAL IV
DATABASE SYSTEMS (P)

Objective : To Impart Practical Training in MySQL

1. Create a table and perform the following basic mysql operations
 - a) Set the primary key
 - b) Alter the structure of the table
 - c) Insert values
 - d) Delete values based on constraints
 - e) Display values using various forms of select clause
 - f) Drop the table

2. Develop mysql queries to implement the following set operations
 - a) Union
 - b) Union all
 - c) Intersect
 - d) Intersect all

3. Develop mysql queries to implement the following aggregate functions
 - a) Sum
 - b) Count
 - c) Average
 - d) Maximum
 - e) Minimum
 - f) Group by clause & having clause

4. Develop mysql queries to implement following join operations
 - a) Natural join
 - b) Inner join
 - c) Outer join-left outer, right outer, full outer
 - d) Using join conditions

5. Develop mysql queries to implement nested subqueries
 - a) Set membership (int, not int)
 - b) Set comparison (some, all)
 - c) Empty relation (exists, not exists)
 - d) Check for existence of Duplicate tuples(unique, not unique)

6. Develop mysql queries to create a views and expand it.

7. Develop mysql queries to implement

- a) String operations using %
- b) String operations using '_'
- c) Sort the element using asc,desc
[*create necessary relations with requires attribute]

8. Consider the following database for a banking enterprise

BRANCH(branch-name:string, branch-city:string, assets:real)

ACCOUNT(accno:int, branch-name:string, balance:real)

DEPOSITOR(customer-name:string, accno:int)

CUSTOMER(customer-name:string, customer-street:string, customer-city:string)

LOAN(loan-number:int, branch-name:string, amount:real)

BORROWER(customer-name:string, loan-number:int)

- i. Create the above tables by properly specifying the primary keys and the foreign keys
- ii. Enter at least five tuples for each relation
- iii. Find all the customers who have at least two accounts at the *Main* branch.
- iv. Find all the customers who have an account at *all* the branches located in a specific city.
- v. Demonstrate how you delete all account tuples at every branch located in a specific city.
- vi. Generate suitable reports.
- vii. Create suitable front end for querying and displaying the results.

M. N. Vijayalakshmi

Ms. N. VIJAYALAKSHMI,
M.Sc., M.Phil., NET, SET,
Head, Dept. of Computer Science,
I.T. and Computer Applications,
Shrimati Indira Gandhi College,
Trichy-2.

CORE COURSE VIII

FOOD MICROBIOLOGY

OBJECTIVES

The subject aims to study about the food microflora, food fermentations, food preservation, food spoilage, food poisoning and food quality control.

Unit I

Concepts of food and nutrients - Physicochemical properties of foods - Food and microorganisms - Importance and types of microorganisms in food (Bacteria, Mould and Yeasts) - Sources of contamination- Factors influencing microbial growth in food - pH, moisture, Oxidation-reduction potential, nutrient contents and inhibitory substances.

Unit II

Food Fermentations - Manufacture of fermented foods - Fermented dairy products (yoghurt and Cheese) - plant products- Bread, Sauerkraut and Pickles - Fermented beverages- Beer. Brief account on the sources and applications of microbial enzymes - Terminologies - Prebiotics Probiotics and synbiotics. Advantages of probiotics.

Unit III

Contamination, spoilage and preservation of cereals and cereal products - sugar and sugar products -Vegetables and fruits- meat and meat products- Spoilage of canned food.

Unit IV

Food borne diseases and food poisoning - *Staphylococcus*, *Clostridium*, *Vibrio parahaemolyticus* and *Campylobacter jejuni*. *Escherichia coli* and *Salmonella* infections, Hepatitis, Amoebiasis. Algal toxins and Mycotoxins.

Unit V

Food preservations: principles- methods of preservations-Physical and chemical methods- food sanitations- Quality assurance: Microbiological quality standards of food. Government regulatory practices and policies. FDA, EPA, HACCP, ISI. HACCP - Food safety- control of hazards.

CORE COURSE IX

INDUSTRIAL MICROBIOLOGY

OBJECTIVES

To train the students on bioprocess technology so as to develop them for employment in bioprocess industry.

To learn the screening of industrial strains, fermenters, media, fermentation process and downstream process.

UNIT I

Historical development of Industrial Microbiology, Industrially important microorganisms, sources and characters; Primary and secondary screening and preservation of industrially important strains, Major classes of products and processes. Strain improvement.

UNIT II

Fermenter - Design, types and basic functions. Characteristics of production media, Fermentation media - formulation strategies, economical means of providing energy, carbon, nitrogen, vitamin and mineral sources, role of buffers, precursors, inhibitors, inducers and antifoams. Sterilization of fermentation equipment, air and media. Types of fermentation.

UNIT III

Downstream processing - recovery and purification of fermentations products (intracellular and extracellular), cell disruption, precipitation, filtration, centrifugation, solvent recovery, chromatography, Ultrafiltration and drying, Quality assurance (QC) of finished product. Immobilization of cell and enzymes.

UNIT IV

Microbial products of pharmaceutical value – raw materials, organism and industrial processes involved in the production of Penicillin, Streptomycin, Vitamin B12, Riboflavin and rabies vaccine.

UNIT V

Microbial products of industrial value – raw materials, organism and industrial processes involved in the production of ethanol, vinegar, amylase, protease, glutamic acid. Recycling and disposal of industrial wastes through microbes.

CORE COURSE IV

METHODS OF SPECTROSCOPY

OBJECTIVE

- To familiarize with the basic principles of various spectroscopic techniques and their applications in the determination of atomic structure, chemical composition and physical properties of materials.

Unit I Atomic Spectroscopy

Quantum states of an electron in atom - Hydrogen atom spectrum - Electron spin -- Stern—Gerlach experiment - Spin-orbit interaction - Two electron system -- LS-JJ coupling schemes - Spectroscopic terms and selection rules - Hyperfine structure - Zeeman and Paschen—Back effect of one and two electron systems - Selection rules - Stark effect.

Unit II Microwave and Infrared Absorption Spectroscopies

Microwave Spectroscopy: Rotation of diatomic molecules - Rotational spectra of polyatomic molecules - Spectrum of nonrigid rotator - Experimental technique - Polyatomic molecules - Linear, symmetric top and asymmetric top molecules.

Infrared Absorption Spectroscopy: Vibrating diatomic molecule - Anharmonic oscillator - Diatomic vibrating rotator - Vibration-rotation spectrum of carbon monoxide - Influence of rotation on the spectrum of polyatomic molecules - Linear and symmetric top molecules - Influence of nuclear spin -- FT techniques.

Unit III Raman Spectroscopy

Quantum theory of Raman effect - Classical theory of Raman effect - Pure rotational Raman spectra - Linear molecules - Symmetric top molecules - Vibration Raman spectra - Rotational fine structure - Structural determination - Raman spectra - Instrumentation - Raman effect and molecular structure - Raman activity of molecular vibrations - - Surface enhanced Raman spectroscopy.

Unit IV Nuclear Magnetic Resonance Spectroscopy

Basic principles -- Bloch equations and solutions - Shielding and deshielding effects - Chemical shift - Spin lattice and spin-spin relaxation - Coupling constants - Experimental technique - Double coil method - Structural diagnosis and hydrogen bonding.

ELECTIVE COURSE III

CRYSTAL GROWTH AND THIN FILM PHYSICS

OBJECTIVE

- To understand the theoretical concepts involved in crystal growth and thin film sciences and to learn the basic characterizing techniques of materials.

Unit I **Basic Concepts, Nucleation and Kinetics of Growth**

Ambient phase equilibrium – Super saturation – Equilibrium of finite phases – Equation of Thomson-Gibbs – Types of nucleation – Formation of critical nucleus – Classical theory of nucleation – Homo and heterogeneous formation of 3D nuclei – Rate of nucleation – Growth from vapor phase, solutions and melts – Epitaxial growth – Growth mechanism and classification – Kinetics of growth of epitaxial films – Mechanisms and controls for nanostructures in 0 and 1 dimensions.

Unit II **Crystallization Principles and Growth Techniques**

Classes of crystal system – Crystal symmetry – Solvents and solutions – Solubility diagram – Super solubility – Expression for super saturation – Metastable zone and induction period – Miers TC diagram – Solution growth – Low and high temperatures solution growth – Slow cooling and solvent evaporation methods – Constant temperature bath as a crystallizer.

Unit III **Gel, Melt and Vapor Growth Techniques**

Principle of gel technique – Various types of gel -- Structure and importance of gel – Methods of gel growth and advantages -- Melt technique – Czochralski growth – Floating zone – Bridgeman method -- Horizontal gradient freeze – Flux growth – Hydrothermal growth – Vapor-phase growth – Physical vapor deposition – Chemical vapor deposition – Stoichiometry.

Unit IV **Thin Film Deposition Techniques**

Vacuum evaporation -- Hertz-Knudsen equation -- Evaporation from a source and film thickness uniformity -- E-beam, pulsed laser and ion beam evaporations -- Glow discharge and plasmas -- Mechanisms and yield of sputtering processes – DC, rf, magnetically enhanced, reactive sputterings – Spray pyrolysis – Electro deposition – Sol-gel technique.

Unit V **Characterization Techniques**

X-ray diffraction – Powder and single crystal – Fourier transform infrared analysis – Elemental dispersive X-ray analysis – Transmission and scanning electron microscopy – UV-vis-NIR spectrometer – Chemical etching

திருக்குறள்

பாட நோக்கம்

1. திருக்குறள் சுட்டும் அறங்களைப் பயிற்றுவித்தல்.
2. திருக்குறளில் உள்ள அழகியல் கூறுகளைக் கற்பித்தல்.
3. உலக அற இலக்கியங்களுள் திருக்குறள் உயர்ந்து நிற்பதை உணர்த்துதல்.

மாணவர் பெறும் திறன்

1. சமுதாய வாழ்விற்கான அற உணர்வைப் பெறுவர்.
2. திருக்குறளில் அமைந்துள்ள இலக்கிய அழகியலை உணர்வர்.
3. திருக்குறளின் காலம் கடந்து நிற்கும் தன்மையைத் தெளிவர்.

அலகு - 1

10 மணி

திருக்குறள் நூலமைப்பு - அதிகாரப்பகுப்புமுறை - திருக்குறள் உணர்த்தும் வாழ்வியல் விழுமியங்கள் - அழகியல் கூறுகள் - அணிநலன்கள் - ஜி.யு.போப், ஆல்பர்ட் சுவைட்சர், எல்லீஸ் போன்ற அறிஞர் கருத்துக்கள் - சமஸ்கிருத, இலத்தீன், கிரேக்க நீதி நூல்களுடன் ஒப்பிடல் - திருக்குறளின் உயர்வும் சிறப்பும்.

அலகு - 2 இறைவணக்கம் முதல் பயனில் சொல்லாமை வரை 20 அதிகாரங்கள் 20 மணி

அலகு - 3 தீவினை அச்சம் முதல் கல்வி வரை 20 அதிகாரங்கள் 20 மணி

அலகு - 4 கல்லாமை முதல் ஊக்கம் உடைமை வரை 20 அதிகாரங்கள் 20 மணி

அலகு - 5 தகையணங்குறுத்தல் முதல் குறிப்பறிவுறுத்தல் வரை 20 அதிகாரங்கள் 20 மணி

பார்வை நூல்

1. க.த.திருநாவுக்கரசு - திருக்குறள் நீதி இலக்கியம், சென்னைப் பல்கலைக்கழக வெளியீடு, சென்னை.
2. மு.வரதராசனார் - திருக்குறள் தெளிவுரை, சைவசித்தாந்த நூற்பதிப்புக்கழகம், சென்னை.
3. கி.ஆ.பெ.விசுவநாதம் - வள்ளுவரும் குறளும், பாரி நிலையம், சென்னை.
4. புலவர் இரா.இளங்குமரனார் - வாழ்வியல் சிக்கல்களும் வள்ளுவத் தீர்வுகளும், உலகத் திருக்குறள் ஆய்வு மையம், சென்னை.
5. எஸ்.ராமகிருஷ்ணன் - திருக்குறள் ஒரு சமுதாயப் பார்வை, மீனாட்சி புத்தக நிலையம், மதுரை.
6. ந.சுப்புரெட்டியார் - தமிழ் இலக்கியங்களில் நீதி-அறம்-முறைமை, ஐந்திணைப் பதிப்பகம், சென்னை.

பண்டைய இலக்கியம்

பாட நோக்கம்

1. பழந்தமிழ் இலக்கிய வளத்தை உணர்த்துதல்.
2. சங்க அகப்புற பாடல் மரபுகளைப் பயிற்றுவித்தல்.
3. புற இலக்கியங்கள் காட்டும் வாழ்வியல் அறங்களை உணர்த்துதல்.

மாணவர் பெறும் திறன்

1. பழந்தமிழ் இலக்கிய மரபை அறிவர்.
2. சங்க இலக்கியங்களில் உள்ள அழகியல் கூறுகளை உணர்வர்.
3. வாழ்வியல் அறங்கள் மற்றும் வரலாற்றுச் செய்திகளை அறிவர்.

அலகு - 1	குறிஞ்சிப்பாட்டு முழுவதும்	15 மணி
அலகு - 2	அ. நற்றிணை 55-74 (20 பாடல்கள்) ஆ. குறுந்தொகை 20-40 (20 பாடல்கள்) இ. ஐங்குறுநூறு- வேட்கைப் பத்து (10 பாடல்கள்)	20 மணி
அலகு - 3	அ. அகநானூறு- களிற்றியானைநிறை 44-53 (10 பாடல்கள்) ஆ. கலித்தொகை- குறிஞ்சிக்கலி 02-10 (09 பாடல்கள்) இ. பரிபாடல் - செவ்வேள் - 14 (01 பாடல்)	20 மணி
அலகு - 4	அ. புறநானூறு 100-120 (20 பாடல்கள்)	20 மணி
அலகு - 5	அ. பதிற்றுப்பத்து- ஐந்தாம் பத்து (10 பாடல்கள்)	15 மணி

பார்வை நூல்கள்

1. கு.வெ.பாலசுப்பிரமணியன் - சங்க இலக்கியம், நியூ செஞ்சரி புக் ஹவுஸ், சென்னை.
2. ந.சுப்புரெட்டியார், அகத்திணை இலக்கியக் கொள்கைகள்,
3. வ.சுப.மாணிக்கம், தமிழ்க்காதல், மணிவாசகர் பதிப்பகம், சென்னை.
4. எம்.நாராயண வேலுப்பிள்ளை - சங்க இலக்கியச் சொல்லோவியங்கள், திருமகள் நிலையம், சென்னை.
5. கு.வெ.பாலசுப்பிரமணியன் - சங்க இலக்கியத்தில் புறப்பொருள், மெய்யப்பன் பதிப்பகம், சிதம்பரம்.
6. தமிழண்ணல் - பரிசில் வாழ்க்கை, பாரி நிலையம், சென்னை.
7. க.அப்பாதுரையார் - சங்ககாலப் புலவர்கள், தமிழ்மண் பதிப்பகம், தி.நகர், சென்னை.
8. சே.செந்தமிழ்ப்பாவை - செம்மொழிச் சிந்தனைகள், பல்லவி பதிப்பகம், ஈரோடு.
9. இரெ.குமரன் - செவ்வியல் நூல்கள்-41 பொன்மொழிகள், கவின் பதிப்பகம், தஞ்சாவூர்.

தொல்காப்பியம் பொருளதிகாரம் - இளம்பூரணம்

(செய்யுளியல் நீங்கலாக)

பாட நோக்கம்

1. தொல்காப்பியப் பொருளிலக்கணம் தமிழ்க் கவிதைகளுக்கான கவிதையியல் மரபை உணர்த்துகிறது என்பதைத் தெளிவுபடுத்தல்.
2. இலக்கியத்தின் கூறுகளான வடிவம், உள்ளடக்கம், உணர்ச்சி, அணிகள் ஆகியவற்றைப் பொருளதிகாரம்வழி உணர்த்துதல்.
3. தமிழரின் திணைசார் வாழ்வியலை மாணவர்களுக்குப் பயிற்றுவித்தல்.

மாணவர் பெறும் திறன்

1. தமிழ் மரபுக் கவிதையின் இலக்கணத்தை அறிவர்.
2. பண்டையத் தமிழ் அக, புற இலக்கிய மரபுகளை அறிவர்.
3. மரபுக் கவிதை படைக்கும் படைப்பாற்றல் பெறுவர்.

அலகு - 1	அகத்திணையியல்	15 மணி
அலகு - 2	புறத்திணையியல்	15 மணி
அலகு - 3	களவியல், கற்பியல்	25 மணி
அலகு - 4	பொருளியல், மெய்ப்பாட்டியல்	15 மணி
அலகு - 5	உவமையியல், மரபியல் (செய்யுளியல் நீங்கலாக)	20 மணி

பார்வை நூல்

1. பாவலரேறு ச.பாலசுந்தரம் - தொல்காப்பியம் பொருளதிகாரம் (தொகுதி-3, பகுதி-1, பகுதி-2, பகுதி-3), ஆராய்ச்சிக் காண்டிகையுரை, பெரியார்ப் பல்கலைக்கழகம், சேலம்.

இணைய முகவரிகள்

1. www.tamilvu.org
2. www.noolaham.in
3. www.ilakkanam.com
4. www.store.tamillexicon.com
5. www.projectmadurai.org

கல்வெட்டியல்

பாடநோக்கம்

1. தமிழின் தொன்மையைச் சான்றுகளுடன் பயிற்றுவித்தல்.
2. கல்வெட்டுக்கள் வழிப் பழந்தமிழர் வரலாற்றைக் கற்பித்தல்.

மாணவர் பெறும் திறன்

1. தமிழ்மொழியின் தொன்மையை அறிவர்.
2. தமிழ்ப் பண்பாட்டின் தொன்மை, பெருமை ஆகியனவற்றை அறிவர்.
3. தமிழ்மொழி, இனத்தின் வரலாற்றை உணர்வர்.

அலகு - 1

15 மணி

பண்டைக் குறியீடுகளும் எழுத்துகளும் - பூலாங்குறிச்சி கல்வெட்டு எழுத்துக்கள் - தமிழ்நாட்டு எழுத்து முறைகளின் வளர்ச்சி - தமிழ்க் கல்வெட்டுக் கண்டுபிடிப்புகள்.

அலகு - 2

20 மணி

கல்வெட்டுகளும் இலக்கியமும் - தமிழ்க் கல்வெட்டுகளும் வரலாறும் - செப்பேடுகள் - பதிப்பித்தலில் அணுகுமுறை - மெய்க்கீர்த்தி - ஓலையும் கல்வெட்டும்.

அலகு - 3

20 மணி

சோழர் காலத்திய ஆவணப் பதிவு முறைகள் - சில அரிய சொற்கள் - ஆள் பெயர்கள் காட்டும் சமுதாயம் - மாராயமும் மாராயனும் - வைத்திய குலம்.

அலகு - 4

20 மணி

கல்வெட்டில் இந்து - முஸ்லீம் சமய ஒருமைப்பாடு - சேலம் மாவட்டக் கல்வெட்டுகள் - விடுகாதழகிய பெருமாள் - எழுத்துப் பொறிப்புப்பெற்ற தீர்த்தங்கரர் திருமேனி - அழுந்தூரும் அழுந்தியூரும்.

அலகு - 5

15 மணி

தொண்டியில் ஒரு புதிய கல்வெட்டு - வரலாற்று நோக்கில் நாகப்பட்டினம் - தஞ்சை மராட்டியர் கல்வெட்டுகளும் செப்பேடுகளும் - ஓலை ஆவணங்களும் முத்திரை ஓலைகளும்.

பாட நூல்

1. முனைவர் எ. சுப்பராயலு, முனைவர் செ. இராக (பதிப்பாசிரியர்கள்), தமிழ்க் கல்வெட்டியலும் வரலாறும், தமிழ்ப் பல்கலைக்கழக வெளியீடு, தஞ்சாவூர்.

நாடகவியல்

பாடநோக்கம்

1. நாடக இலக்கியத்தின் அமைப்புமுறையைக் கற்பித்தல்.
2. நாடக இலக்கியம் தோன்றி வளர்ந்த வரலாற்றைப் பயிற்றுவித்தல்.
3. காலந்தோறும் நாடக இலக்கியம் தந்த சமூகப் பங்களிப்பை உணர்த்துதல்.

மாணவர் பெறும் திறன்

1. தமிழ் நாடக இலக்கியத்தின் தொன்மையையும் சிறப்பையும் அறிவர்.
2. தமிழ்ச் சமூக மாற்றத்தோடு நாடகக்கலை தொடர்ந்து வரும் தன்மையை உணர்வர்.
3. நாடகப் படைப்பாக்கத்திற்கான தூண்டுதலைப் பெறுவர்.

அலகு - 1

15 மணி

நாடகம் சொல் விளக்கம் - நாடகத்திற்கான இலக்கணம் - தமிழில் நாடகத்தின் தோற்றம் வளர்ச்சி - தொல்காப்பியர்கூறும் நாடக வழக்கு - சங்க இலக்கியக் கூத்தர், பொருநர், விறலியர் - சிலப்பதிகாரத்தில் கூத்துக்கள் - பல்லவர் சோழர், கால நாடகங்கள் - ஆங்கிலேயர்காலத்தில் நாடகங்கள் - தற்கால நாடகங்கள் ஆகியவற்றை அறிமுக அளவில் கற்பித்தல்.

அலகு - 2

20 மணி

நாடகத்துறை வளர்ச்சியில் நாடகக் கலைஞர்களின் பங்களிப்பு - பரிதிமாற் கலைஞர் - சங்கரதாஸ் சுவாமிகள் - பம்மல் சம்பந்த முதலியார் - டி.கே.சண்முகம் - சி.என்.அண்ணாதுரை - கோமல் சுவாமிநாதன் ஆகியோரின் பங்களிப்புகள்.

அலகு - 3

15 மணி

நாடக வகைகள் - செய்யுள், உரைநடை வகைகள் - சமூக, வரலாற்று, பராண நாடக வகைகள் - ஓரங்க முழுநீள நாடக வகைகள் - வானொலி, தொலைக்காட்சி நாடகங்கள் - வீதி நாடகங்கள் முதலான பல்வேறு வகைகள்.

அலகு - 4

20 மணி

நாடக நடிகர்களுக்கூரிய பண்புகள், திறமைகள் - ஒலி, ஒளி அமைப்பு - நாடக மேடை நிர்வாகம் - நாடகங்களில் உரையாடல் அமைக்கும் திறன் - சொல்லாட்சித்திறன் - நாடகக் கருவைத் தேர்வதில் படைப்பாளனின் திறமை ஆகியன.

அலகு - 5

20 மணி

ஒரு குறிப்பிட்ட கருத்து, அல்லது சமுதாயச் சிக்கலின் அடிப்படையில் அரசியல், சமூக வரலாற்று நாடகம் எழுதப் பயிற்சி அளித்தல்.

CORE COURSE I

DIFFERENTIAL CALCULUS AND TRIGONOMETRY

Objectives

1. To inculcate the basics of differentiation and their applications.
2. To introduce the notion of curvatures, Evolutes & Involutives and polar co-ordinates.
3. To understand the basic concepts of Trigonometry

UNIT I

Methods of Successive Differentiation – Leibnitz's Theorem and its applications-
Increasing & Decreasing functions –Maxima and Minima of function of two variables.

UNIT II

Curvature – Radius of curvature in Cartesian and in Polar Coordinates – Centre of
curvature–Evolutes & Involutives

UNIT III

Expansions of $\sin(nx)$, $\cos(nx)$, $\tan(nx)$ – Expansions of $\sin^n x$, $\cos^n x$ –Expansions of
 $\sin(x)$, $\cos(x)$, $\tan(x)$ in powers of x .

UNIT IV

Hyperbolic functions – Relation between hyperbolic & Circular functions- Inverse
hyperbolic functions.

UNIT V

Logarithm of a complex number –Summation of Trigonometric series – Difference
method- Angles in arithmetic progression method –Gregory's series

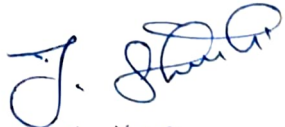
TEXT BOOKS:

1. S.Narayanan and T.K.Manicavachagom Pillai, **Calculus Volume I**, S.Viswanathan
(Printers&Publishers) Pvt Limited , Chennai -2011.
2. S.Arumugam & others, **Trigonometry and Fourier series**, New Gamma
Publications -1999

UNIT – I	- Chapter III	Sections 1.1 to 2.2 & Chapter IV Section 2.1, 2.2 and Chapter V 1.1 to 1.4 of [1]
UNIT – II	- Chapter X	Sections 2.1 to 2.6 of [1]
UNIT – III	- Chapter 1	Sections 1.2 to 1.4 of [2]
UNIT – IV	- Chapter 2	Sections 2.1& 2.2 of [2]
UNIT – V	- Chapter 3 & Chapter 4	Sections 4.1,4.2 & 4.4 of [2]

REFERENCE(S)

1. S.Arumugam and Isaac, Calculus, Volume1, New Gamma Publishing House, 1991.
2. S. Narayanan, T.K. Manichavasagam Pillai, Trigonometry, S. Viswanathan Pvt
Limited, and Vijay Nicole Imprints Pvt Ltd, 2004.


The Head
Dept Of Mathematic
Shrimati Indira Gandhi College
Tiruchirappalli - 620 002

CORE COURSE II
INTEGRAL CALCULUS

Objectives

1. To inculcate the basics of integration and their applications.
2. To study some applications of definite integrals.
3. To understand the concepts of Beta, Gamma functions

UNIT I

Revision of all integral models – simple problems -

UNIT II

Definite integrals - Integration by parts & reduction formula

UNIT III

Geometric Application of Integration-Area under plane curves: Cartesian co-ordinates -Area of a closed curve - Examples - Areas in polar co-ordinates.

UNIT IV

Double integrals – changing the order of Integration – Triple Integrals.

UNIT V

Beta & Gamma functions and the relation between them – Integration using Beta & Gamma functions

TEXT BOOK(S)

1. S.Narayanan and T.K.Manicavachagom Pillai, **Calculus Volume II**, S.Viswanathan (Printers & Publishers) Pvt Limited, Chennai -2011.

UNIT I : Chapter 1 section 1 to 10
UNIT II : Chapter 1 section 11, 12 & 13
UNIT III : Chapter 2 section 1.1, 1.2, 1.3 & 1.4
UNIT IV : Chapter 5 section 2.1, 2.2 & 4
UNIT V : Chapter 7 section 2.1 to 2.5

REFERNECE(S)

1. Shanti Narayan, Differential & Integral Calculus.


The Head
Dept Of Mathematic
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

CORE COURSE III

DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS

OBJECTIVES:

1. To know the order and degree of the ODE's
2. To identify some specific methods and solve them
3. To make difference between ODE and PDE
4. To solve some standard methods
5. To know the concept of Laplace transforms and its inverse with applications

UNIT I

First order, higher degree differential equations solvable for x, solvable for y, solvable for dy/dx , Clairauts form – Conditions of integrability of $M dx + N dy = 0$ – simple problems.

UNIT II

Particular integrals of second order differential equations with constant coefficients - Linear equations with variable coefficients – Method of Variation of Parameters (Omit third & higher order equations).

UNIT III

Formation of Partial Differential Equation – General, Particular & Complete integrals – Solution of PDE of the standard forms - Lagrange's method - Solving of Charpit's method and a few standard forms.

UNIT IV

PDE of second order homogeneous equation with Constant coefficients – Particular integrals of the forms e^{ax+by} , $\sin(ax+by)$, $\cos(ax+by)$, $x^r y^s$ and $e^{ax+by}.f(x,y)$.

UNIT V

Laplace Transforms – Standard formulae – Basic theorems & simple applications – Inverse Laplace Transforms – Use of Laplace Transforms in solving ODE with constant coefficients.


TEXT BOOK

1. T.K.Manicavachagom Pillay & S.Narayanan, Differential Equations, S.Viswanathan Publishers Pvt. Ltd., 1996.
2. Arumugam & Isaac, Differential Equations, New Gamma Publishing House, Palayamkottai, 2003.

- Unit : 1 Chapter IV – Sections 1,2 & 3, Chapter II – Section 6 [1]
Unit : 2 Chapter V – Sections 1,2,3,4 & 5, Chapter VIII – Section 4 [1]
Unit : 3 Chapter XII – Sections 1 – 6 [1]
Unit : 4 Chapter V [2]
Unit : 5 Chapter IX – Sections 1 – 8 [1]

Reference book:

1. M.D.Raisinghania , Ordinary and Partial Differential Equations, S.Chand & Co
2. M.K. Venkatraman, Engineering Mathematics, S.V. Publications, 1985 Revised Edition


The Head
Dept Of Mathematics,
Shrimati Indira Gandhi College,
Tiruchirappalli - 620 002

CORE COURSE IV
ANALYTICAL GEOMETRY 3D

OBJECTIVES :

1. To study 3 dimensional Cartesian Co-ordinates system
2. To enable the students to develop their skill in 3 dimensions

UNIT I

Coordinates in space-Direction cosines of a line in space-angle between lines in space – equation of a plane in normal form. Angle between planes – Distance of a plane from a point.

UNIT II

Straight lines in space – line of intersection of planes – plane containing a line. Coplanar lines – skew lines and shortest distance between skew lines- length of the perpendicular from point to line.

UNIT III

General equation of a sphere-Section of sphere by plane-tangent planes –condition of tangency-system of spheres generated by two spheres - System of spheres generated by a sphere and plane.

UNIT IV

The equation of surface – cone – intersection of straight line and quadric cone – tangent plane and normal

UNIT V

Condition for plane to touch the quadric cone - angle between the lines in which the plane cuts the cone. Condition that the cone has three mutually perpendicular generators- Central quadrics – intersection of a line and quadric – tangents and tangent planes – condition for the plane to touch the conicoid

Books for Study

1. Shanthi Narayanan and Mittal P.K:Analytical Solid Geometry 16th Edition S.Chand & Co., New Delhi.
2. Narayanan and Manickavasagam Pillay, T.K. Treatment as Analytical Gementry S.Viswanathan (Printers & Publishers) Pvt. Ltd.,

Unit I : Chapter I, Sec 1.5 to 1.9, Chapter II Sec 2.1 to 2.3, Pages : 10-31,
Chapter II Sec 2.4 to 2.8 pages : 32-47 of [1]

Unit II : chapter III section 3.1-3.7, pages 55-89 of [1]

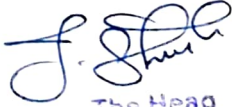
Unit III : Chapter VI Sec. 6.1 to 6.6 pages : 121-143 of [1]

Unit IV : Chapter V Sec.43 to 47 pages : 103-113 of [2]

Unit V: Chapter V Sec.49 to 53, Pages:115-125 of [2]

Book for Reference

1. P.Duraipandian & others- Analytical Geometry 3 Dimensional – Edition.


The Head
Dept Of Mathematic,
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

CORE COURSE V
SEQUENCES AND SERIES

OBJECTIVES :

1. To lay a good foundation for classical analysis
2. To study the behavior of sequences and series.

Unit I

Sequences – Bounded Sequences – Monotonic Sequences – Convergent Sequence – Divergent Sequences – Oscillating sequences

Unit II

Algebra of Limits – Behavior of Monotonic functions

Unit III

Some theorems on limits – subsequences – limit points : Cauchy sequences

Unit IV

Series – infinite series – Cauchy's general principal of convergence – Comparison – test theorem and test of convergence using comparison test (comparison test statement only, no proof)

Unit V

Test of convergence using D Alembert's ratio test – Cauchy's root test – Alternating Series – Absolute Convergence (Statement only for all tests)

Book for Study

Dr. S.Arumugam & Mr.A.Thangapandi Isaac Sequences and Series – New Gamma Publishing House – 2002 Edition.

Unit I : Chapter 3 : Sec. 3.0 – 3.5 Page No : 39-55

Unit II : Chapter 3 : Sec. 3.6, 3.7 Page No:56 – 82


Unit III : Chapter 3 : Sec. 3.8-3.11, Page No:82-102

Unit IV : Chapter 4 : Sec. (4.1 & 4.2) Page No : 112-128.

Unit V : Relevant part of Chapter 4 and Chapter 5: Sec. 5.1 & 5.2
Page No:157-167.

Book for Reference

1. Algebra – Prof. S.Surya Narayan Iyer
2. Algebra – Prof. M.I.Francis Raj


The Head
Dept Of Mathematic.
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

CORE COURSE VI

CLASSICAL ALGEBRA AND THEORY OF NUMBERS

Objectives

1. To lay a good foundation for the study of Theory of Equations.
2. To train the students in operative algebra.

Unit I

Relation between roots & coefficients of Polynomial Equations – Symmetric functions – Sum of the r^{th} Powers of the Roots

Unit II

Newtion's theorem on the sum of the power of the roots-Transformations of Equations – Diminshing, Increasing & Multiplying the roots by a constant - Reciprocal equations - To increase or decrease the roots of the equation by a given quantity.

Unit III

Form of the quotient and remainder – Removal of terms – To form of an equation whose roots are any power – Transformation in general – Descart's rule of sign

Unit IV

Inequalities – elementary principles – Geometric & Arithmetic means – Weirstrass inequalities – Cauchy inequality – Applications to Maxima & Minima.

Unit V

Theory of Numbers – Prime & Composite numbers – divisors of a given number N – Euler's Function ($\phi(N)$) and its value – The highest Power of a prime P contained in $N!$ – Congruences – Fermat's, Wilson's & Lagrange's Theorems.


Text Book(s)

1. T.K.Manickavasagam Pillai & others Algebra Volume I.S.V. Publications – 1985 Revised Edition.
2. T.K. Manickavasagam Pillai & others Algebra Volume II, S.V.Publications – 1985 Revised Edition.

Unit I	:	Chapter 6 Section 11 to 13 of (1)
Unit II	:	Chapter 6 Section 14 to 17 of (1)
Unit III	:	Chapter 6 Section 18- 21 & 24 of (1)
Unit IV	:	Chapter 4 of (2)
Unit V	:	Chapter 5 of (2)

References :

1. H.S.Hall and S.R. Knight, Higher Algebra, Prentice Hall of India, New Delhi.
2. H.S. Hall and S.R.Knight, Higher Algebra, McMillan and Co., London, 1948.


The Head
Dept Of Mathematic
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

CORE COURSE VII

VECTOR CALCULUS AND FOURIER SERIES

Objectives:

To provide the basic knowledge of vector differentiation & vector integration.
To solve vector differentiation & integration problems.

UNIT I

Vector differentiation –velocity & acceleration-Vector & scalar fields –Gradient of a vector- Directional derivative – divergence & curl of a vector solinoidal & irrotational vectors –Laplacian double operator –simple problems

UNIT II

Vector integration –Tangential line integral –Conservative force field –scalar potential- Work done by a force - Normal surface integral- Volume integral – simple problems.

UNIT III

Gauss Divergence Theorem – Stoke's Theorem- Green's Theorem – Simple problems & Verification of the theorems for simple problems.

UNIT IV

Fourier series- definition - Fourier Series expansion of periodic functions with Period 2π and period $2a$ – Use of odd & even functions in Fourier Series.

UNIT V

Half-range Fourier Series – definition- Development in Cosine series & in Sine series Change of interval – Combination of series

TEXT BOOK(S)

1. M.L. Khanna, Vector Calculus, Jai Prakash Nath and Co., 8th Edition, 1986.
2. S. Narayanan, T.K. Manicavachagam Pillai, Calculus, Vol. III, S. Viswanathan Pvt Limited, and Vijay Nicole Imprints Pvt Ltd, 2004.

UNIT – I - Chapter 1 Section 1 & Chapter 2 Sections 2.3 to 2.6 , 3 , 4 , 5 , 7 of [1]

UNIT – II - Chapter 3 Sections 1 , 2 , 4 of [1]

UNIT – III - Chapter 3 Sections 5 & 6 of [2]

UNIT – IV - Chapter 6 Section 1, 2, 3 of [2]

UNIT – V - Chapter 6 Section 4, 5.1, 5.2, 6, 7 of [2]

Reference:

1. P.Duraipandiyan and Lakshmi Duraipandian, Vector Analysis, Emarald publishers (1986).
2. Dr. S.Arumugam and prof. A.Thangapandi Issac, Fourier series, New Gamma publishing house (Nov 12)

CORE COURSE VIII

LINEAR ALGEBRA

Objectives

1. To facilitate a better understanding of vector space
2. To solve problems in linear algebra

Unit I Vector spaces:

Vector spaces – Definition and examples – Subspaces-linear transformation – Span of a set.

Unit II Basis and Dimension:

Linear Independence – Basis and Dimension – Rank and Nullity.

Unit III Matrix and Inner product space:

Matrix of a linear transformation -Inner product space – Definition and examples – Orthogonality – Gram Schmidt orthogonalisation process – Orthogonal Complement.

Unit IV Theory of Matrices:

Algebra of Matrices - Types of Matrices – The Inverse of a Matrix – Elementary Transformations – Rank of a matrix.

Unit V Characteristic equation and bilinear forms:

Characteristic equation and Cayley -Hamilton theorem – Eigen values and Eigen vectors

Textbook

1. Arumugam S and Thangapandi Isaac A, Modern Algebra, SciTech Publications (India) Ltd., Chennai, Edition 2012.

Unit1: Chapter 5, Sec 5.1 to 5.4

Unit2: Chapter 5, Sec 5.5 to 5.7

Unit3: Chapter 5, Sec 5.8, Chapter 6, Sec 6.1 to 6.3

Unit4: Chapter 7 Sec 7.1 to 7.5

Unit5: Chapter 7, Sec 7.7, 7.8

References

1. I. N. Herstein, Topics in Algebra, Second Edition, John Wiley & Sons (Asia), 1975.



The Head
Dept Of Mathematic.
Shrimati Indira Gandhi Colleg.
Tiruchirapalli - 620 002

CORE COURSE X

REAL ANALYSIS

Objectives: To enable the students to

1. Understand the real number system and countable concepts in real number system
2. Provide a Comprehensive idea about the real number system.
3. Understand the concepts of Continuity, Differentiation and Riemann Integrals
4. Learn Rolle's Theorem and apply the Rolle's theorem concepts.

UNIT I

Real Number system – Field axioms –Order relation in \mathbb{R} . Absolute value of a real number & its properties –Supremum & Infimum of a set – Order completeness property – Countable & uncountable sets.

UNIT II

Continuous functions –Limit of a Function – Algebra of Limits – Continuity of a function –Types of discontinuities – Elementary properties of continuous functions – Uniform continuity of a function.

UNIT III

Differentiability of a function –Derivability & Continuity –Algebra of derivatives – Inverse Function Theorem – Daurboux's Theorem on derivatives.

UNIT IV

Rolle's Theorem –Mean Value Theorems on derivatives- Taylor's Theorem with remainder- Power series expansion .

UNIT V

Riemann integration –definition – Daurboux's theorem –conditions for integrability – Integrability of continuous & monotonic functions - Integral functions –Properties of Integrable functions - Continuity & derivability of integral functions – The Fundamental Theorem of Calculus and the First Mean Value Theorem.

TEXT BOOK(S)

1. M.K,Singhal & Asha Rani Singhal , A First Course in Real Analysis, R.Chand & Co., June 1997 Edition
2. Shanthi Narayan, A Course of Mathematical Analysis, S. Chand & Co., 1995

UNIT – I - Chapter 1 of [1]

UNIT – II - Chapter 5 of [1]

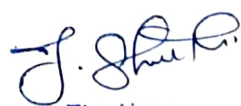
UNIT – III - Chapter 6 – Sec 1 to 5 of [1]

UNIT – IV - Chapter 8 – Sec 1 to 6 of [1]

UNIT – V - Chapter 6 – Sec 6.2, 6.3, 6.5, 6.7, 6.9 of [2]

REFERENCE(S)

1. Goldberge, Richard R, Methods of Real Analysis, Oxford & IBHP Publishing Co., New Delhi, 1970.


The Head
Dept Of Mathematic.
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

MAJOR BASED ELECTIVE I (A)

OPERATIONS RESEARCH

Objectives:

1. To introduce the various techniques of Operations Research.
2. To make the students solve real life problems in Business and Management

UNIT I

Linear programming problem - Mathematical formulation - Illustrations on Mathematical formulation on Linear Programming Problems - Graphical solution method - some exceptional cases - Canonical and standard forms of Linear Programming Problem - Simplex method.

UNIT II

Use of Artificial Variables (Big M method - Two phase method) - Duality in Linear Programming - General primal-dual pair - Formulating a Dual problem - Primal-dual pair in matrix form - Dual simplex method.

UNIT III

Transportation problem - LP formulation of the TP - Solution of a TP - Finding an initial basic feasible solution (NWCM - LCM - VAM) - Degeneracy in TP - Transportation Algorithm (MODI Method) - Assignment problem - Solution methods of assignment problem - special cases in assignment problem.

UNIT IV

Queuing theory - Queuing system - Classification of Queuing models - Poisson Queuing systems Model I (M/M/1)(∞ /FIFO) only - Games and Strategies - Two person zero sum - Some basic terms - the maximin-minimax principle - Games without saddle points - Mixed strategies - graphic solution $2 \times n$ and $m \times 2$ games.

UNIT V

PERT and CPM - Basic components - logical sequencing - Rules of network construction - Critical path analysis - Probability considerations in PERT.

Book for Study:

Kanti Swarup, P.K. Gupta and ManMohan, Operations Research, 13th edition, Sultan Chand and Sons, 2007.

Unit 1: Chapter 2 Sec 2.1 to 2.4, Chapter 3 Sec 3.1 to 3.5, Chapter 4 Sec 4.1 , 4.3

Unit 2: Chapter 4 Sec 4.4, Chapter 5 Sec 5.1 to 5.4, 5.9

Unit 3: Chapter 10 Sec 10.1, 10.2, 10.8, 10.9, 10.12, 10.13, Chapter 11 Sec 11.1 to 11.4

Unit 4: Chapter 21 Sec 21.1, 21.2, 21.7 to 21.9, Chapter 17 Sec 17.1 to 17.6

Unit 5: Chapter 25 Sec 25.1 to 25.4, 25.6, 25.7

Book for Reference:

1. Sundaresan.V, Ganapathy Subramanian. K.S. and Ganesan.K, Resource Management Techniques, A.R. Publications, 2002.
2. Taha H.A., Operations Research: An introduction, 7th edition, Pearson Prentice Hall, 2002.

MAJOR BASED ELECTIVE II (A)

GRAPH THEORY

Objectives

1. To introduce the notion of graph theory and its applications.
2. To learn the techniques of combinatorics in Graph Theory.

UNIT I

Introduction - The Konigsberg Bridge Problem - Graphs and subgraphs: Definition and Examples - Degrees - Subgraphs - Isomorphism. -independent sets and coverings.

UNIT II

Matrices - Operations on Graphs - Walks, Trails and Paths - Connectedness and Components - Eulerian Graphs.

UNIT III

Hamiltonian Graphs (Omit Chavatal Theorem) - Characterization of Trees - Centre of a Tree.

UNIT IV

Planarity: Introduction - Definition and Properties - Characterization of Planar Graphs.

UNIT V

Directed Graphs: Introduction - Definitions and Basic Properties - Some Applications: Connector Problem - Kruskal's algorithm - Shortest Path Problem - Dijkstra's algorithm.


Textbook

1. S. Arumugam and S. Ramachandran, Invitation to Graph Theory, SciTech Publications (India) Pvt. Ltd., Chennai, 2006.

UNIT-I Chapter-1 Sec 1.0, 1.1 and Chapter -2 Sec 2.0, 2.1, 2.2, 2.3, 2.4.2.6
UNIT-II Chapter-2 Sec 2.8,2.9 ,Chapter-4 Sec 4.1,4.2 and Chapter-5 Sec 5.0,5.1
UNI-III Chapter-5 Sec 5.2, Chapter-6 Sec 6.0, 6.1, 6.2.
UNIT-IV Chapter-8 Sec 8.0, 8.1, 8.2.
UNIT-V Chapter-10 Sec 10.0, 10.1 Chapter-11 Sec 11.0, 11.1, 11.2

References

1. Narsingh Deo, Graph Theory with applications to Engineering and Computer Science, Prentice Hall of India, 2004.
2. Gary Chartrand and Ping Zhang, Introduction to Graph Theory, Tata McGraw-Hill Edition, 2004.


The Head
Dept Of Mathematic.
Shrimati Indira Gandhi College
Tiruchirapalli - 620 002

CORE COURSE III
ORDINARY DIFFERENTIAL EQUATIONS

Objectives

1. To give an in-depth knowledge of differential equations and their applications.
2. To study the existence, uniqueness, stability behavior of the solutions of the ODE

UNIT I

The general solution of the homogeneous equation– the use of one known solution to find another – The method of variation of parameters – Power Series solutions. A review of power series– Series solutions of first order equations – Second order linear equations; Ordinary points.

UNIT II

Regular Singular Points – Gauss's hypergeometric equation – The Point at infinity - Legendre Polynomials – Bessel functions – Properties of Legendre Polynomials and Bessel functions.

UNIT III

Linear Systems of First Order Equations – Homogeneous Equations with Constant Coefficients – The Existence and Uniqueness of Solutions of Initial Value Problem for First Order Ordinary Differential Equations – The Method of Solutions of Successive Approximations and Picard's Theorem.

UNIT IV

Oscillation Theory and Boundary value problems – Qualitative Properties of Solutions – Sturm Comparison Theorems – Eigenvalues, Eigenfunctions and the Vibrating String.

UNIT V

Nonlinear equations: Autonomous Systems; the phase plane and its phenomena – Types of critical points; Stability – critical points and stability for linear systems – Stability by Liapunov's direct method – Simple critical points of nonlinear systems.

TEXT BOOKS

G.F. Simmons, Differential Equations with Applications and Historical Notes, TMH, New Delhi, 1984.

- UNIT – I Chapter 3: Sections 15, 16, 19 and Chapter 5: Sections 25 to 27
UNIT – II Chapter 5 : Sections 28 to 31 and Chapter 6: Sections 32 to 35
UNIT – III Chapter 7: Sections 37, 38 and Chapter 11: Sections 55, 56
UNIT – IV Chapter 4: Sections 22 to 24
UNIT – V Chapter 8: Sections 42 to 44

REFERENCES

1. W.T. Reid, Ordinary Differential Equations, John Wiley & Sons, New York, 1971.
2. E.A. Coddington and N. Levinson, Theory of Ordinary Differential Equations, McGraw Hill Publishing Company, New York, 1955.

CORE COURSE IV

GRAPH THEORY

Objectives

1. To give a rigorous study of the basic concepts of Graph Theory.
2. To study the applications of Graph Theory in other disciplines.

Note: Theorems, Propositions and results which are starred are to be omitted.

Unit I Basic Results

Basic Concepts - Subgraphs - Degrees of Vertices - Paths and Connectedness- Operations on Graphs - Directed Graphs: Basic Concepts - Tournaments.

Unit II Connectivity

Vertex Cuts and Edge Cuts - Connectivity and Edge - Connectivity, Trees: Definitions, Characterization and Simple Properties - Counting the Number of Spanning Trees - Cayley's Formula.

Unit III Independent Sets and Matchings

Vertex Independent Sets and Vertex Coverings - Edge Independent Sets - Matchings and Factors - Eulerian Graphs - Hamiltonian Graphs.

Unit IV Graph Colourings

Vertex Colouring - Critical Graphs - Triangle - Free Graphs - Edge Colourings of Graphs - Chromatic Polynomials.

Unit V Planarity

Planar and Nonplanar Graphs - Euler Formula and its Consequences - K_5 and $K_{3,3}$ are Nonplanar Graphs - Dual of a Plane Graph - The Four-Colour Theorem and the Heawood Five-Colour Theorem-Kuratowski's Theorem.

Textbook

1. R. Balakrishnan, K. Ranganathan, A Textbook of Graph Theory, Springer International Edition, New Delhi, 2008.

UNIT I	Chapter I & II: 1.1 to 1.4, 1.7, 2.1, 2.2
UNIT II	Chapter III & IV: 3.1, 3.2, 4.1, 4.3 to 4.4
UNIT III	Chapter V & VI: 5.1 to 5.4, 6.1, 6.2
UNIT IV	Chapter VII: 7.1 to 7.4, 7.7
UNIT V	Chapter VIII: 8.1 to 8.6

References

1. J.A. Bondy, U.S.R. Murty, Graph Theory with Applications, Mac Milan Press Ltd., 1976.
2. Gary Chartrand, Linda Lesniak, Ping Zhang, Graphs and Digraph, CRC press, 2010.
3. F. Harary, Graph Theory, Addison - Wesley, Reading, Mass., 1969.

CORE COURSE V

INTEGRAL EQUATIONS, CALCULUS OF VARIATIONS AND TRANSFORMS

Objectives.

1. To introduce the concept of calculus of variations and integral equations and their applications.
2. To study the different types of transforms and their properties.

UNIT I

Calculus of variations – Maxima and Minima – the simplest case – Natural boundary and transition conditions - variational notation – more general case – constraints and Lagrange's multipliers – variable end points – Sturm-Liouville problems.

UNIT - II

Fourier transform - Fourier sine and cosine transforms - Properties Convolution - Solving integral equations - Finite Fourier transform - Finite Fourier sine and cosine transforms - Fourier integral theorem - Parseval's identity.

UNIT III

Hankel Transform : Definition – Inverse formula – Some important results for Bessel function – Linearity property – Hankel Transform of the derivatives of the function – Hankel Transform of differential operators – Parseval's Theorem

UNIT IV

Linear Integral Equations - Definition, Regularity conditions – special kind of kernels – eigen values and eigen functions – convolution Integral – the inner and scalar product of two functions – Notation – reduction to a system of Algebraic equations – examples- Fredholm alternative - examples – an approximate method.

UNIT V

Method of successive approximations: Iterative scheme – examples – Volterra Integral equation – examples – some results about the resolvent kernel. Classical Fredholm Theory: the method of solution of Fredholm – Fredholm's first theorem – second theorem – third theorem.


TEXT BOOKS

- [1] Ram.P.Kanwal – Linear Integral Equations Theory and Practise, Academic Press 1971.
- [2] F.B. Hildebrand, Methods of Applied Mathematics II ed. PHI, ND 1972.
- [3] A.R. Vasishtha, R.K. Gupta, Integral Transforms, Krishna Prakashan Media Pvt Ltd, India, 2002.

UNIT - I Chapter 2: Sections 2.1 to 2.9 of [2]
UNIT - II Chapter 7 of [3]
UNIT - III Chapter 9 of [3]; UNIT - IV -Chapters 1 and 2 of [1]
UNIT - V Chapters 3 and 4 of [1]

REFERENCES

- [1] S.J. Mikhlin, Linear Integral Equations (translated from Russian), Hindustan Book Agency, 1960.
- [2] I.N. Snedden, Mixed Boundary Value Problems in Potential Theory, North Holland, 1966.


The Head
Dept Of Mathematics,
Shrimati Indira Gandhi College
Tiruchirappalli - 620 002

CORE COURSE VII

LINEAR ALGEBRA

Objectives

1. To give the students a thorough knowledge of the various aspects of Linear Algebra
2. To train the students in problem-solving as a preparatory for competitive exam.

UNIT I: Matrices:

Systems of linear Equations - Matrices and Elementary Row operations - Row-reduced echelon Matrices - Matrix Multiplication - Invertible Matrices - Bases and Dimension. (Only revision of Vector spaces and subspaces).

Unit II: Linear transformations:

The algebra of linear transformations - Isomorphism of Vector Spaces - Representations of Linear Transformations by Matrices - Linear Functionals - The Double Dual - The Transpose of a Linear Transformation.

Unit III: Algebra of polynomials:

The algebra of polynomials - Lagrange Interpolation - Polynomial Ideals - The prime factorization of a polynomial - Commutative rings - Determinant functions.

Unit IV: Determinants:

Permutations and the uniqueness of determinants - Classical Adjoint of a (square) matrix - Inverse of an invertible matrix using determinants - Characteristic values - Annihilating polynomials.

Unit V: Diagonalization:

Invariant subspaces - Simultaneous triangulation and simultaneous Diagonalization Direct-sum Decompositions - Invariant Direct sums - Primary Decomposition theorem.

TEXTBOOK

1. Kenneth Hoffman and Ray Alden Kunze, Linear Algebra, Second Edition, Prentice Hall of India Private Limited, New Delhi, 1975.
UNIT I Chapter 1 & 2 1.2-1.6 and 2.3
UNIT II Chapter 3
UNIT III Chapter 4 & 5 4.1 - 4.5 and 5.1 - 5.2
UNIT IV Chapter 5 & 6 5.3, 5.4 and 6.1 - 6.3
UNIT V Chapter 6 6.4 - 6.8

REFERENCES

1. S. Kumaresan, Linear Algebra: A Geometric Approach, Prentice-Hall of India Ltd, 2004.
2. V. Krishnamurthy, V.P. Mainra, J.L. Arora, Introduction to Linear Algebra, East West Press Ltd, 1985.
3. A.R. Rao, P. Bhimashankaram, Linear Algebra, Second Edition, Tata McGraw Hill, 2000.
4. Edgar G. Goodaire, Linear Algebra-Pure & Applied World Scientific, Cambridge University Press India Ltd, 2014



ELECTIVE V (3)

ALGEBRAIC NUMBER THEORY

Objectives

1. To expose the students to the charm, niceties and nuances in the world of numbers.
2. To highlight some of the Applications of the Theory of Numbers.

UNIT I

Introduction – Divisibility – Primes – The Binomial Theorem – Congruences – Euler's totient – Fermat's, Euler's and Wilson's Theorems – Solutions of congruences – The Chinese Remainder theorem.

UNIT II

Techniques of numerical calculations – Public key cryptography – Prime power Moduli – Primitive roots and Power Residues – Congruences of degree two.

UNIT III

Number theory from an Algebraic Viewpoint – Groups, rings and fields – Quadratic Residues- The Legendre symbol (a/r) where r is an odd prime – Quadratic Reciprocity – The Jacobi Symbol (P/q) where q is an odd positive integer.

UNIT IV

Binary Quadratic Forms – Equivalence and Reduction of Binary Quadratic Forms – Sums of three squares – Positive Definite Binary Quadratic forms – Greatest integer Function – Arithmetic Functions – The Mobius Inversion Formula – Recurrence Functions – Combinatorial number theory .

UNIT V

Diophantine Equations – The equation $ax+by=c$ – Simultaneous Linear Diophantine Equations – Pythagorean Triangles – Assorted examples.

TEXT BOOK

Ivan Niven, Herbert S, Zuckerman and Hugh L, Montgomery, An Introduction to the Theory of Numbers, Fifth edn., John Wiley & Sons Inc, 2004.

UNIT I	Chapter 1 and Chapter 2 : Sections 2.1 to 2.3
UNIT II	Chapter 2 : Sections 2.4 to 2.9
UNIT III	Chapter 2 : Sections 2.10, 2.11 and Chapter 3: Sections 3.1 to 3.3
UNIT IV	Chapter 3 : Sections 3.4 to 3.7 and Chapter 4
UNIT V	Chapter 5: Sections 5.1 to 5.4.

REFERENCES

1. Elementary Number Theory, David M. Burton W.M.C. Brown Publishers, Dubuque, Iowa, 1989.
2. Number Theory, George Andrews, Courier Dover Publications, 1994.
3. Fundamentals of Number Theory, William J. Leveque Addison-Wesley Publishing Company, Phillipines, 1977.

CORE COURSE VIII
PARTIAL DIFFERENTIAL EQUATIONS

Objectives

1. To give an in-depth knowledge of solving partial differential equations and apply them in scientific and engineering problems.
2. To study the other aspects of PDE

UNIT I

Partial differential equations- origins of first order Partial differential equations- Cauchy's problem for first order equations- Linear equations of the first order- Integral surfaces Passing through a Given curve- surfaces Orthogonal to a given system of surfaces -Non linear Partial differential equations of the first order.

UNIT II

Cauchy's method of characteristics- compatible systems of first order equations- Charpits method- Special types of first order equations- Solutions satisfying given conditions- Jacobi's method.

UNIT III

Partial differential equations of the second order : The origin of second order equations -second order equations in Physics – Higher order equations in Physics - Linear partial differential equations with constant co-efficient- Equations with variable coefficients- Characteristic curves of second order equations

UNIT IV

Characteristics of equations in three variables- The solution of Linear Hyperbolic equations-Separation of variables. The method of Integral Transforms – Non Linear equations of the second order.

Unit V

Laplace equation : Elementary solutions of Laplace's equations-Families of equipotential Surfaces- Boundary value problems-Separation of variables –Problems with Axial Symmetry.

TEXT BOOK

Ian N. Sneddon, Elements of Partial differential equations, Dover Publication -INC, New York, 2006.

UNIT I Chapter II Sections 1 to 7

UNIT II Chapter II Sections 8 to 13

UNIT III Chapter III Sections 1 to 6

UNIT IV Chapter III Sections 7 to 11

UNIT V Chapter IV Sections 2 to 6

REFERENCES

1. **M.D.Raisinghania**, Advanced Differential Equations , S.Chand and company Ltd., New Delhi,2001.
2. **E.T.Copson**, Partial Differential Equations, Cambridge University Press

MPHIL Mathematics
GUIDE PAPER - NUMBER THEORY

UNIT I:

Divisibility: The division Theorem – Greatest common divisor - The Euclidean Algorithm- Least common multiple-Prime numbers-the fundamental theorem on arithmetic - Fermat's number- Mathematical induction.

UNIT II:

Congruence: Basic properties of congruences – Divisibility test with the congruence relation –complete system of residues –Linear congruences –Chinese remainder theorem –Fermat's theorem – reduced system- Euler's theorem –Wilson's theorem- Lagrange's theorem-Polynomial congruence modulo m .

UNIT III:

Number theoretic functions: Functions $\tau(n)$ - Euler Totient function and its properties- Mobius functions- Mobius Inversion formula.

UNIT IV:

Diophantine equation : Linear diophantine equation and its solutions- Non- linear Diophantine equations- $x^n + y^n = z^n$, $n \geq 2$ - Pythagorean triple- Fermat's Theorem.

UNIT V:


Continued fraction: simple continued fractions and Their Properties- recurring continued fraction-symmetric continued fraction-Pell's equation.

TEXT BOOK:

DR. Ajay, KR Chaudhuri, Introduction to Number Theory, New central Book Agency Pvt Ltd, Delhi.

REFERENE BOOK:

Dr. Sudhir, K.Pundir and Rimple Pundir, Theory of Numbers, Pragati Prakashan Meerut 2009.


The Head
Dept Of Mathematic
Shrimati Indra Gandhi College
Tiruchirapalli - 620 002