



**GOVERNMENT DEGREE COLLEGE**  
BHADRACHALAM-507111, BHADRADRI KOTHAGUDEM DIST



**1.3.2 Average percentage of Courses that include experiential learning through project work/ field work / internship during the last five years.**

## **ADDITIONAL INFORMATION**

**SYLLABI FOR THE PROJECT WORK /FIELD VISITS RELATED TO AFFILIATING UNIVERSITY**



  
**Principal**  
Govt. Degree College  
Bhadrachalam-507 111,  
Bhadrachalam Kothagudem Dist

**KAKATIYA UNIVERSITY**  
**U.G. CHEMISTRY (Under CBCS)**  
**B.Sc. Final Year (DSE-1E)**  
**SEMESTER - V**

**ELECTIVE-I**

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**A (T) - INSTRUMENTAL METHODS OF ANALYSIS**

**Unit I: Chromatography-I**

**11Hrs**

**S5-E-A-I: Solvent Extraction-** Principle, Methods of extraction: Batch extraction, continuous extraction and counter current extraction. Application - Determination of Iron (III).  
**Chromatography:** Classification of chromatographic methods, principles of differential migration, adsorption phenomenon, nature of adsorbents, solvent systems.

**Thin layer Chromatography (TLC):** Advantages, preparation of plates, development of the chromatogram, Detection of the spots, factors effecting Rf values and applications.

**Paper Chromatography:** Principle, choice of paper and solvent systems, development of chromatogram - ascending, descending, radial and two dimensional chromatography and applications

**Unit II: Chromatography-II**

**11Hrs**

**S5-E-A-II: Column Chromatography-** Principle, Types of stationary phases, Column packing - Wet packing technique. Dry packing technique. Selection criteria of mobile phase solvents for eluting polar, non-polar compounds and its applications.

**Ion exchange chromatography:** Principle, cation and anion exchange resins, its application in separation of ions.

**Gas Chromatography:** Theory and instrumentation (Block Diagram), Types of stationary phases and carrier gases (mobile phase).

**High performance liquid chromatography:** Theory and instrumentation, stationary phases and mobile phases. Analysis of paracetamol.

**Unit III: Colorimetry and Spectrophotometry**

**12Hrs**

**S5-E-A-III: General features of absorption - spectroscopy,** transmittance, absorbance, and molar absorptivity. Beer Lambert's law and its limitations, difference between Colorimetry and Spectrophotometry.

**Instruments - Single beam UV- Visible Spectrophotometer, Double beam UV- Visible Spectrophotometer.** Lamps used as energy sources. Verification of Beer's law. Estimation of iron in water samples by thiocyanate method. Estimation of (i) Chromium and (ii) Manganese in steel.



2016-17

**B.A /B.Sc. (Life Sciences) with Computer Application Syllabus**

**I Semester, DSC 1A**

**Computer Fundamentals**

**Unit - I**

Introduction to Computer : Introduction, Digital and Analog Computers, Characteristics of Computer, History of Computer, Generations of Computer, Classification of Computer, The Computer System, Application of Computers.

The Computer System Hardware: Introduction, Central Processing Unit, Memory Unit, Instruction Format, Instruction Set, Instruction Cycle, Microprocessor, Interconnecting the Units of a Computer, Performance of a Computer, Inside a Computer Cabinet

Computer Memory : Introduction, Memory Representation, Memory Hierarchy, CPU Registers, Cache Memory, Primary Memory, Secondary Memory, Access Types of Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk, Magneto-Optical Disk, Using the Computer Memory.

**Unit - II**

Input and Output Devices: Introduction, Input-Output Unit, Input Devices, Human Data Entry Devices, Source Data Entry Devices, Output Devices, I/O Port, Working of I/O System.

Data Representation : Introduction, Number System, Conversion from Decimal to Binary, Octal, Hexadecimal, Conversion of Binary, Octal, Hexadecimal to Decimal , Conversion of Binary to Octal, Hexadecimal, Conversion of Octal, Hexadecimal to Binary, Binary Arithmetic, Signed and Unsigned Numbers, Binary Data Representation, Binary Coding Schemes, Logic Gates.

Interaction of User and Computer: Introduction, Types of Software, System Software, Application Software, Software Acquisition.

**Unit - III**

Operating System : Introduction, Objectives of Operating System, Types of OS, Functions of OS, Process Management, Memory Management, File Management, Device Management, Protection and Security, User Interface, Examples of Operating Systems.

Computer Programming Fundamentals: Introduction, Program Development Life Cycle, Algorithm, Control Structures, Flowchart, Pseudo Code, Programming Paradigms.

**The Internet and Internet Services:** Introduction, History of Internet, Internetworking Protocol, the Internet Architecture, Managing the Internet, Connecting to Internet, Internet Connections, Internet Address, Internet Services, Uses of Internet.

**Unit IV**

Information Systems : Introduction, Data, Information and Knowledge, Characteristics of Information, Information System (IS), Computer-Based Information System (CBIS), Need for Efficient Information System, Categories of Information System, Operations Support System, Management Support System, Specialized Information System, Careers in Information Systems.

Computer Security: Introduction, Security Threat and Security Attack, Malicious

2017-18

**KAKATIYA UNIVERSITY**  
**U.G. Computer Science (Under CBCS)**  
**B.Sc. Final Year**  
**SEMESTER - V:**

**Elective I**

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**A) Computer Networks**

**Unit I**

Introduction: Data Communication Components, Line Configuration, Topologies, Transmission Mode, Categories of Networks, ISO Reference Model-Layered Architecture, Functions of Layers, TCP/IP Reference Model.

Transmission Media: Guided Media-Twisted Pair Cable, Coaxial Cable, Optical Fiber, Unguided Media- Satellite Communication, and Cellular Telephony. Multiplexing: Frequency-Division Multiplexing, Time-Division Multiplexing.

**Unit II**

Data Link Layer: Error Detection-VRC, LRC, CRC, Checksum, Error Correction-Hamming Code, Burst Error Correction, Line Discipline-ENQ/ACK, Poll/Select, Flow Control-Stop-and-Wait, Sliding Window, Error Control-Stop-and-Wait ARQ, Sliding Window ARQ Go-Back-n ARQ, Selective-Reject ARQ.

**Unit III**

Local Area Networks: Introduction to IEEE 802, Ethernet-CSMA/CD, Implementation, Token Ring,-Token Passing, Implementation.

Switching: Circuit Switching, Packet Switching, Message Switching.

**Unit IV**

Networking and Internetworking Devices: Repeaters, Bridges, Routers, Gateways, Routers, Switches, Distance Vector Routing Algorithm, Link State Routing Algorithm.

Transport Layer: Duties of Transport Layer, Connection. Upper OSI Layers; Session Layer, Presentation Layer, Application Layer.

**Text Book:**

Behrouz A. Forouzan, Data Communication and Networking (2e Update)

**References:**

1. S.S. Shinde, Computer Networks
2. William Stallings, Data and Computer Communications
3. Andrew S. Tanenbaum, David J Wetherall, Computer Networks
4. Behrouz A Forouzan, Firouz Mosharruf, Computer Networks A Top-Down Approach
5. James F. Kurose, Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet.



2018-19

## KAKATIYA UNIVERSITY

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

### B.Sc. Computer Science II Year SEMESTER – IV

#### DATA BASE MANAGEMENT SYSTEMS

Theory:	4 Hours/Week;	Credits: 4	Marks: 100 (Internal: 20; External: 80)
Practical:	3 Hours/Week	Credits: 1	Marks: 25

##### Unit - I

Introduction: Database-System Applications, Purpose of Database Systems, View of Data, Database Languages, Relational Databases, Database Design, Data Storage and Querying, Transaction Management, Database Architecture, Database Users and Administrators.

Introduction to the Relational Model: Structure of Relational Databases, Database Schema, Keys, Schema Diagrams, Relational Query Languages, Relational Operations.

##### Unit - II

Database Design and the E-R Model: Overview of the Design Process, The Entity- Relationship Model, Constraints, Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Reduction to Relational Schemas, Entity-Relationship Design Issues, Extended E-R Features, Alternative Notations for Modeling Data, Other Aspects of Database Design.

Relational Database Design: Features of Good Relational Designs, Atomic Domains and First Normal Form, Decomposition Using Functional Dependencies, Functional- Dependency Theory, Decomposition Using Multivalued Dependencies, Normal Forms-2 NF, 3 NF, BCNF, The Database Design Methodology for Relational Databases.

##### Unit - III

Introduction to SQL: Overview of the SQL Query Language, SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Subqueries, Modification of the Database.

Intermediate SQL: Join Expressions, Views, Transactions, Integrity Constraints, SQL Data Types and Schemas, Authorization.

Advanced SQL: Accessing SQL from a Programming Language, Functions and Procedures, Triggers, Recursive Queries.

##### Unit - IV

Transaction Management: Transaction Support-Properties of Transactions, Database Architecture, Concurrency Control-The Need for Concurrency Control, Serializability and Recoverability, Locking Methods, Deadlock, Time Stamping Methods, Multi-version Timestamp Ordering, Optimistic Techniques, Granularity of Data Items, Database Recovery-The Need for Recovery, Transactions and Recovery, Recovery Facilities, Recovery Techniques, Nested Transaction Model. Security: Database Security-Threats, Computer-Based Controls-Authorization, Access Controls, Views, Backup and Recovery, Integrity, Encryption, RAID.

##### Text book:

1. Silberschatz, H. Korth and S. Sudarshan, Database System Concepts, 6th Ed., Tata McGraw Hill, 2011
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems-A Practical Approach to Design, Implementation, and Management (6e)



2019-20

Faculty of Commerce & Business Management, Kakatiya University, Warangal.

Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(Only for B.Com. (Computer Applications))

Hours Per Week: 7 (3T+4P)

Credits: 5

Exam Hours: 1 1/2

Marks: 50U+35P+15I

Objective: to acquire basic conceptual background necessary to design and develop simple database system, Relational database mode, ER model and distributed databases, and to write good queries using a standard query language called SQL.

UNIT-I: BASIC CONCEPTS: Database Management System - File based system - Advantages of DBMS over file based system - Database Approach - Logical DBMS Architecture - Three level architecture of DBMS or logical DBMS architecture - Need for three level architecture - Physical DBMS Architecture - Database Administrator (DBA) Functions & Role - Data files indices and Data Dictionary -Types of Database. Relational and ER Models: Data Models - Relational Model - Domains - Tuple and Relation - Super keys - Candidate keys - Primary keys and foreign key for the Relations - Relational Constraints - Domain Constraint - Key Constraint - Integrity Constraint - Update Operations and Dealing with Constraint Violations - Relational Operations - Entity Relationship (ER) Model - Entities - Attributes - Relationships - More about Entities and Relationships - Defining Relationship for College Database - E-R Diagram - Conversion of E-R Diagram to Relational Database.

UNIT-II: DATABASE INTEGRITY AND NORMALISATION: Relational Database Integrity - TheKeys - Referential Integrity - Entity Integrity - Redundancy and Associated Problems - Single Valued Dependencies - Normalisation - Rules of Data Normalisation - The First Normal Form -The Second Normal Form - The Third Normal Form - Boyce Codd Normal Form - Attribute Preservation - Lossless-join Decomposition - Dependency Preservation. File Organisation : Physical Database Design Issues - Storage of Database on Hard Disks - File Organisation and Its Types - Heap files (Unordered files) - Sequential File Organisation - Indexed (Indexed Sequential) File Organisation - Hashed File Organisation

- Types of Indexes - Index and Tree Structure - Multi-key File Organisation - Need for Multiple Access Paths - Multi-list File Organisation - Inverted File Organisation.

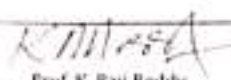
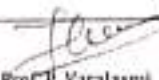
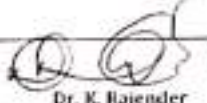




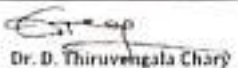

UNIT-III: STRUCTURES QUERY LANGUAGE (SQL): Meaning-SQL commands - Data Definition Language - Data Manipulation Language - Data Control Language - Transaction Control Language - Queries using Order by - Where - Group by - Nested Queries. Joins - Views - Sequences - Indexes and Synonyms - Table Handling.

UNIT-IV: TRANSACTIONS AND CONCURRENCY MANAGEMENT: Transactions - Concurrent Transactions - Locking Protocol - Serialisable Schedules - Locks Two Phase Locking (2PL) - Deadlock and its Prevention - Optimistic Concurrency Control. Database Recovery and Security: Database Recovery meaning - Kinds of failures - Failure controlling methods - Database errors - Backup & Recovery Techniques - Security & Integrity - Database Security - Authorization.

UNIT-V: DISTRIBUTED AND CLIENT SERVER DATABASES: Need for Distributed Database Systems - Structure of Distributed Database - Advantages and Disadvantages of DDBMS - Advantages of Data Distribution - Disadvantages of Data Distribution - Data Replication - Data Fragmentation. Client Server Databases: Emergence of Client Server Architecture - Need for Client Server Computing - Structure of Client Server Systems & its advantages.

ADVANCED TOPICS: Overview: Parallel Database - Multimedia Database - Mobile Database - Web Database - Multidimensional Database. Data Warehouse - OLTP Vs OLAP - NoSQL Database. LAB: SQL QUERIES BASED ON VARIOUS COMMANDS.

SUGGESTED READINGS: 1) Database Systems: R.Elmasri & S.B. Navathe, Pearson.; 2) Introduction to Database Management System: ISRD Group, McGraw Hill.; 3) Database Management System: R.Ramakrishnan & J.Gehrke, McGrawHill.; 4) Modern Database Management: J.A.Hoffer, V.Ramesh & H.Topi, Pearson.; 5) Database System Concepts: Silberschatz, Korth & Sudarshan, McGrawHill. 6) Simplified Approach to DBMS: Parteek Bhaia, Kalyani Publishers.

 Prof. K. Raji Reddy	 Prof. T. Varalaxmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somsalah	 Dr. S. Narayana Swamy
 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao



Paper DSC 303: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(Only for B.Com. (Computer Applications))

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Exam Hours: 1 ½

Marks: 50U+35P+15I

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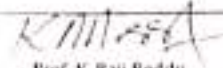
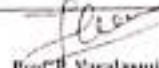

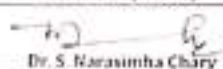
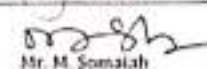
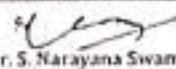

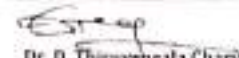

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 Dr. Ramavath Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Ran



- 1.
- 2.

Department of Commerce and Business Management, Kakatiya University, Warangal  
 B.Com III Year - V Semester  
 BC 503; Cost Accounting

Max. Marks: 80UE-201A

**UNIT-I: INTRODUCTION:** Cost Accounting: Definition - Features - Objectives - Functions - Scope - Advantages and Limitations. Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting - Concepts - Cost Classification - Preparation of cost sheet (including problems)

**UNIT-II: MATERIAL:** Direct and Indirect Material cost - Inventory Control Techniques - Stock Levels - EOQ - ABC Analysis - JIT-VED-ESND - Issue of Materials to Production - Pricing methods: FIFO-LIFO with Base Stock and Simple and Weighted Average methods. (Including problems)

**UNIT-III: LABOUR AND OVERHEADS:** Labour: Direct and Indirect Labour Cost - Methods of Payment of Wages (only Incentive Plans) - Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods; Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (including problems)

**UNIT-IV: UNIT COSTING AND JOB COSTING:** Unit Costing: Features - Cost Sheet - Tender and Estimated Cost Sheet, Job Costing: Features - Objectives - Procedure - Preparation of Job Cost Sheet. (including problems)

**UNIT-V: CONTRACT AND PROCESS COSTING:** Contract Costing: Features - Procedure of Contract Costing - Guidelines to Assess profit on incomplete contracts - Advantages **Process Costing:** Meaning - Features - **Preparation of Process Cost Sheet** - Normal and Abnormal Losses. (including problems)

**SUGGESTED BOOKS:**

1. Cost Accounting: Jain and Narang, Kalyani Publications.
2. Cost Accounting: M.N. Arora, Himalaya Publications.
3. Cost and Management Accounting: Prashanta Athma, Himalaya Publications
4. Cost Accounting: Jawaharlal, Tata Megraw Hill Publications.
5. Cost Accounting: Theory and Practice: Banerjee, PHI Publications.
6. Introduction to Cost Accounting: Tulsian, S.Chand Publications.
7. Cost Accounting: Horngren, Pearson Publications.
8. Cost Accounting: Ravi M. Kishore, Tax Mann Publications.



8. EGG Traly Industry.

3, 4, 7  
KTPS, ITC, Agro Business.

9. Heavy water plant.

Faculty of Commerce & Business Management, Kakatiya University, Warangal.

## Paper DSC 102: BUSINESS ORGANISATION AND MANAGEMENT

**Objective:** To acquaint the students with the basics of Commerce and Business concepts and functions, forms of Business Organization and functions of Management.

### UNIT-I: INTRODUCTION AND FORMS OF BUSINESS ORGANISATIONS:

Concepts of Business, Trade, Industry and Commerce - Objectives and Functions of Business - Social Responsibility of a Business - Forms of Business Organization - Meaning, Characteristics, Advantages and Disadvantages of Sole Proprietorship - Meaning, Characteristics, Advantages and Disadvantages of Partnership - Kinds of Partners - Partnership Deed - Concept of Limited Liability Partnership - Meaning, Characteristics, Advantages and Disadvantages of Hindu Undivided Family - Meaning, Advantages and Disadvantages of Co-Operative Organization

### UNIT-II: JOINT STOCK COMPANY:

Joint Stock Company - Meaning - Definition - Characteristics - Advantages and Disadvantages - Kinds of Companies - Promotion - Stages of Promotion - Promoter - Characteristics - Kinds - Preparation of Important Documents - Memorandum of Association - Clauses - Articles of Association - Contents - Prospectus - Contents - Red herring Prospectus - Statement in lieu of Prospectus (As per Companies Act, 2013)

### UNIT-III: INTRODUCTION TO FUNCTIONS OF MANAGEMENT:

Management - Meaning - Characteristics - Functions of Management - Levels of Management - Skills of Management - Scientific Management - Meaning - Definition - Objectives - Criticism - Fayol's 14 Principles of Management

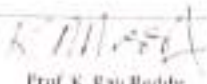
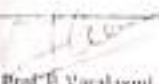
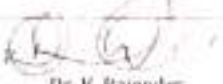
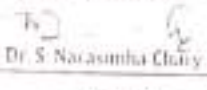


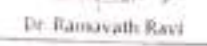
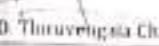
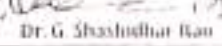
**UNIT-IV: PLANNING AND ORGANISING:** Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages - Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits - Weaknesses - Definition of Organizing - Organization - Process of Organizing - Principles of Organization - Formal and Informal Organizations - Line, Staff Organizations - Line and Staff Conflicts - Functional Organization - Span of Management - Meaning - Determining Span - Factors influencing the Span of Supervision

### UNIT-V: AUTHORITY, COORDINATION AND CONTROL:

Meaning of Authority, Power, responsibility and accountability - Delegation of Authority - Decentralization of Authority - Definition, importance, process, and principles of Coordination - techniques of Effective Coordination - Control - Meaning - Definition - Relationship between planning and control - Steps in Control - Types (post, current and pre-control) - Requirements for effective control

### SUGGESTED READINGS:

1. Business Organization & Management: Sharma Shashi K. Gupta, Kalyani Publishers
2. Business Organisation & Management: Patrick Anthony, Himalaya Publishing House
3. Business Organization & Management: Dr. Manish Gupta, PBP.
4. Modern Business Organization: S.A. Sherlekar, V.S. Sherlekar, Himalaya Publishing House
5. Business Organization & Management: C.R. Basu, Tata McGraw Hill
6. Organizational Behaviour Text & Cases: V.S.P. Rao, Himalaya Publishing House
7. Business Organization & Management: Uma Shekaram, Tata McGraw Hill
8. Business Organization & Management: Niranjan Reddy & Surya Prakash, Vaagdevi publishers
9. Business Organisation and Management, Dr. Neeru Vasithi, Tax Manu Publications.

 Prof. K. Raj Reddy	 Prof. P. Varalakshmi	 Dr. K. Rajender
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 Dr. Ramavath Ravi	 Dr. D. Thiruvengata Chary	 Dr. G. Shasthinar Rao

3- KTPS.

4- ITC.

**Kakatiya University, Warangal.**

**Faculty of Commerce & Business Management,**

**B.Com. V Semester - Paper DSE 501 (a) : COST ACCOUNTING**

**Objective:** To make the students acquire the knowledge of cost accounting methods.

**UNIT-I: INTRODUCTION:**

Cost Accounting: Definition - Features - Objectives - Functions - Scope - Advantages and Limitations - Essentials of a good cost accounting system- Difference between Cost Accounting and Financial Accounting - Cost concepts - Cost Classification. (Theory Only)

**UNIT-II: MATERIAL:**

Direct and Indirect Material cost - Inventory Control Techniques - Stock Levels - EOQ - ABC Analysis - JIT - VED - FSND - Issue of Materials to Production - Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (Problems)

**UNIT-III: LABOUR AND OVERHEADS:**

Labour: Direct and Indirect Labour Cost - Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.

Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (Problems)

**UNIT-IV: UNIT AND JOB COSTING:**

Unit Costing: Features - Cost Sheet - Tender and Estimated Cost Sheet.

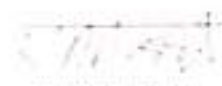
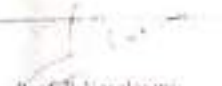
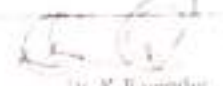


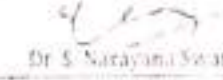
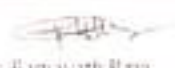
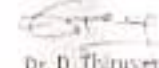
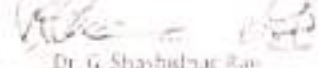
Job Costing: Features - Objectives - Procedure - Preparation of Job Cost Sheet. (Problems)

**UNIT-V: CONTRACT AND PROCESS COSTING:**

Contract Costing: Features - Advantages - Procedure of Contract Costing - Guidelines to Assess profit on incomplete Contracts. **Process Costing:** Meaning - Features - **Preparation of Process Account** - Normal and Abnormal Losses. (Problems)

**SUGGESTED READINGS:**

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: Prashanta Athma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata McGraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI

 Prof. K. Rao-Reddy	 Prof. P. Varalakshmi	 Dr. K. Banerjee
 Dr. S. Narayana Chary	 Mr. M. Somasah	 Dr. S. Narayana Swamy
 Dr. Ramavath Bava	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao



**B.Com. III Semester - Paper DSC 303: FINANCIAL INSTITUTIONS & MARKETS***Objective: To familiarize with various Financial Institutions and Markets.***UNIT-I: INDIAN FINANCIAL SYSTEM:**

Components - Functions - Flow of Funds Matrix - Financial System and Economic Development - Recent Developments in Indian Financial System - Weaknesses of Indian Financial System

**UNIT-II: FINANCIAL INSTITUTIONS:**

**Commercial Banking:** Types - Functions - Lending by Commercial Banks - Recent Developments - **Merchant Banking** - functions - Venture Capital - objectives - Private Equity - role in start-ups - Hire purchase and leasing - Non-banking Finance Companies: Types - Functions

**UNIT-III: MONEY MARKET:**

**Functions of Money Market** - Organization of Money Market - Dealers - **Money Market Instruments** - RBI - Functions - Role of RBI in Money Market - LAF (Liquidity Adjustment Facility), MSF (Marginal Standing Facility), Repo, and Reverse Repo.

**UNIT-IV: DEBT MARKET:**

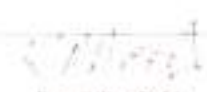






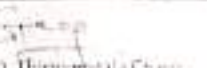

Evolution of Debt Markets in India - Instruments and Players in Debt Market: Government Securities - PSU Bonds - Corporate Bonds - Securities Trading Corporation of India - Primary Dealers in Government Securities - Bonds: Features of Bonds - Types of Bonds - Bond Ratings.

**UNIT-V: EQUITY MARKET:**

Meaning - Development of Equity Market in India - Primary Market: IPO and FPO - Methods of IPO - Role of Merchant Bankers in Fixing the Price - Red Herring Prospectus - Sweat Equity - ESOP - Rights Issue - Secondary Market: Meaning and Functions of Stock Exchanges - Evolution and Growth of Stock Exchanges - Stock Exchanges in India - Recent Developments in Indian Stock Exchanges - Stock Market Indices - SEBI: Objectives and Functions

**SUGGESTED READINGS:**

- 1) Bhole, L.M., Financial Markets and Institutions. Tata McGraw Hill Publishing Company, New Delhi, India.
- 2) Prof. Prashanta Athma, Financial Institutions and Markets: PBP
- 3) Gordon & Natarajan, Financial Markets and Services. Himalaya Publishing House, New Delhi, India.
- 4) Khan and Jain, Financial Services, Tata McGraw Hill, New Delhi, India.
- 5) Khan, M.Y., Indian Financial System - Theory and Practice, Vikas Publishing House, New Delhi, India.

 Prof. K. Raj Reddy	 Prof. P. Varadachari	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Sumaiah	 Dr. S. Narayana Swamy
 Dr. Ramavathi Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Sheshadhar Rao

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C.B.C.S Pattern Syllabus from 2019-2010 onwards  
B.A., B.Sc., B.Com. & B.BA  
1st Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం ✓

- ~~1) కందుకూరి వీరేశలింగం - నన్నయ~~  
2) గోడగూరి కథ - పొట్టిరికి సోమనాథుడు  
3) సంవరణుడి తపస్సు - అద్దంకి గంగాధరుడు



Unit-II ఆధునిక కవిత్వం

- 1) కాసులు-గురజాడ అప్పారావు
- 2) రాజు-కవి-డా.గుమ్మం జాషువా
- 3) గంగిరెద్దు-డా. పల్లా దుర్గయ్య
- 4) జయభేరి-శ్రీ శ్రీ

Unit-III వచన కవిత్వం

రుద్రమదేవి (నపల) - ఒద్దిరాజు సోదరులు

Unit-IV భాషా భాగాలు - వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం



V. Srinivasulu  
K. Srinivasulu  
Srinivasulu  
Srinivasulu



KAKATIYA UNIVERSITY, WARANGAL  
 B.A., B.Sc., B.Com. & B.B.A (CBCS)  
 Syllabus - 2020  
 Telugu (Second Language)  
 3rd Semester



Unit -I ప్రాచీన పద్యభాగం

- |                          |   |                    |
|--------------------------|---|--------------------|
| 1) ధర్మజుని వాక్యాతుర్యం | - | తిక్కన             |
| 2) విభీష్ణుల శరణాగతి     | - | గోన బుద్ధాచార్యులు |
| 3) గుణనిధి కథ            | - | శ్రీనాథుడు         |

Unit -II ఆధునిక పద్యభాగం

- |                          |   |                           |
|--------------------------|---|---------------------------|
| 1) రైతు ప్రశస్తి         | - | వానమామలై జగన్నాథాచార్యులు |
| 2) గురుదక్షిణ            | - | అంబటి లక్ష్మీనరసింహరాజు   |
| 3) గుడిసెలు కాలిపోతున్నై | - | డా॥ బోయి భీమన్న           |

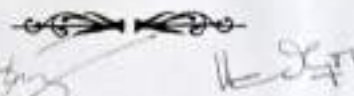
Unit -III అలంకారాలు

శబ్దాలంకారాలు: వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస,  
 అంశ్యానుప్రాస, యమకం, ముక్తపద్యస్రాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉల్లేఖ,  
 అర్థాంతరవ్యాస, శ్లేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం

  
 Chairman  
 Board of Studies in Telugu  
 KAKATIYA UNIVERSITY



  
 Head  
 Department of Telugu  
 Kakatiya University  
 Warangal-500 03(T.S.)



**KAKATIYA UNIVERSITY, WARANGAL**  
B.A., B.Sc., B.Com. & B.B.A (CBCS)  
Syllabus - 2020  
Telugu (Second Language)  
3rd Semester

**Unit -I ప్రాచీన పద్యభాగం**

- 1) ధర్మజాని వాక్యాతుర్ము - తిక్కన
- 2) విలీపన శరణాగతి - గంప బుద్ధాదితీ
- 3) గుణనిధి కథ - శ్రీనాథుడు

**Unit -II ఆధునిక పద్యభాగం**

- 1) నైతు భ్రశస్తి - వానమాచలై జగన్నాథాచార్యులు
- 2) గురుదక్షిణ - అంబటి లక్ష్మీనరసింహారాజు
- 3) గుడిసెలు కాలిపోతున్నై - దా|| బోయి భీమన్న

**Unit -III అలంకారాలు**

శబ్దాలంకారాలు: వ్యత్యసప్రాస, రేకాసుప్రాస, లాలాసుప్రాస,  
అంత్యాసుప్రాస, యమకం, ముక్తపద్యగ్రస్తాలంకారాలు

అర్థాలంకారాలు: ఉపమ, ఉత్పేక్ష, రూపక, స్వభావోక్తి, ఉద్దేశ,  
అర్ధాంతరవ్యాస, శ్రేష, దృష్టాంతాలంకారాలు

పాఠ్యగ్రంథం: తెలుగు అకాడమీ వారి "సాహితీ కిన్నెర" తెలుగు వాచకం

  
Chairman  
Board of Studies in Telugu  
KAKATIYA UNIVERSITY



  
Head  
Department of Telugu  
Kakatiya University  
Warangal-500 031(T.S.)





C.B.C.S Pattern Syllabus from 2019-2010 onwards  
B.A., B.Sc., B.Com. & B.B.A.  
2nd Semester IInd Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) గజేంద్ర మోక్షం-పోతన
- 2) హనుమత్ సందేశం-మొల్ల
- 3) సుభాషితాలు-ఎనుగు లక్ష్మణ కవి

Unit-II ఆధునిక కవిత్వం

- 1) స్నేహలత లేఖ-రాయప్రోలు సుబ్బారావు
- 2) అంతర్వాదం-దాశరథి కృష్ణమాచార్యులు
- 3) ప్రపంచపదులు-డా॥ సి.నారాయణరెడ్డి
- 4) అల్విదా-కౌముది

Unit-III వచన విభాగం

- 1) యుగాంతం-నెల్లూరి కేశవ స్వామి
- 2) ఎంకన్న - ఆచార్య పాకాల యశోదారెడ్డి
- 3) మామిడి పండు - సురవరం ప్రతాపరెడ్డి
- 4) మా ఊరుపోయింది-దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit-IV ఛందస్సు

ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, ఆటవెలది, తేటగీతి, ద్విపద, సీ-  
కందం, ఉత్సాహం, తరళం, స్రగ్ధర, మహాస్రగ్ధర, ముత్యాలసరం



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C.B.C.S Pattern Syllabus from 2019-2010 onwards  
B.A., B.Sc., B.Com. & B.B.A.  
2nd Semester IInd Languages - Telu

Unit-I ప్రాచీన కవిత్వం

- 1) గజేంద్ర మోక్షం-పోతన
- 2) హనుమత్ సందేశం-మొల్ల
- 3) సుభాషితాలు-వినుగు లక్ష్మణ కవి

Unit-II ఆధునిక కవిత్వం

- 1) స్నేహలత లేఖ-రాయప్రోలు సుబ్బారావు
- 2) అంతర్నాదం-దాశరథి కృష్ణమాచార్యులు
- 3) ప్రపంచపదులు-డా॥ సి.నారాయణరెడ్డి
- 4) అల్విదా-కౌముది

Unit-III వచన విభాగం

- 1) యుగాంతం-నెల్లూరి కేశవ స్వామి
- 2) ఎంకన్న - ఆచార్య పాకాల యశోదారెడ్డి
- 3) మామిడి పండు - సురవరం ప్రతాపరెడ్డి
- 4) మా ఊరుపోయింది-దేవులపల్లి వేంకట కృష్ణశాస్త్రి

Unit-IV ఛందస్సు

ఉత్పలమాల, చంపకమాల, శార్దూలం, మత్తేభం, ఆటవెలది, తేటగీతి, ద్విపద, సు  
కందం, ఉత్సాహం, తరళం, స్రగ్ధర, మహాస్రగ్ధర, ముత్యాలసరం





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B.C.S Pattern Syllabus from 2019-2010 onwards  
B.A., B.Sc., B.Com. & B.B.A  
1st Semester Hind Languages - Telugu

Unit-I ప్రాచీన కవిత్వం

- 1) శుకదేవీశ్వరం - నర్మదా
- 2) గోకాకవి - పాల్నాటి గోపాలం
- 3) సోమదేవీ శంకరు-అద్వైత గోర్రపాడు

Unit-II ఆధునిక కవిత్వం

- 1) శంకరా-గురజాడ అప్పారావు
- 2) రాజ-కవి-రా. గజ్జం శామరా
- 3) గంగారాజు-రా. విల్లూ దుర్జయ్య
- 4) అయ్యల-శ్రీ శ్రీ

Unit-III పదన కవిత్వం

గురజాడ (పదన) - సద్గుణ గోపాలం

Unit-IV భాషా భాగాలు-వ్యాకరణం

పద్యాల పదాలు, తాత్పర్యం, సంధులు, సమసాలు, తెలుగు వాక్యాలు



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**KAKATIYA UNIVERSITY - WARANGAL - TELANGANA**  
**UNDER GRADUATE COURSES (UNDER CBCS 2021 – 2022 ONWARDS)**  
**B.SC. BOTANY III YEAR**  
**SEMESTER – V**

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**PAPER – V: (A) BIODIVERSITY & CONSERVATION**  
**(DSE-I: ELECTIVE)**

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Practical 3 Hours/Week Credits: 1 Marks: 25

✓ **UNIT - I**

1. Plant diversity and its scope: Genetic diversity, Species diversity, Plant diversity at the ecosystem level, Agro biodiversity and cultivated plant taxa, wild taxa.
2. Values and uses of Biodiversity: Ethical and aesthetic values, Precautionary principle, Methodologies for valuation, Uses of plants, Uses of microbes.

✓ **UNIT-II**

3. Loss of Biodiversity: Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity, Projected scenario for biodiversity loss.
4. Management of Plant Biodiversity: Organizations associated with biodiversity, management- Methodology for execution-IUCN, UNEP, UNESCO, WWF, NBPGR.
5. Biodiversity legislation and conservation, Biodiversity information management and communication.

✓ **UNIT-III:**

7. Conservation of Biodiversity: Conservation of genetic diversity, species diversity and ecosystem Diversity
8. Principles of conservation :*In-situ* and *Ex-situ* conservation. Sacred grove, Botanical garden, Biosphere reserves, Sanctuaries, National parks (*In-situ*) and Tissue culture, Gene / seed / pollen banks and Cryopreservation (*Ex-situ*).

✓ **UNIT-IV:**

9. Role of plants in relation to Human Welfare; Importance of forestry, their utilization and commercial aspects, Avenue trees, Ornamental plants of India.
10. Alcoholic beverages through ages. Fruits and nuts, Important fruit crops and their commercial importance. Wood and its uses.

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**B.Sc., BOTANY**  
**First Year, 1-Semester**  
**Paper-I**  
**Microbial Diversity and Lower Plants**

DSC - 1A (4 hrs./week)

Credits- 4

Theory Syllabus

(60 hours)

**UNIT - I**

(15 hours)

- 1) **Bacteria:** Structure, nutrition, reproduction and economic importance. Brief account of Archaeobacteria, Actinomycetes and Mycoplasma with reference to little leaf of Brinjal and Papaya leaf curl
- 2) **Viruses:** Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro.
- 3) An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.

**UNIT-II**

(15 hours)

- 1) General characters, structure, reproduction and classification of algae (Fritsch)
- 2) **Cyanobacteria:** General characters, cell structure their significance as biofertilizers with special reference to Oscillatoria, Nostoc and Anabaena.
- 3) Structure and reproduction of the following:  
Chlorophyceae- Volvox, Oedogonium and Chara.  
Phaeophyceae- Ectocarpus  
Rhodophyceae- Polysiphonia.

**UNIT-III**

(15 hours)

- 1) General characters and classification of fungi (Ainsworth).
- 2) Structure and reproduction of the following:  
(a) Mastigomycotina- Albugo  
(b) Zygomycotina- Mucor  
(c) Ascomycotina- Saccharomyces and Penicillium.  
(d) Basidiomycotina- Puccinia  
(e) Deuteromycotina- Cercospora.
- 3) Economic importance of lichens

**UNIT-IV**

(15 hours)

- 1) **Bryophytes:** Structure, reproduction, life cycle and systematic position of Marchantia, Anthoceros and Polytrichum. Evolution of Sporophyte in Bryophytes.
- 2) **Pteridophytes:** Structure, reproduction, life cycle and systematic position of Rhynia, Lycopodium, Equisetum and Marsilea.
- 3) Stejar evolution, heterospory and seed habit in Pteridophytes.

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*Shobha Ahluwalia* *Munish* *Bob* *APD*

# B.Sc., BOTANY

## First Year, II -Semester

### Paper-II

### Gymnosperms, Taxonomy of Angiosperms and Ecology

DSC-1B

Credits-4

#### Theory Syllabus

#### UNIT-I

- 1) Gymnosperms: General characters, structure, reproduction and classification (Sporne's). Distribution and economic importance of Gymnosperms.
- 2) Morphology of vegetative and reproductive parts, systematic position and life cycle of Pinus and Gnetum,
- 3) Geological time scale Introduction to Palaeobotany, Types of fossils and fossilization, Importance of fossils.

#### UNIT-II

(15 hours)

- 1) Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantl classification systems. An introduction to Angiosperm Phylogeny Group (APG).
- 2) Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.
- 3) Nomenclature and Taxonomic resources: An introduction to ICN, Shenzhen code – a brief account. Herbarium: Concept, techniques and applications.

#### UNIT-III

(15 hours)

- 1) Systematic study and economic importance of plants belonging to the following families: Polypetalae Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/Papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
- 2) Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae, Monochalmydeae: Amaranthaceae, Euphorbiaceae
- 3) Monocotyledons: Orchidaceae, Poaceae and Zingiberaceae.

#### UNIT-IV

(15 hours)

1. Component of eco system, energy flow, food chain and food webs.
2. Plants and environment, ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes
3. Plant Succession serial stages, modification of environment, climax formation with reference to Hydrosere and Xerosere.

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Shalini A.

03/2

4 | Page



**KAKATIYA UNIVERSITY - WARANGAL - TELANGANA**  
**UNDER GRADUATE COURSES (UNDER CBCS 2021 – 2022 ONWARDS)**  
**B.SC. BOTANY III YEAR**  
**SEMESTER – V**

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**PAPER – V: (B) ECONOMIC BOTANY**  
**(DSE-1: ELECTIVE)**

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Practical 3 Hours/Week; Credits: 1 Marks: 25

**UNIT - I**

Origin of Cultivated Plants: Major plants introduction, Crop domestication and examples of crops / varieties

1. Vegetables: Nutritional and Commercial values of root crops, leafy and fruit vegetables.
2. Millets: Nutrient significance of Sorghum, Finger millet, Pearl millet, Foxtail millet.
3. Cereals: Rice, Wheat and maize - Origin, morphology and uses.

**UNIT – II**

4. Legumes: General account, importance to man and ecosystem.
5. Fruits and nuts: Commercial and nutritional value of South Indian fruits. Cashew nut, Almond and Walnut.
6. Sugars & Starches: Morphology and processing of sugarcane, products and by-products of sugarcane industry. Potato – morphology, propagation & uses.
7. Spices: Listing of important spices, part used, economic importance with special reference to fennel, saffron, clove and black pepper

**UNIT – III**

8. Beverages: Tea, Coffee (morphology, processing & uses)
9. Edible oils & Fats: General description, extraction, uses and health implications of groundnut, sunflower, coconut, linseed, and mustard.
10. Essential Oils: General account, extraction methods, comparison with fatty oils & their uses.
11. Natural Rubber: Para-rubber - tapping, processing and uses.

**UNIT – IV**

12. Drug-yielding plants: Therapeutic and habit-forming drugs with special reference to *Cinchona*, *Digitalis*, *Papaver* and *Cannabis*.
13. Tobacco processing, uses and health hazards
14. Timber plants: General account with special reference to teak and pine
15. Fibres: Classification based on the origin of fibres, extraction methods and uses of Cotton and Jute.

**KAKATIYA UNIVERSITY - WARANGAL - TELANGANA**  
**UNDER GRADUATE COURSES (UNDER CBCS 2021 – 2022 ONWARDS)**  
**B.SC. BOTANY III YEAR**  
**SEMESTER – V**

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**PAPER – V:: (C) SEED TECHNOLOGY**  
**(DSE-1: ELECTIVE)**

Theory: 4 Hours/Week;  
Practical 3 Hours/Week;

Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Credits: 1 Marks: 25

**UNIT-I**

1. Seed: Structure and types. Seed development in cultivated plants, seed quality concept, importance of genetic purity of seed. Hybrid seed production and Heterosis.
2. Cross pollination, Emasculation, role of pollinators and their management.
3. Collection and storage of pollen for artificial pollination.

**UNIT-II**

4. Seed germination: Internal and external factors affecting germination.
5. Physiological processes during seed germination; seed respiration, breakdown and mobilization of stored seed reserves.
6. Seed dormancy: Types, causes and methods of breaking dormancy. Role of Phytochrome.

**UNIT-III**

7. Cultural practices and harvesting of Seed: Isolation, Sowing, Cultural practices, harvesting and threshing of the following crops: a) Rice b) Cotton c) Sunflower
8. Seed treatment to control seed borne disease –General account
9. Seed testing- Procedures of seed testing, seed testing laboratories and importance of seed testing

**UNIT-IV**

10. Seed viability, factors affecting seed viability and genetic erosion.
11. Seed storage: Long term and short term storage. Orthodox and recalcitrant seeds. Packing of seeds – Principles, practices, bagging and labelling.
12. Seed banks- National, International and Millennium seed banks. Seed certification- History, Seed certification agency, Indian millennium, general and specific seed certification standard.



**CELL BIOLOGY AND PLANT PHYSIOLOGY**

Theory: 4 Hours/Week Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Practical: 3 Hours/Week Credits: 1 Marks: 25

**UNIT-I:** Plant cell envelops; Ultra structure of cell wall, molecular organization of cell membranes.

1. Models of membrane structure, Functions, fluidity and Selective permeability of the membranes.
2. Cell Organelles: Structure and semiautonomous nature of Mitochondria and Chloroplast.
3. Structure and role of endoplasmic reticulum, ribosomes, golgi complex, lysosomes, peroxisomes and glyoxisomes.

**UNIT-II**

Nucleus: Ultra structure, types and functions of DNA & RNA.

4. Chromosomes: Morphology, organization of DNA in a chromosome, Euchromatin and Heterochromatin, Karyotype. Special types of chromosomes: Lampbrush and Polytene chromosomes.
5. Extra nuclear genome: Mitochondrial DNA and Plastid DNA.. Plasmids.
8. Cell division: Cell and its regulation; mitosis, meiosis and their significance

**UNIT-III**

9. Plant -Water Relations: Physical properties of water, diffusion, imbibitions, osmosis; osmotic and pressure Potential, absorption and transport of water.
10. Mineral Nutrition: Essential macro and micro mineral nutrients, and symptoms of mineral deficiency.
11. Transpiration; Stomatal structure and movement. Mechanism of phloem transport.
12. Enzymes: Nomenclature, Characteristics, Classification and factors regulating enzyme activity.

**UNIT-IV**

13. Photosynthesis: Photosynthetic pigments, Mechanism of photosynthetic electron transport and evolution of oxygen. Photophosphorylation . Carbon assimilation pathways: C3, C4 and CAM.
14. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle and electron transport system.
15. Nitrogen Metabolism: Biological nitrogen fixation
16. Physiological effects of Phytohormones: Auxins, gibberellins, cytokinins, ABA, ethylene and Brassinosteroids

**KAKATIYA UNIVERSITY**  
**U.G. HISTORY (Under CBCS)**

**B.A. Final Year**  
**Semester - V**

**Discipline Specific Elective - Paper - I (A)**  
**History of Telangana (From Earliest Times to 1724 CE)**

- Unit-I: Sources - Archaeological and Literary Sources - Geographical Features of Telangana - Pre History - The Age of Satavahanas - Origin - Administration - Society and Economy - Religion - Language & Literature - Art & Architecture
- Unit-II: Post-Satavahana Period - Ikshvakus - Vishnukundins - A Brief Political History - Society - Economy - Religion - Language & Literature - Art & Architecture.
- Unit-III: Origin and Early History of Chalukyas of Badami and their Contribution to Culture - Chalukyas of Vemulavada & Mudigonda - Political History - Society - Economy - Religion - Language & Literature - Art & Architecture.
- Unit-IV: **Kakatiyas** - Origin and Early History - Ganapatideva, Rudramadevi and Prataparudra - Administration - Society - Economy - Language & Literature - **Art & Architecture** - **Sammakka-Sarakka** Revolt - Post-Kakatiya Political Developments - Musunuri Nayakas, Recherla Rulers - Their Contribution to Culture.
- Unit-V: Qutb Shahis of Golconda - Origin and Political History - Society - Economy - Agriculture - Irrigation - Trade & Commerce - Religion - Language & Literature - Art & Architecture - Political Conditions in Telangana from 1687 to 1724 - Life and Times of Sarvai Papanna.

**Recommended Books:**

- G. Yazdani, *Early History of Deccan*, 2 Vols.  
D. Raja Reddy, *The Study of Satavahana History: The Source Material*.  
K. Satyanarayana, *A Study of History and Culture of Andhras*, Vol. I & II.  
-----, *History of Minor Chalukyan Families in Andhra Desa*.  
Balendru Sekharam, *Andhras through the Ages*.  
M. Rama Rao, *Andhra through the Ages*.  
K. Gopalachary, *Early History of Andhra Country*.  
Parabrahma Sastry, *The Kakatiyas*.  
H.K. Sherwani, *History of Qutb Shahis*.  
*Comprehensive History of Andhra Pradesh*, Vol. I to V.  
Richard, M. Eaton, *Social History of Deccan*.

**Telugu:**

- Suravaram Pratapa Reddy, *Andhrula Sanghika Charitra*.  
P. Sree Rama Sarma, *Andhrula Charitra upto 1330 A.D.*  
B.S.L. Hanumantha Rao, *Andhrula Charitra*.  
B.N. Sastry, *Recharla Padmanayukulu*.  
*Comprehensive History of Andhra Pradesh*, Vol. I to V.

- ① Medaram
- ② Akempeta - Ramappa
- ③ Fort Warangal



Tribal museum - 5/5/20

TELANGANA STATE  
B.A. HISTORY SYLLABUS  
Semester - VI

(A) History and Culture of Telangana (From earliest times to 2014 CE)  
(DSE - Discipline Specific Elective-601 A  
(2019-2020)

- Unit-I: Sources – Pre-History of Telangana – Asmaka Janapada and the Culture of Ancient Telangana – Jainism and Buddhism – Brief Political Survey of Satavahanas – Ikshvakus, Vishnukundins – Medieval Telangana from Kakatiyas to Qutb Shahis – Popular Revolts – Sammakka-Sarakka, Sarvai Pupanna – Society, Economy and Culture; Fairs, Festivals, Folk, Batukamma, Bonalu, Urs, Moharram, etc. Telangana Food, Festivals, Arts, Folksongs, Symbols, Musical Instruments, Composite Culture.
- Unit-II: Foundation of Asaf Jahi Dynasty – A Brief Survey of The Political History of Asaf Jahis from 1724-1857 – Salarjungs Reforms and their Importance Mir Mahboob Ali Khan and Mir Osman Ali Khan – Modernization of Hyderabad under them – Growth of Transportation and Communication, Public Health, Industries and Osmania University – Public Health – Hospitals – Social, Cultural and Political Awakening in Telangana – Press, Journalism and Library Movements – Nizam Andhra Jana Sangham – Arya Samaj and Its Activities – Ittehadul Muslimin Party – Bhagya Reddy Varma and Dalit Movements.
- Unit-III: Political Developments in Hyderabad State 1900 to 1942 – The Andhra Maha Sabha – Hyderabad State Congress – Mulki-Non-Mulki Issue (1930) – Vande Mataram Movement – Comrades Association, Student and Workers Organisations and Movements - Communist Party and Its Activities – The Role of Women in Hyderabad Freedom Movement.
- Unit-IV: Anti-Nizam and Anti-Feudal Movements - Telangana Peasants Armed Struggle – **Adivasis Revolt – Kumaram Bheem** – Razakars and their Activities – Police Action - Formation of Popular Ministry under Burgula Rama Krishna Rao - Assertion of Mulki Identity and the City College Incident (1952) - Merger of Telangana and the Formation of Andhra Pradesh, (1956)
- Unit-V: Discrimination, Dissent and Protest - Violation of Gentlemen's Agreement - Agitation for Separate Telangana State: Formation of TPS – Role of Intellectuals, Students, Employees in 1969 Movement - Second Phase Movement for Separate Telangana – Formation of Various Associations – Telangana Aikya Vedika – Telangana Jana Sabha – Telangana Rashtra Samiti (2001) – Mass Mobilization – Sakala Janula Samme – Millennium March – Sagara Haram, Chaloo Assembly – December 2009 Declaration and the Formation of Telangana State, June 2014.

Recommended Books:

Bhargya Bhukya, *The Subjugated Nomads*, Hyderabad, 2010.  
 Goutham Pingle, *The Fall and Rise of Telangana*, Hyderabad, 2014.  
 H. Rajendra Prasad, *Asaf Jahis*, Hyderabad, 2006.  
 I. Thirumali, *Against Dora and Lord*, New Delhi, 2008.  
 I. Thirumali, *Telangana – Andhra*, Delhi, 2010.  
 Kingshuk Nag, *Battle Ground Telangana*, Hyderabad, 2010.  
 Lalitha & Susie Tharu, *We were Making History*, Kali for Women, New Delhi.

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TELANGANA STATE  
B.A. (HISTORY) SYLLABUS  
Semester - I

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History of India (From Earliest Times to c.700 CE)  
(DSC-101) Discipline Specific Course - Paper - I  
(With Effect from 2019-2020)

- Module-I: Definitions - Nature and Scope of History - History and Its Relationship with other Social Sciences - Geographical Features of India - Sources of Indian History: Pre-History - Palaeolithic, Mesolithic, Neolithic, Chalcolithic and **Megalithic Cultures**.
- Module-II: Indus Valley Civilization - Its Features & Decline; Early Vedic and Later Vedic Civilizations - Vedic Literature - Society - Economy - Polity - Religion.
- Module-III: Rise of New Religious Movements - Charvakas, Lokayathas, Jainism and Buddhism: Mahajanapadas - Rise of Magadha; Alexander's Invasion and Its Impact.
- Module-IV: Foundation of the Mauryan Dynasty; Ashoka and His Dharma - Polity - Administration - Society - Economy - Religion - Literature - Art and Architecture; Disintegration of the Mauryan Empire; Post-Mauryan Kingdoms - Indo-Greeks - Kushanas and Kanishka - Society - Economy - Literature - Art and Architecture; The Satavahanas; Sangam Age - Literary Development.
- Module-V: Gupta Empire: A Brief Political Survey - Polity and Administration, Social and Economic Conditions, Agriculture and Land Grants - Feudalism, Caste System, Position of Women, Education, Literature, Science and Technology, Art and Architecture - Harshavardana and His Achievements.

**Recommended Books:**

- A.L. Basham, *The Wonder that was India*, Rupa & Co., New Delhi, 2001.
- Allchin, Bridget & Raymond, *The Rise of Civilization in India and Pakistan*, CUP, New Delhi, 1996.
- E.H. Carr, *What is History?* Penguin Books, England, 1990.
- Majumdar, R.C., *History and Culture of the Indian People*, Vols. I, II & III.
- Romila Thapar, *Asoka and the Decline of the Mauryas*, OUP, New Delhi, 1995.
- Romila Thapar, *Early India (From the earliest to AD 1300)*.
- Romila Thapar, *A History of India*, Vol. I, Penguin Books, New Delhi, 1990.
- Upinder Singh, *A History of Ancient and Medieval India*.

[E. SUMALATHA]

(S. Ganapathulu)

BOS

Head.



**KAKATIYA UNIVERSITY**  
**U.G. HISTORY (Under CBCS)**

**B.A. Final Year**  
**Semester - V**

**Discipline Specific Elective - Paper - I (A)**  
**History of Telangana (From Earliest Times to 1724 CE)**

- Unit-I: **Sources - Archaeological and Literary Sources** - Geographical Features of Telangana - Pre History - The Age of Satavahanas - Origin - Administration - Society and Economy - Religion - Language & Literature - Art & Architecture
- Unit-II: Post-Satavahana Period - Ikshvakus - Vishnukundins - A Brief Political History - Society - Economy - Religion - Language & Literature - Art & Architecture.
- Unit-III: Origin and Early History of Chalukyas of Badami and their Contribution to Culture - Chalukyas of Vemulavada & Mudigonda - Political History - Society - Economy - Religion - Language & Literature - Art & Architecture.
- Unit-IV: Kakatiyas - Origin and Early History - Ganapatideva, Rudramadevi and Prataparudra - Administration - Society - Economy - Language & Literature - Art & Architecture - Sammakka-Sarakka Revolt - Post-Kakatiya Political Developments - Musunuri Nayakas, Recherla Rulers - Their Contribution to Culture.
- Unit-V: **Qutb Shahis of Golconda** - Origin and Political History - Society - Economy - Agriculture - Irrigation - Trade & Commerce - Religion - Language & Literature - Art & Architecture - Political Conditions in Telangana from 1687 to 1724 - Life and Times of Sarvai Papanna.

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K. Satyanarayana, *A Study of History and Culture of Andhras*, Vol. I & II.  
-----, *History of Minor Chalukyan Families in Andhra Desa*.  
Balendru Sekharam, *Andhras through the Ages*.  
M. Rama Rao, *Andhra through the Ages*.  
K. Gopalachary, *Early History of Andhra Country*.  
Parabrahma Sastry, *The Kakatiyas*.  
H.K. Sherwani, *History of Qutb Shahis*.  
*Comprehensive History of Andhra Pradesh*, Vol. I to V.  
Richard, M. Eaton, *Social History of Deccan*.

**Telugu:**

- Suravaram Pratapa Reddy, *Andhrula Sanghika Charitra*.  
P. Sree Rama Sarma, *Andhrula Charitra upto 1330 A.D.*  
B.S.L. Hanumantha Rao, *Andhrula Charitra*.  
B.N. Sastry, *Recharla Padmanarayakula*.  
*Comprehensive History of Andhra Pradesh*, Vol. I to V.

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TELANGANA STATE  
B.A. (HISTORY) SYLLABUS  
Semester - III  
History of India (1526-1857 CE)  
(DSC - Discipline Specific Course - Paper - III  
(2019-2020)

- Module-I: Establishment of Mughal Dynasty - Sources - Sher Shah Sur and His Reforms - Brief Survey of Political History of Mughals - Akbar, Shah Jahan and Aurangzeb - Polity - Administration - Society - Economy - Technological Developments - Religion - Hindu-Muslim Relations - Emergence of Composite Culture - Education - Language and Literature - Art and Architecture - Disintegration of Mughal Empire.
- Module-II: Rise of Regional Powers - Marathas - Shivaji his Military Achievements, and his Administration - The Rise of Peshwas - and their role in Maratha History - The Third Battle of Panipat - The Rise of Sikhs. - Ranjit Singh - Rise of Princely States - Hyderabad - Avad - Junagarh - Mysore - Kashmir.
- Module-III: Advent of European Powers - Portuguese, Dutch, English and French, Anglo-French Rivalry - Expansion and Consolidation of British Power - Wellesley's Subsidiary Alliance - Dalhousie's Doctrine of Lapse.
- Module-IV: Three Stages of Colonialism - Mercantilism - Free Trade Policies - Finance Capital - Land Revenue Settlements - Cornwallis and Permanent Revenue Settlement; Thomas Munroe and Ryotwari; Mahalwari System - Changes in the Agrarian Economy and Condition of Peasantry - Famines.
- Module-V: Decline of Rural Cottage Industries and Urban Handicrafts - Growth of Railways Roads, Communication - Modern Industries - Coal Mines, Textiles, Iron and Steel, etc. - Anti-Colonial Upsurge - 1857 Revolt - Nature, Causes and Results.

**Recommended Books:**

- A.L. Srivastava, *History of India from A.D. 1000 to 1707*.  
A.R. Desai, *Social Background of Indian Nationalism*.  
Bipan Chandra, *A History of Modern India*.  
Harbans Mukhia, *The Mughals*.  
John F. Richards, *The Mughal Empire*, CUP, New Delhi, 1995.  
R.C. Majumdar (ed.), *A History and Culture of India People*, Bharatiya Vidya Bhavan Series (Relevant Vols.).  
R.C. Majumdar, H.C. Raychaudhuri & K. Datta, *An Advanced History of India*, Madras, 1995.  
Satish Chandra, *Medieval India*, Vol. II.  
Sumit Sarkar, *Modern India (1885-1947)*, Macmillan India Ltd., Madras, 1995.  
Tarachand, *A History of the Freedom Movement in India*, Four Volumes.  
V.D. Mahajan, *History of Medieval India (Sultanate Period and Mughal Period)*.  
V.D. Mahajan, *Modern Indian History*.
- Telugu:**  
B. Laxminarayana Rao, *Bharatadesa Swathantra Charitra (Part-3)*, (Trans.), Telugu Academy, 2005.  
Bipan Chandra, *Adhunka Bharatadesa Charitra (Translation Sahuvasi)*, Hyderabad Book Trust.  
B.A. First & Second Year Indian History Text Books (English & Telugu Medium-CBCS) 2016-17.  
J. Durga Prasad and Others, *Bharatadesa Charitra (1526-1964 A.D.)*, Telugu Academy, 2006.  
V. Rama Krishna Reddy, *Bharatadesa Charitrala Mukhya Ghattalu*, Telugu Academy, 2005.



DSC-1A  
BS:104

## DIFFERENTIAL CALCULUS

[2016-17]

Theory: 4 credits and Practicals: 1 credit  
Theory: 4 hours/week and Practicals: 2 hours/week

2016-17



Objective: the course is aimed at exposing the students to some basic notions in differential calculus.

Outcome: by the time students complete the course they realize wide ranging applications of subject.

## Unit - I

Successive differentiation:

Higher order derivatives, Calculation of the  $n$ th derivative, Some standard results, Determination of  $n$ th derivative of rational functions, The  $n$ th derivatives of the products of the powers of sines and cosines, Leibnitz's theorem, The  $n$ th derivative of the product of two functions.

Expansion of Functions:

Maclaurin's theorem, Taylor's theorem.

Mean Value Theorems:

Rolle's theorem, Lagrange's mean value theorem, Meaning of the sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Higher derivatives, Formal expansions of functions.

## Unit - II

Indeterminate Forms:

Indeterminate forms, The indeterminate form  $0/0$ , The indeterminate form  $\infty/\infty$ , The indeterminate form  $0 \cdot \infty$ , The indeterminate form  $\infty - \infty$ , The indeterminate forms  $0^0$ ,  $1^\infty$ ,  $\infty^\infty$ .

Curvature and Evolutes:

Introduction, Definition of curvature, Length of arc as a function, Derivative of arc, Radius of curvature-cartesian equations, Newtonian method, Centre of curvature, Chord of curvature, Evolute and involutes, Properties of the evolute.

## Unit - III

Partial Differentiation - Homogeneous Functions - Total Derivative:

Introduction, Functions of two variables, Neighbourhood of a point  $(a, b)$ , Continuity of a function of two variables, continuity at a point, Limit of a function of two variables, Partial derivatives, Geometrical representation of a function of two variables, Homogeneous functions, Theorem on total differentials, composite functions: differentiation of composite functions; implicit functions.

## Unit - IV

Maxima and Minima:

Maxima and minima of functions of two variables, Lagrange's method of undetermined multipliers.

SEMESTER-VI

Field Trip - Syllabus

(A) Numerical Analysis

(w.o.f. academic year 2019-20 batch onwards)

DSE-VI

2020-21

Theory: 5 credits and Tutorials: 0 credits

Theory: 5 hours/week and Tutorials: 1 hours/week



**Objective.** Students will be made to understand some methods of numerical analysis.  
**Outcome.** Students realize the importance of the subject in solving some problems of algebra and calculus.

**Unit-I**

**Errors in Numerical Calculations** - Solutions of Equations in One Variable - The Bisection Method - The Iteration Method - The Method of False Position - Newton's Method - Muller's Method - solution of Systems of Nonlinear Equations.

**Unit-II**

**Interpolation and Polynomial Approximation** - Interpolation - Finite Differences - Differences of Polynomials - Newton's formula for Interpolation - Gauss's central differences formulae - Stirling's and Bessel's formula - Lagrange's Interpolation Polynomial - Divided differences - Newton's General Interpolation formula - Inverse Interpolation.

**Unit-III**

**Curve Fitting:** Least Square Curve Fitting - Fitting a Straight Line - Nonlinear Curve Fitting  
**Numerical Differentiation and Integration:** Numerical Differentiation - Numerical Integration - Trapezoidal Rule - Simpson's 1/3rd-Rule and Simpson's 3/8th-Rule - Boole's and Weddle's Rule - Newton's Cotes Integration Formulae.

**Unit-IV**

**Numerical Solutions of Ordinary Differential Equations:** Taylor's Series Method - Picard's Method - Euler's Methods - Runge-Kutta Methods

**Text:**

S.S. Sastry, Introductory Methods of Numerical Analysis, PHI

**References:**

- 1) Richard L. Burden and J. Douglas Faires, Numerical Analysis (9e)
- 2) M. K. Jain, S. R. K. Iyengar and R. K. Jain, Numerical Methods for Scientific and Engineering computation
- 3) B. Brdjanovic, A Friendly introduction to Numerical Analysis



2016-17

Kakatiya University  
B.Sc. Mathematics, VI Semester  
NUMERICAL ANALYSIS

DSC-1F  
BS:603

Theory: 3 credits and Practicals: 1 credits  
Theory: 3 hours/week and Practicals: 2 hours/week

**Objective:** Students will be made to understand some methods of numerical analysis.

**Outcome:** Students realize the importance of the subject in solving some problems of algebra and calculus.

**UNIT-I**

Solutions of Equations in One Variable : The Bisection Method - Fixed-Point Iteration - Newtons Method and Its Extensions - Error Analysis for Iterative Methods - Accelerating Convergence - Zeros of Polynomials and Mullers Method - Survey of Methods and Software.

**UNIT-II**

\* Interpolation and Polynomial Approximation: Interpolation and the Lagrange Polynomial - Data Approximation and Nevilles Method - Divided Differences.

**UNIT-III**

Hermite Interpolation - Cubic Spline Interpolation. Numerical Differentiation and Integration: Numerical Differentiation - Richardsons Extrapolation

**UNIT-IV**

Elements of Numerical Integration- Composite Numerical Integration - Romberg Integration - Adaptive Quadrature Methods - Gaussian Quadrature.

**TEXT:** Richard L. Burden and J. Douglas Faires, *Numerical Analysis (9e)*

**References**

- M. K. Jain, S. R. K. Iyengar and R. K. Jain, *Numerical Methods for Scientific and Engineering computation*
- B. Bradic, *A Friendly introduction to Numerical Analysis*

Field Trip syllabus

R. S. J.  
Dept of Mathematics

DSC-1A  
BS:104

## DIFFERENTIAL CALCULUS

2019-2020

Theory: 4 credits and Practicals: 1 credit  
Theory: 4 hours/week and Practicals: 2 hours/week

Objective: the course is aimed at exposing the students to some basic notions in differential calculus.

Outcome: by the time students complete the course they realize wide ranging applications of the subject.

### Unit - I

Successive differentiation:

Higher order derivatives, Calculation of the  $n$ th derivative, Some standard results, Determination of  $n$ th derivative of rational functions, The  $n$ th derivatives of the products of the powers of sines and cosines, Leibnitz's theorem, The  $n$ th derivative of the product of two functions.

Expansion of Functions:

Maclaurin's theorem, Taylor's theorem.

Mean Value Theorems:

Rolle's theorem, Lagrange's mean value theorem, Meaning of the sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Higher derivatives, Formal expansions of functions.

### Unit - II

Indeterminate Forms:

Indeterminate forms, The indeterminate form  $0/0$ , The indeterminate form  $\infty/\infty$ , The indeterminate form  $0 \cdot \infty$ , The indeterminate form  $\infty - \infty$ , The indeterminate forms  $0^0$ ,  $1^\infty$ ,  $\infty^0$ .

\* Curvature and Evolutes:

Introduction, Definition of curvature, Length of arc as a function, Derivative of arc, Radius of curvature-cartesian equations, Newtonian method, Centre of curvature, Chord of curvature, Evolutes and involutes, Properties of the evolute.

### Unit - III

Partial Differentiation - Homogeneous Functions - Total Derivative:

Introduction, Functions of two variables, Neighbourhood of a point  $(a, b)$ , Continuity of a Function of two variables, continuity at a point, Limit of a function of two variables, Partial derivatives, Geometrical representation of a function of two variables, Homogeneous functions, Theorem on total differentials; composite functions; differentiation of composite functions; implicit functions.

### Unit - IV

\* Maxima and Minima:

Maxima and minima of function of two variables, Lagrange's method of undetermined multipliers.

Find <sup>with</sup> imp syllabus

R. S. A.  
Dept of mathematics





(2017-18) (Field Trip Syllabus)

KAKATIYA UNIVERSITY

U.G. Physics (Under CBCS)

B.Sc. Final Year (DSC-1E)

SEMESTER - V

Paper - V: Electromagnetism

**Unit I : Electrostatics (11 hrs)**

Electric Field:- Concept of electric field lines and electric flux, Gauss's law (Integral and differential forms), application to linear, plane and spherical charge distributions. Conservative nature of electric field „E”, Irrotational field. Electric potential:- Concept of electric potential, relation between electric potential and electric field, potential energy of a system of charges. Energy density in an electric field. Calculation of potential from electric field for a spherical charge distribution.

**Unit II : Magnetostatics (12 hrs)**

Concept of magnetic field „B” and magnetic flux, Biot-Savart's law, B due to a straight current carrying conductor. Force on a point charge in a magnetic field. Properties of B, curl and divergence of B, solenoidal field. Integral form of Ampere's law, Applications of Ampere's law: field due to straight, circular and solenoidal currents. Energy stored in magnetic field. Magnetic energy in terms of current and inductance. Magnetic force between two current carrying conductors. Magnetic field intensity. Ballistic Galvanometer:- Torque on a current loop in a uniform magnetic field, working principle of B.G., current and charge sensitivity, electromagnetic damping, critical damping resistance.

**Unit III: Electromagnetic Induction (9 hrs)**

Faraday's laws of induction (differential and integral form), Lenz's law, self and mutual Induction. Continuity equation, modification of Ampere's law, displacement current, Maxwell equations

**Unit IV : Electromagnetic waves (10 hrs)**

Maxwell's equations in vacuum and dielectric medium, boundary conditions, plane wave equation: transverse nature of EM waves, velocity of light in vacuum and in medium, polarization, reflection and transmission. Polarization of EM waves, Brewster's angle, description of linear, circular and elliptical polarization.

**Text Books**

1. Fundamentals of electricity and magnetism By Arthur F. Kip (McGraw-Hill, 1968)
2. Electricity and magnetism by J.H.Fewkes & John Yarwood. Vol.I (Oxford Univ. Press, 1991).
3. Introduction to Electrodynamics, 3rd edition, by David J. Griffiths, (Benjamin Cummings, 1998).

**Reference Books**

1. Electricity and magnetism By Edward M. Purcell (McGraw-Hill Education, 1986)
2. Electricity and magnetism. By D C Tayal (Himalaya Publishing House, 1988)
3. Electromagnetics by Joseph A. Edminister 2nd ed. (New Delhi: Tata McGraw Hill, 2006).

Principal  
Govt. Degree College  
Bhadrachalam-507 111,  
Bhadrachalam Dist.

Dr. B. Venkatram Reddy  
Chairman, Board of Studies in Physics, KU, Wgl

Date: 24<sup>th</sup> Aug., 2016 & 5<sup>th</sup> June, 2017





(2018-19) (Field Trip Syllabus)

B.Sc. (Physics) Syllabus, Kakatiya University, Warangal  
pattern in Semester System (w. e. from 2018-2019)

B.Sc. (Physics)- III Year  
Semester – VI  
Paper – VII:: Modern Physics  
(DSC – Compulsory)  
(w.e.f the academic year 2018-2019)

42 hrs  
(3 hrs / week)

#### UNIT-I (11 hrs)

##### Atomic Spectra and Models - Inadequacy of classical physics:

Brief review of black body radiation, Photoelectric effect, Compton effect, dual nature of radiation, wave nature of particles. Atomic spectra, Line spectra of hydrogen atom, Ritz -Rydberg combination principle. Alpha particle scattering, Rutherford scattering formula, Rutherford model of atom and its limitations, Bohr's model of hydrogen atom, explanation of atomic spectra, correction for finite mass of the nucleus, Bohr correspondence principle, limitations of Bohr model, discrete energy exchange by atom, Frank Hertz experiment. Sommerfeld's modification of Bohr's theory.

#### UNIT-II (11 hrs)

Wave particle duality, de-Broglie hypothesis, Experimental confirmation of matter wave, Davisson-Germer experiment, velocity of de-Broglie wave, wave particle duality, Complementarity. Superposition of two waves, phase velocity and group velocity, wave packets, Gaussian wave packet, spatial distribution of wave packet, Localization of wave packet in time. Time development of a wave Packet; Heisenberg uncertainty Principle, Illustration of the principle through thought experiments of Gamma ray microscope and electron diffraction through a slit. Time-independent Schrodinger wave equation and its application to linear harmonic oscillator.

#### UNIT-III (9 hrs)


Nuclear physics; Size and structure of atomic nucleus and its relation with atomic weight; Impossibility of an electron being in the nucleus as a consequence of the uncertainty principle. Nature of nuclear force, NZ graph, Liquid-drop model; semi-empirical mass formula and binding energy, Nuclear shell model and magic numbers.

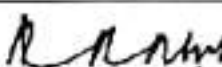
#### Unit IV(11 hrs)

Radioactivity: stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma ray emission, energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus. Fission and fusion - Mass defect, relativity and generation of energy; Fission - nature of fragments and emission of neutrons. Nuclear reactor: ~~slow neutrons interacting with Uranium 235~~; Fusion and ~~thermonuclear reactions driving stellar energy (brief qualitative discussion)~~.

#### Text Books:

1. Introduction to Atomic spectra – H. E. White, McGraw-Hill
2. Nuclear Physics – D. C. Tayal, Himalaya Publishing House
3. Quantum Theory and Nuclear Physics – V. K. Srivastava, ABD Publisher, Jaipur
4. Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
5. Modern Physics ---Murugesan and Sivaprasad -(S. Chand Higher Academics)

  
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B.Sc. (Physics)- III Year  
Semester – VI  
Paper – VIII(A):: Basic Electronics  
(DSE- Elective-1)

42 hrs  
(3 hrs / week)

Unit-I: (10 Hrs)

Network Elements and Network Theorems

Passive elements, Power sources, Active elements, Network models: T and  $\pi$  Transformations, Superposition theorem, Thevenin's theorem, Norton's theorem. Reciprocity theorem and Maximum power transfer theorem (Simple problems).

Two-port Networks – Introduction - Z-parameters, Y-parameters, h-parameters and ABCD-parameters (Simple problems).

Unit – II: (10 Hrs)

Band theory of P-N junction

1. Energy band in solids (band theory), valence band, conduction band and forbidden energy gap in solids, insulators, semi conductors and pure or intrinsic semiconductors and impure or extrinsic semi-conductors. N-type semi-conductors, P-type semi-conductors, Fermi level, continuity equation.

2. Diodes: P-N junction diode, Half-wave, full-wave and bridge rectifier. Zener diode & its characteristics. Zener diode as voltage regulator.

Unit-III: (11 Hrs)

1. Bipolar Junction Transistor (BJT) – p-n-p and n-p-n transistors, current components in transistors, CB, CE and CC configurations – transistor as an amplifier - RC coupled amplifier – Frequency response (Qualitative analysis).

2. Feedback concept & Oscillators: Feedback, General theory of feedback – Concepts of oscillators, Barkhausen's criteria, Phase shift oscillator – Expression for frequency of oscillation.

Unit-IV: (11 Hrs)

1. Digital Electronics

Binary number system, conversion of binary to decimal and vice-versa. Binary addition and subtraction (1's and 2's complement methods). Hexadecimal number system. Conversion from binary to hexadecimal and vice-versa, Decimal to hexadecimal and vice-versa.

2. Logic gates:

OR, AND, NOT gates, truth tables, realization of these gates using discrete components. NAND, NOR as universal gates, Exclusive – OR gate (EX-OR). De Morgan's Laws – Statement and proof.

NOTE: Problems should be solved from every chapter of all units.

Textbooks

1. Electronic devices and circuits – Millman and Halkias. *Mc.Graw-Hill Education.*
2. Principles of Electronics by V.K. Mehta – *S. Chand & Co.*
3. Basic Electronics (Solid state) – B. L. Theraja, *S. Chand & Co.*

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Date: 24<sup>th</sup> Aug., 2016 & 5<sup>th</sup> June, 2017



PAPER - II SILKWORM BIOLOGY GRAINAGE & BREEDING:

1. Systematic position of silkworm - Classification & distribution.
2. Morphology & External characters of egg - larva - pupa & Adult.
3. Life history - voltinism - Moltinism.
4. Anatomy of silkworm - digestive system - Excretory - Respiratory circulatory - Nervous & Reproductive systems.
5. Development - Hormones, diapause & metamorphosis.
6. Environmental & Physiological factors responsible for silkworm development.
7. Different methods of silkworm seed production - Grainages.
8. Seed areas and 3-4 tier seed crops.
9. Seed organisation.
10. Silkworms breeding - Different races of silkworm in India - Japan, China & Europe.
11. Methods of breeding (brief account) of races/strains.

PRACTICALS:

1. Morphology of larva - pupa & moth. Mothparts, sex, sexupara larva/pupa.
2. Dissection of silk glands, digestive & Reproductive systems.
3. Cocoon colours & shell quality.
4. Moth pupal gut examination for pebrine disease.
5. Studies of different silkworm through cocoon rearing.
6. Egg preparation (sheet & loose eggs).
7. Acid treatment (cold & hot acid).
8. Disinfection methods.



# Sericulture III yr - III Paper

Rearing - 16-17.

## PAPER - IV: SILK TECHNOLOGY

1. Raw material - Cocoons - Sorting - Types of defective Cocoons - cocoon testing & ~~REELING~~  
*Shresh, Preservation*
  2. ~~SILK REARING~~ *SILK REARING* Cocoons and cooking / *Softening*
  3. Reeling - Methods & machines - Re-reeling, lacing, skeining & ~~REELING~~
  1. Rearing ~~Reel machines~~ - Basic requirements.
  4. Raw silk - properties & uses of Raw silk.
  2. Rearing ~~applicances~~ - different types & their use.
  5. Other natural & synthetic fibres - difference with natural silk
  3. Rearing ~~methods~~ - shelf, sheet & floor rearing - advantage & disadvantages.
  6. ~~Disinfection~~ *Disinfection* products - *Chits in forest*
  7. ~~Exchange~~ *Exchange* demand for silk *add over the world*, rearing at different stages.  
*Environment factors - Their*
  8. ~~Chawki worm~~ *Chawki worm* rearing.  
*Disinfection of surface by layers*
  9. Late age worm rearing.
  1. Cocoon testing:
  8. Mountages & mounting methods - Harvesting of cocoons.  
a) Silk content
  9. Diseases *of silk worms*  
c) denier  
- *Hot air*
    1. Pebrine *reelability* agent - mode of infection symptoms, prevent
    2. Bacterial *regulate* *Reiditts* - do-
    3. Viral - do-
  2. Cocoon cooking methods & Redding:
- PRACTICALS Open pan system  
*pan system*
1. ~~Practical~~ *Practical* ~~of rearing~~ *of rearing*
    - a) ~~Practical~~ *Practical* ~~of rearing~~ *of rearing*
    - d) Floating system
  2. Identification of rearing equipment.
  3. Reeling machines - Types.
  3. Brushing - Chowki worm & Late age worm rearing methods.
  4. Leaf preservation methods.
  5. Identification *of* diseased worms.
  6. Microscopic study of pebrine spores.
  7. Uzi infection Identification & control measures.

Filature - *with wool reel*

*Leaf*



PAPER - IV: SILK TECHNOLOGY

1. Raw material - Coccons - Sorting - Types of defective Coccons - cocoon testing & ~~REELING~~

~~PAPER~~ <sup>Shree</sup> <sup>Preservation</sup> ~~REELING~~ Coccons and cooking / <sup>soaking</sup>

3. Reeling - Methods & machines - Re-reeling, lacing, skeining &

1. Rearing ~~Reel~~ ~~machines~~ - Basic requirements.

4. Raw silk - properties & uses of Raw silk.

2. Rearing applicances - different types & their use.

5. Other natural & synthetic fibres - difference with natural silk

3. Rearing ~~methods~~ - shelf, shoot & floor rearing - advantage & disadvantages.

6. ~~Disinfection~~ ~~Products~~ ~~of~~ ~~their~~ ~~infestation~~.  
5. ~~Exchange~~ ~~of~~ ~~raw~~ ~~silk~~ ~~over~~ ~~the~~ ~~world~~ ~~rearing~~ ~~at~~ ~~different~~ ~~stages~~.

BRASSICA ~~g~~ - Chawki worm rearing.

*biological removal of larvae from larvae*

*- Punjab  
- Strawn  
- Bank  
- Bar*

7. Late age worm rearing.

1. Cocoon testing.

8. Mountages & mounting methods - Harvesting of cocoons.

9. Diseases of silk worm  
a) Silk content  
c) denier

*- Hot air*

1. ~~Pebrine~~ ~~agent~~ - mode of infection symptoms, prevent

2. ~~Controlled~~ ~~Rearing~~ ~~methods~~ - do-

3. ~~Viral~~ ~~infection~~ - do-

PRACTICAL ~~Open~~ ~~pan~~ ~~system~~

1. ~~Identification~~ ~~of~~ ~~rearing~~ ~~equipment~~.

2. Reeling machines - Types.

3. Brushing - Chowki worm & Late age worm rearing methods.

4. Leaf preservation methods.

*Filature - methods and machinery*

5. Identification of diseased worms.

6. Microscopic study of pebrine spores.

7. Uzi infection Identification & control measures.

*Handwritten notes and scribbles*



**KAKATIYA UNIVERSITY**

**Faculty of Science**

**B. Sc (Sericulture)**

**Semester – IV**

**D SC – Seri - IV**

**Post cocoon Technology**

Theory	4 hours/week	4 credits	Theory {Internal Marks-20}
	3 hours/week	1 credit	Theory {external marks-80}
			Practical - External marks-25

**Objectives**

1. To introduce the cocoon and its significance in reeling.
2. To acquaint with silk reeling technologies and its importance.
3. To understand the process from cocoon to yarn.

**UNIT – I**

Textile fibers – Brief introduction to natural & synthetic fibers and their uses: cocoon characteristic, structure of fiber; physical and commercial characteristic of cocoons, importance and problems of reeling in industry.

Cocoon sorting – objectives & procedure: defective cocoons, marketing of cocoons – functions & procedure.

**UNIT – II**

Cocoon handling, Selection, preservation of cocoons,

Cocoon stifling:- objectives, factors and methods – sun drying, steam stifling, hot air drying, Yamato hot air driers – advantages and disadvantages, cocoon sorting, preservation of cocoons.

Cocoon cooking:- objectives, factors and methods – open pan, three pan, pressurized, floating and sunken system- merits and demerits.

Brushing:- objectives – method – advantage and limitations.

**UNIT – III**

**Silk Reeling**:- Evolution of silk reeling, reeling units – charaka, cottage basin, multiend, semi automatic and automatic reeling devices – components and their functions.

Re reeling and packing: objectives, grant reeling, hank preparation, lacing, skeinling, booking, baling and bundling.

Raw silk properties – physical, chemical and microscopic - factors influencing the properties/ silk quality of raw silk, silk exchange – structure and functions.

#### UNIT –IV

Raw silk testing and grading:- objectives of testing/grading.

Raw silk testing: Visual, winding, evenness, cleanness, neatness, tenacity and elongation, cohesion and condition weight:- raw silk grading – international standards and bureau of International standards (BIS).

Doubling, twisting, weaving, degumming, bleaching and silk dyeing – objectives and methods.

#### REFERENCE BOOKS:-

1. Bibhuti Nath Jha (2012) Silk industry in India, Satyam Publishing house, New Delhi.
2. Dhote, A.K (1989): Sericulture instructional cum practical manual, Volume V, Silk reeling, testing and spinning, NCERT, New Delhi.
3. Huang guo Rui (1998) Silk Reeling, - Oxford & IBM Publishing Co. Pvt Ltd, New Delhi.
4. Krishnaswami, S. Madhava Rao, N.R, Suryanarayana, S.K and Sundaramurthy, TS (1972) Manual – 3 Silk reeling. FAO Agricultural Service Bulletin 15/3 Food & Agriculture Organization of the United Nations, Rome
5. Mahadevappa, D., Halliyal, U.G., Shankar., A.G and Ravindra Bhandiwad 2000. Mulberry silk reeling technology, Oxford & IBM publishing Co. Pvt Ltd, New Delhi.
6. Somasekhar, T.H and Kawakami, K Eds (2002) manual on Bivoltine silk reeling technology, 2002, JICN PP BST Project CSRTI Mysore.

#### Post cocoon Technology

Practicals    D SC - Seri – IV    3 hours/week    1 credit    25 marks

(Core paper)

1. Identification of textile fibers by microscopic, physical, chemical and confirmatory tests.
2. Physical and commercial characters of cocoons in MV and BV races / Breeds.
3. Properties like tenacity, elongation, toughness, elastic recovery and moisture absorption.
4. Sorting of cocoons:- Identification and calculation of good and defective cocoons by number and percentage.
5. Cocoon stifling and cooking
6. Determination of filament length / reel ability/raw % recovery / renditta and denier.
7. Determination of alkalinity and hardness of reeling water by titration method.
8. Identification of reeling machines and their components.
9. Estimation of degumming loss in multivoltine and bivoltine cocoons and raw silk.
10. Estimation of bleaching loss in multivoltine silk.
11. Dyeing of multivoltine and bivoltine silk using acid, basic and compound dyes.



**KAKATIYA UNIVERSITY**

**Faculty of Science**

**B. Sc (Sericulture)**

**Semester – III**

**D.SC – Seri – III**

**Silkworm Seed Technology**

Theory – 4hours/week	4 credits	Theory {Internal marks 20} Theory {External marks-80}
Practical – 3 hours/week	1 credits	Practical - External marks – 25

**Objectives**

1. To understand about the seed technology, silkworm seed organisation and its importance.
2. Gain knowledge about scientific procedure involved in egg production & hibernation.
3. Schedules and importance of mother moth examination and other related process in production of DFLs.

**UNIT – I**

Seed technology: introduction, concept and general account of silkworm seeds.  
Seed organization – concept and significance, maintenance of parent stock Basic multiplication centers (P<sub>4</sub>, P<sub>3</sub>, P<sub>2</sub> and P<sub>1</sub> centers), Seed areas - seed cocoon rearers – seed cocoon markets – transaction procedures – significance

Planning for pure and hybrid silkworm eggs production, purchase of bivoltine and multivoltine seed cocoons from markets deflossing, sorting & preservation, pupal examination & its function.

**UNIT – II**

**Grainages:** Location, ground plan, model grainage – grainage equipments and their usage, maintenance of environmental factors in grainage, disinfection and hygienic conditions in grainage: Grainage management:- staff and labour maintenance, care to be taken while carrying out grainage activities: Sex separation of pupa and moth, synchronization of moth emergence.

**UNIT – III**

Processing of eggs: Selection of moth, coupling, decoupling, oviposition, preservation of moths, preparation of starch coated paper – method of egg laying (egg sheet and loose eggs), weighing, disinfection of egg sheet/washing of eggs, weighing and packing of loose eggs,

Pupal and mother moth examination: types of examination – green and dry moth examination, individual, sample and mass examination, precautions.

#### UNIT - IV

Handling and preservation of eggs:-

Acid treatment – hot and cold acid treatment, advantages and disadvantages.

Preservation and handling of hibernated eggs for 3, 4, 6 and 10 months hibernation schedule, incubation of acid treated and hibernated eggs.

#### REFERENCE BOOKS:-

1. Ganga G. (2003) Comprehensive sericulture, volume 2 Silkworm rearing and seed technology, Oxford & IBH Publishing Co. Pvt. Ltd.
2. Javant Jayaswal, Giridhar K, Somi Reddy J. Jagadish Prabhu, H(2008) Mulberry silkworm seed production, Central Silk Board, Bangalore.
3. Manjeet S. Jolly ed (1987) Appropriate sericulture techniques, International center for training & research in tropical sericulture, Mysore.
4. Reading in sericulture, KU publication, by Dr. Vijaya Babu, Dr. K. Sujatha, Dr. G. Shamitha.
5. Tribuwan Singh, Madan Mohan Bhat (2010) silkworm egg science:- principles and protocol. Daya Publishing house, Delhi.
6. Ullah, S.R and Narasimhanna, M.N (1987) Handbook of practical Sericulture (3<sup>rd</sup> Edition) Central silkworm Board, Bangalore.
7. Wang San – ming (1989) silkworm egg production, Vol-III FAO Agricultural services Bulletin 73/3 Translated by Li Ping Y, Pan Runshi and Ou Bing – Se

#### Silkworm Seed Technology

D SC – III      Practicals                      3hour/week                      1 credit                      25marks

1. Model grainage plan
2. Identification of grainage equipments.
3. Assessment of cocoons of pure race and hybrids for cocoon weight, shell weight and racial characters.
4. Selection of seed cocoons, sorting & preservation.
5. Sex separation at cocoon, pupa and moth stages.
6. Moth emergence – pairing, de pairing and oviposition.
7. Preparation of egg cards/loose eggs & surface sterilization of eggs.
8. Moth & pupal examination. Individual moth examination, pupal gut examination, identification of pebrine spores
9. Identification of different types of eggs – fertilized, unfertilized, un hatched and dead eggs.
10. Morphology of silkworm egg.
11. Acid treatment: preparation of acids of required specific activity and treatment of eggs with acid.
12. Visit to seed cocoon markets, cocoon markets, grainage and cold storage centers.



**KAKATIYA UNIVERSITY**

**Faculty of Science**

**B. Sc (Sericulture)**

**Semester – IV**

**D SC – Seri - IV**

**2020-2021**

**Post cocoon Technology**

Theory	4 hours/week	4 credits	Theory {Internal Marks-20}
	3 hours/week	1 credit	Theory {external marks-80}
			Practical - External marks-25

**Objectives**

1. To introduce the cocoon and its significance in reeling.
2. To acquaint with silk reeling technologies and its importance.
3. To understand the process from cocoon to yarn.

**UNIT – I**

Textile fibers – Brief introduction to natural & synthetic fibers and their uses; cocoon characteristic, structure of fiber; physical and commercial characteristic of cocoons, importance and problems of reeling in industry.

Cocoon sorting – objectives & procedure: defective cocoons, marketing of cocoons – functions & procedure.

**UNIT – II**

Cocoon handling, Selection, preservation of cocoons,

Cocoon stifling:- objectives, factors and methods – sun drying, steam stifling, hot air drying, Yamato hot air driers – advantages and disadvantages, cocoon sorting, preservation of cocoons.

Cocoon cooking:- objectives, factors and methods – open pan, three pan, pressurized, floating and sunken system- merits and demerits.

Brushing:- objectives – method – advantage and limitations.

**UNIT – III**

Silk Reeling:- Evolution of silk reeling, reeling units – charaka, cottage basin, multiend, semi automatic and automatic reeling devices – components and their functions.

Re reeling and packing: objectives, grant reeling, hank preparation, lacing, skeinling, booking, baling and bundling.

Raw silk properties – physical, chemical and microscopic - factors influencing the properties/ silk quality of raw silk, silk exchange – structure and functions.

#### UNIT -IV

Raw silk testing and grading:- objectives of testing/grading,

Raw silk testing: Visual, winding, evenness, cleanness, neatness, tenacity and elongation, cohesion and condition weight:- raw silk grading – international standards and bureau of International standards (BIS).

Doubling, twisting, weaving, degumming, bleaching and silk dyeing – objectives and methods.

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1. Bibhuti Nath Jha (2012) Silk industry in India, Satyam Publishing house, New Delhi.
2. Dhote, A.K (1989): Sericulture instructional cum practical manual, Volume V, Silk reeling, testing and spinning, NCERT, New Delhi.
3. Huang guo Rui (1998) Silk Reeling, - Oxford & IBM Publishing Co. Pvt Ltd, New Delhi.
4. Krishnaswami, S. Madhava Rao, N.R, Suryanarayana, S.K and Sundaramurthy, TS (1972) Manual – 3 Silk reeling. FAO Agricultural Service Bulletin 15/3 Food & Agriculture Organization of the United Nations, Rome
5. Mahadevappa, D., Halliyal, U.G., Shankar., A.G and Ravindra Bhandiwad 2000. Mulberry silk reeling technology, Oxford & IBM publishing Co. Pvt Ltd, New Delhi.
6. Somasekhar, T.H and Kawakami, K Eds (2002) manual on Bivoltine silk reeling technology, 2002, JICN PP BST Project CSRTI Mysore.

#### Post cocoon Technology

Practicals      D SC - Seri – IV      3 hours/week      1 credit      25 marks

(Core paper)

1. Identification of textile fibers by microscopic, physical, chemical and confirmatory tests.
2. Physical and commercial characters of cocoons in MV and BV races / Breeds.
3. Properties like tenacity, elongation, toughness, elastic recovery and moisture absorption.
4. Sorting of cocoons:- Identification and calculation of good and defective cocoons by number and percentage.
5. Cocoon stifling and cooking
6. Determination of filament length / reel ability/raw % recovery / renditta and denier.
7. Determination of alkalinity and hardness of reeling water by titration method.
8. Identification of reeling machines and their components.
9. Estimation of degumming loss in multivoltine and bivoltine cocoons and raw silk.
10. Estimation of bleaching loss in multivoltine silk.
11. Dyeing of multivoltine and bivoltine silk using acid, basic and compound dyes.



12. Printing of silk fabrics: objective and methods – hand and screen printing.
13. Study of different types of silk waste
14. Visit to nearest silk reeling centers.
15. Longitudinal & cross section view of silk textile fibers & its impact on physio-mechanical characters.

KAKATIYA UNIVERSITY  
FACULTY OF SCIENCE

B. Sc (Sericulture)

Semester – V

DSE – Seri – I (Elective - I)

**Mulberry and Silkworm Crop Protection**

2020 - 2021

Theory	-	4 hours/week	- 4credits	Theory {Internal marks – 20}
				Theory {External marks - 80}
Practicals	-	3 hours/week	-1credit	Practical: {External marks – 25}

**Objectives**

1. To study the incidence, symptoms and damage caused by pests and diseases of mulberry & silkworm.
2. To acquaint with management of pest and diseases through different methods to prevent crop loss (in mulberry and rearing).

**UNIT – I:- Sampling of Diseases / Sample**

Collection of diseases from Mulberry, Identification, Isolation, culturing and preservation of pathogen of mulberry; disease scoring scale – calculation of disease index percentage and severity, significance of crop protection.

**Mulberry diseases & its management**

- Introduction and importance of mulberry diseases
- Fungal disease:- mulberry leaf and stem diseases – incidence, symptoms
- Root rot – incidence, symptoms, casual organism, life cycle of pathogen and management and incidence, symptoms.
- Viral, bacterial, nematode diseases of mulberry- occurrence, symptoms, casual organisms, and its management.
- Nutritional disorders in mulberry - symptoms and remedial measures

**UNIT – II Mulberry pests:-**

- Pests, predators and parasites.
- Definition - mulberry pest and its classification.
- Mulberry pests:- leaf eating caterpillars, mealy bugs (tukra), leaf rollers, jassids, thrips, scale insects, beetles, grass hoppers, sap suckers - occurrence, symptoms, nature of damage and integrated crop measures,
- Mulberry predators - nature of damage & management.
- Integrated Pest Management.



### UNIT – III Silkworm diseases:-

- Introduction – mode of infection, classification of silkworm diseases.
- Protozoan disease (Pebrine) – occurrence, symptoms, casual organism, life cycle and management.
- Bacterial disease of silkworm – occurrence, types symptoms, casual organism, predisposing factors, mode of infection, prevention and control measures.
- Viral disease (grasserie) – occurrence, types, symptoms, casual organism, mode of infection – management.
- Fungal disease (muscardine) – occurrence, types, symptoms, casual organism, mode of diseases and management,
- Diseases of non mulberry & its management.

### UNIT – IV Pests and Predators of Silkworm:-

- Dermestid beetles – life cycle, factors responsible, Indian uzifly, nature of damage and prevention / control measures.
- Predators of Silkworm:- Cockroach, ant, lizards, rodents, birds – systematic position, nature of damage and control measures.
- Integrated pest management:- physical, chemical and biological control methods.
- Pest and predators of non mulberry and their management.

### REFERENCE BOOKS: -

1. Govindaiah Gupta, V.P, D. Rajadurai, S & Nishitha Naik (2005) A text book on mulberry crop protection, Central Silk Board, Bangalore.
2. Govindan R and T.K. Narayanaswamy (1998) principles and silkworm pathology mulberry and silkworm crop protection.
3. Jolly M.S., Sen S.K., Sonwalker, N. and Prasad G.K, (1979) Sericulture Manual – 4 Non mulberry silk, Food and Agricultural Services Bulletin 15/4 food and Agricultural Organization of the United Nations Rome.
4. Khan, M.A., Anil dhar., Zeya, S.B. and Trag, A.B (2004) Pests and Disease of Mulberry and their management. Bishan Singh, Mahendra Pal Singh Publishing.
5. Lu Yup Lian (1991) silkworm disease FAO Agricultural Services Bulletin 73/4 FAO of the United Nations Rome.
6. Nataraju B and Balavenkatasubbaiah (2008) silkworm diseases and their management, under block 2, Silkworm disease and pest management in crop protection INGOU, New Delhi.
7. Singh R.N and Saratchandra, B (2011) sericulture entomology A.P.H Publishing Corporation, New Delhi.
8. Singh R.N, Samson, M.V and Datta R.K (2000) Pest management in sericulture. Indian Publishers House Pvt. Ltd, New Delhi.
9. Tribhuvan Singh and Pramod Kumar Singh (2013) Mulberry crop protection, Discovery Publishing House Pvt. Ltd. New Delhi.

## Mulberry and silkworm crop protection

Practicals - DSE – Seri - 1 Semester - V      3 hrs/week    1 credit      25 marks

1. Studies of fungal disease of mulberry (free hand sectioning), staining and temporary mounting.
2. Collection of diseased samples of mulberry leaf / root and their identification and preservation, identification of fungal, bacterial pathogen, mineral deficiencies symptoms in mulberry and their remedial measures.
3. Pests of mulberry – collection, identification and preservation / mounting.
4. Studies on common insect pests of mulberry - leaf eating caterpillars, scale insects, mealy bugs, thrips, jassids, leaf roller and grass hoppers.
5. Morphological features of pebrine infected silkworm eggs, pupa and moth – isolation and microscopic examination. Staining of spores (giemsa staining).
6. Preparation of media and cultivation of bacteria,  
Characterization of bacteria, 1) Morphological: Shape, endospore stain, capsule stain  
2) Cultural growth in different carbon sources (Media)  
3) Biochemical Tests – Catalase, IMVC, Nitrate reductase
7. Staining and study of symptoms of bacterial diseases of silkworm – microscopic examination and identification of pathogens.
8. Identification / visual examination of silkworm larva infected with NPV, CPV and kenchu – collection and Microscopic examination of polyhedral bodies – staining polyhedral
9. Study of silkworm larva, pupa and moth infected by fungal disease – collection, staining and microscopic examinations.
10. Fungicide / pesticides – forms, formulation and application
11. Studies on India uzifly and dermestid beetle - identification of maggot, pupa, adult and silkworm larva infected by uzifly.
12. Visit to different mulberry garden in different districts for field study.



KAKATIYA UNIVERSITY  
FACULTY OF SCIENCE

B. Sc (Sericulture)

Semester – II

D. SC - Seri - II

Silkworm Biology & Rearing Technology

2019-2020  
2020-2021

Theory: 4 hours/week	4 credits	Theory {Internal marks: 20}
Practicals: 3 hours/week	1 credit	Theory {External marks: 80}
		Practical: External Marks – 25

**Objectives**

1. Acquire knowledge on various aspects of silkworm biology & development.
2. To acquaint with ecology & ethiology of silkworm rearing.
3. To familiarise with improved rearing technologies.
4. Develop confidence to set up farms on their own.

**UNIT – I**

Salient features of class Insects - Classification of Serigenous Insects – Characteristics features of order Lepidoptera - families - Bombycidae and Saturniidae- economical importance of insects, Classification of Silkworms – based on origin, geographical distribution, voltinism and moulting - popular mulberry silkworm species and varieties of Telangana and India.

Biology of Silkworm *Bombyx mori* – Life cycle of *Bombyx mori*.

**UNIT – II**

Morphology of *B. mori*: egg, larva, Pupa and moth. Metamorphosis – Definition, types and Significances.

Anatomy:- digestive system, circulatory system - excretory system - nervous system, male and female reproductive system, structure and function of silk glands.

**UNIT – III**

**Rearing House**:- model rearing house, types of rearing houses, rearing appliances- disinfection of rearing house and appliances-personal hygiene.

Procurement of DFL – transportation procedures.

Incubation – Definition, environmental requirements, black boxing and its importance.

Brushing - Definition; types of brushing and its importance

#### UNIT – IV

Chawki rearing:- Preparation:- brushing & its methods, rearing -optimum condition, chawki methods and frequency of feeding, bed cleaning & methods of cleaning, spacing, moulting & care during moulting.

Late rearing: methods, optimum condition, feeding, bed cleaning and methods – spacing, moulting & care to be taking during moulting.

Spinning: Identification of spinning worms, mounting and mounting density – types of mountages – environmental conditions during spinning and moulting.

Moulting – identification of moulting worms and care

Harvesting: Time of harvesting, harvesting methods, storage, preservation, transportation and marketing of cocoons- time and procedure to be followed.

Mounting – identification of worms, mounting and spinning of larvae.

#### REFERENCE BOOKS:-

1. Chrsley,S.R (1982) Culture and Sericulture Academic press inc., New York U.S.A
2. Ganga., G., and J. Sulochana Chetty (1991) An Introduction to Sericulture:- Oxford & IBM Publishing Company, Both Editions
3. Krishnaswami, S; Narasimhanna, M.N; Suryanarayan, S.K and Kumararaj, S. (1973) SERICULTURE MANUAL-2 – Silkworm Rearing, Agriculture services Bulletin FAQ sericulture manual, Rome
4. Manuals - @ Silkworm Rearing Agriculture Serice bulletin FAO, Rome.
5. Madan Mohan Rao, M. (1999) Comprehensive Sericulture Manual. P.S Publication, Hyderabad
6. M.Amin Masood & Afifa S, Kamie I (2000) Principles of temperate sericulture Kalyani C Publisher
7. S.Morashi (2001) Improvement of biological functions in the silkworm, science publisher.
8. Tazim Y (1922) Handbook of silkworm rearing Fuzi pub Co Ltd Tokyo Japan.
9. Yataro Fazima (2001) improvement of Biological Functions in the silkworm science, publishers



## Silkworm Biology and Rearing Technology

### PRACTICALS

- | 3hours/week  | 1credit | Marks-25 |
|--|---------|----------|
| 1. Life Cycle: Morphology of egg, larva, pupa and adult silkworm of <i>B. mori</i>   |         |          |
| 2. Sex separation in larva, pupa and adult silkworm  |         |          |
| 3. Anatomy of silkworm: Dissection of mouthparts, digestive system –respiratory system, nervous system, silk glands, reproductive system of male and female moth, cocoon characteristics- uni, bi & mv races |         |          |
| 4. Rearing houses, model rearing house, rearing appliances for chawki and late age   |         |          |
| 5. Disinfection – types of disinfectants – concentration, dosage requirements  |         |          |
| 6. Incubation of silkworm eggs: method, black boxing, optimum environmental condition.   |         |          |
| 7. Calculation of fecundity and hatching percentage  |         |          |
| 8. Chawki rearing – feeding, bed cleaning, spacing, moulting.  |         |          |
| 9. Late age rearing - feeding, bed cleaning, spacing, moulting.  |         |          |
| 10. Mounting and spinning – types of mountages.  |         |          |
| Note: silkworm rearing (22-24 days) submission of report   |         |          |
| 11. Mounting – identification of moulted worms and care to be taken during moulting.   |         |          |

**B.Sc. ZOOLOGY SYLLABUS UNDER CBCS**

(With effect from 2016-2017)

**I - SEMESTER**

**DSC-1A (Theory)**

**Animal Diversity – Invertebrates**

**Max. Marks: 80**

**UNIT – I**

- 1.1 Kingdom Animalia, Brief history of Invertebrates.
- 1.2 Protozoa General characters and Classification up to classes with examples.
- 1.3 Type study of *Elphidium*, Life cycle of *Plasmodium*. Locomotion, Reproduction and Diseases of protozoans.
- 1.4 Porifera General characters, Classification of up to classes with examples.
- 1.5 Type study of *Sycon*; Canal system in sponges and Spicules.

**UNIT – II**

- 2.1 General characters and Classification of Cnidaria up to classes with examples.
- 2.2 Type study of *Obelia*, Polymorphism in hydrozoa; Corals and coral reef formation.
- 2.3 General characters and Classification of Platyhelminthes up to classes with examples.
- 2.4 Type study- *Schistosoma*; Parasitic Adaptations in Helminthes.
- 2.5 Nematelminthes General characters, Classification of Nematelminthes up to classes with examples; Type study of *Dracunculus*.

**UNIT – III**

- 3.1 Annelida General characters and Classification up to classes with examples.
- 3.2 Type study of *Hirudinaria granulosa*.
- 3.3 Evolutionary significance of Coelome and Coelomoducts and metamerism.
- 3.4 Arthropoda General characters and Classification of Arthropoda up to classes with examples.
- 3.5 Type study of Prawn; Mouth parts of Insects; Insect metamorphosis; *Peripatus* - Structure and affinities.

**UNIT – IV**

- 4.1 Mollusca General characters and Classification up to classes with examples.
- 4.2 Type study – *Pila*; Pearl formation; Torsion and detorsion in gastropods.
- 4.3 Echinodermata General characters and Classification of Echinodermata up to classes with examples.
- 4.4 Water vascular system in star fish; Echinoderm larvae and their significance.
- 4.5 Hemichordata General characters and Classification up to classes with examples; *Balanoglossus* - Structure and affinities.



**ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER**  
**ZOOLOGY - PAPER - I**  
**ANIMAL DIVERSITY - INVERTEBRATES**

Max. Marks: 50

1. Study of museum slides / specimens / models (Classification of animals up to orders)
  - i. **Protozoa:** *Amoeba*, *Paramecium*, *Paramecium Binary fission and Conjugation*, *Vorticella*, *Entamoeba histolytica*, *Plasmodium vivax*
  - ii. **Porifera:** *Sycon*, *Spongilla*, *Euspongia*, *Sycon - T.S & L.S*, Spicules, Gemmule
  - iii. **Coelenterata:** *Obelia - Colony & Medusa*, *Aurelia*, *Physalia*, *Velella*, *Corallium*, *Gorgonia*, *Pennatula*
  - iv. **Platyhelminthes:** *Planaria*, *Fasciola hepatica*, *Fasciola larval forms - Miracidium*, *Redia*, *Cercaria*, *Echinococcus granulosus*, *Taenia solium*, *Schistosoma haematobium*
  - v. **Nemathelminthes:** *Ascaris (Male & Female)*, *Dracunculus*, *Ancylostoma*, *Wuchereria*
  - vi. **Annelida:** *Nereis*, *Aphrodite*, *Chaetopterus*, *Hirudinaria*, Trochophore larva
  - vii. **Arthropoda:** *Cancer*, *Palaemon*, *Scorpion*, *Scolopendra*, *Sacculina*, *Limulus*, *Peripatus*, Larvae - *Nauplius*, *Mysis*, *Zoea*, Mouth parts of male & female *Anopheles* and *Culex*, Mouthparts of Housefly and Butterfly.
  - viii. **Mollusca:** *Chiton*, *Pila*, *Unio*, *Pteredo*, *Murex*, *Sepia*, *Loligo*, *Octopus*, *Nautilus*, Glochidium larva
  - ix. **Echinodermata:** *Asterias*, *Ophiothrix*, *Echinus*, *Clypeaster*, *Cucumaria*, *Antedon*, Bipinnaria larva
  - x. **Hemichordata:** *Balanoglossus*, Tornaria larva
2. Dissections:

**Prawn:** Appendages, Digestive system, Nervous system, Mounting of Statocyst  
**Insect Mouth Parts**
3. Laboratory Record work shall be submitted at the time of practical examination
4. An "Animal album" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.
5. Computer aided techniques should be adopted – show virtual dissections

**Suggested manuals:**

1. Practical Zoology- Invertebrates S.S. Lal
2. Practical Zoology - Invertebrates P.S. Verma
3. Practical Zoology - Invertebrates K.P. Kurl

**B.Sc. ZOOLOGY SYLLABUS UNDER CBCS**  
(With effect from 2016-2017)

**II - SEMESTER**

**DSC-1B (Theory)**

**Ecology, Zoogeography and Animal Behavior**

**Max. Marks: 80**

**UNIT – I**

- 1.1 Ecosystem structure and functions.
- 1.2 Types of Ecosystems –Aquatic and Terrestrial.
- 1.3 Biogeochemical cycles - Nitrogen, Carbon, Phosphorus and Water.
- 1.4 Energy flow in ecosystem; Food chain, food web and ecological pyramids.
- 1.5 Animal Associations - Mutualism, commensalism, parasitism, competition, predation.

**UNIT – II**

- 2.1 Concept of Species, Population dynamics and Growth curves.
- 2.2 Community Structure and dynamics; Ecological Succession.
- 2.3 Ecological Adaptations.
- 2.4 Environmental Pollution – Sources, Effect and Control measures of Air, Water, Soil and Noise pollution.
- 2.5 Wildlife conservation - National parks and Sanctuaries of India, Endangered species. Biodiversity and hotspots of Biodiversity in India.

**UNIT – III**

- 3.1 Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities.
- 3.2 Wallace line
- 3.3 Discontinuous distribution.
- 3.4 Continental Drift

**UNIT – IV**

- 4.1 Types of Behaviour- Innate and Acquired, Instinctive and Motivated behavior.
- 4.2 Taxes, Reflexes, Tropisms.
- 4.3 Physiology and phylogeny of learning, trial and error learning, Imprinting, habituation, Classical conditioning, Instrumental conditioning.
- 4.4 Social behavior, Communication, Pheromones.
- 4.5 Biological rhythms, Biological clocks, Circadian rhythms.



**B.Sc. PRACTICAL SYLLABUS FOR II SEMESTER**  
**ZOOLOGY - Core Paper – II**  
**Ecology, Zoogeography and Animal Behavior**

**Max. Marks: 50**

1. Determination of pH of Soil and Water
2. Estimation of salinity (chlorides) of water in given samples.
3. Estimation of Carbonates and bicarbonates in the given water samples.
4. Estimation of dissolved oxygen of pond water, sewage water and effluents.
5. Identification of Zooplankton from a nearby water body.
6. Study of Pond Ecosystem / local polluted site - Report submission
7. Study of at least 3 endangered or threatened wild animals of India through photographs / specimens / models
8. Field visit to Zoo Park to study the management, behavior and enumeration of wild animals.
9. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.
10. Observe the response of invertebrates in different lightening conditions

**Computer aided techniques should be adopted as per UGC guide lines.**

**Suggested manuals**

1. Robert Desharnais, Jeffrey Bell, 'Ecology Student Lab Manual, Biology Labs'
2. Darrell S Vodopich, 'Ecology Lab Manual'

16  
Year wise - 2016-2017 ✓

**B. Sc (ZOOLOGY) III Year (THEORY PAPER - IV)**  
**APPLIED ZOOLOGY**

80 hrs  
(3 hrs/week)

**UNIT - I**

**1.0. FISHERIES AND AQUACULTURE**

- |  |         |
|--|---------|
| 1.1. Capture fisheries - Introduction  | 2 hours |
| 1.2. Types of fisheries, Fishery resource from Freshwater                            | 4 hours |
| 1.3. Fin-fish and shell-fish fisheries   | 2 hours |
| 1.4. Fishing gears and fishing crafts  | 3 hours |
| 1.5. Site selection criteria   | 2 hours |
| 1.6. Aquaculture systems   | 2 hours |
| 1.7. Induced breeding  | 3 hours |
| 1.8. Hatchery design and Management  | 2 hours |
| 1.9. Shrimp and prawn culture  | 2 hours |
| 1.10. Post-harvest technology  | 2 hours |
| 1.11. Preservation and processing - Freezing, solar drying, Canning, Salting smoking | 4 hours |
- Shrimp = Shrimps*

**UNIT - II**

**2.0. CLINICAL SCIENCE**

- |  |          |
|--|----------|
| 2.1. Hematology  | 10 hours |
| 2.1.1. Blood composition and functions                                     |          |
| 2.1.2. Blood groups and Rh factor, transfusion problems                    |          |
| 2.1.3. Blood diseases - Anemia, Leukemia, Leucocytosis, Leucopaenia        |          |
| 2.1.4. Biopsy and autopsy - Clinical importance                            |          |
| 2.2. Immunology  | 16 hours |
| 2.2.1. Types of immunity - Innate and acquired, organs of immune system    |          |
| 2.2.2. Antigens - Haptens and epitopes                                     |          |
| 2.2.3. Structure and biological properties of human immunoglobulin G (IgG) |          |
| 2.2.4. Humoral immunity and cell mediated immunity, B and T- cells         |          |
| 2.2.5. Hypersensitivity - immediate and delayed                            |          |

**UNIT - III**

**3.0. ANIMAL BIOTECHNOLOGY:**

- |   |         |
|---|---------|
| 3.1. Animal Biotechnology: Scope of Biotechnology, Cloning vectors - Characteristics of vectors, Plasmids | 8 hours |
| 3.2. Gene Cloning - Enzymatic cleavage of DNA, Restriction enzymes (Endonucleases) and Ligation.          | 6 hours |
| 3.3. Transgenesis and Production of transgenic animals (Fish and Goat)                                    | 6 hours |
| 3.4. Application of Stem Cell technology in Cell based therapy (Diabetes and Parkinson's diseases)        | 6 hours |



From  
2016 - 2017

KAKATIYA UNIVERSITY  
U.G. ZOOLOGY (Under CBCS)  
B.Sc. Final Year (DSE-1E)  
SEMESTER - V

From  
2016 - 2017

Elective

A) Applied Zoology (Theory)

Max. Marks:

UNIT - I

- 1.1. Types of Fisheries, culture of Fresh Water Fish and Prawn
- 1.2. Fresh water fishing gears and crafts; Induced Breeding.
- 1.3. Hatchery design and Management of fish and prawn, Transportation of fish and prawn seed.
- 1.4 Preservation, Processing and By-products of fishes.
- 1.5 Fish Diseases and control measures

UNIT - II

- 2.1. Life cycle of *Bombyx mori*
- 2.2 Structure of silk gland and secretion of silk
- 2.3 Silkworm rearing technology, Spinning, harvesting and storage of cocoons.
- 2.4 Silk worm Pests and Diseases: Uzi fly; Protozoan, Viral, Fungal and Bacterial; Control and prevention.
- 2.5 Prospects of Sericulture in India

UNIT - III

- 3.1 Selection of Bee Species for Apiculture. Bee Keeping Equipment.
- 3.2 Methods of Extraction of Honey (Indigenous and Modern). Bee Diseases and Enemies.
- 3.3 Products of Apiculture Industry and its Uses (Honey, Bees Wax).
- 3.4 Introduction of Vermiculture and Vermicomposting. Vermiculture techniques. Bedding, Essential parameters for Vermiculture and Management
- 3.5 Methods of Harvesting (Manual & Mechanical). Economic Importance of Vermiculture.

UNIT - IV

- 4.1. Classification of Fowls based on their use - Broilers and Commercial layers.
- 4.2. Principles of poultry breeding, Management of breeding stock and broilers, Processing and preservation of eggs.
- 4.3. Poultry diseases - Viral, Bacterial, Fungal, Protozoan
- 4.4. Management of a modern Poultry Farm, progressive plans to promote Poultry as a Self-Employment venture
- 4.5. Dairy farm and its management, Animal Husbandry - Introduction, Preservation of semen, artificial insemination of cattle, Induction of early puberty and synchronization of estrus in cattle.

Prof. T. RAVINDER REDDY

Chairman, BOS  
Department of Zoology  
KAKATIYA UNIVERSITY, WGL-566 009 (T.S.)

**KAKATIYA UNIVERSITY**  
**U.G. ZOOLOGY (Under CBCS)**  
**B.Sc. Final Year (DSE-1E)**  
**SEMESTER - V**

Elective

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**A) Applied Zoology (Practical)**

**Max. Marks: 25**

1. Identification and study of important cultivable and edible fishes - Any five
2. Identification and study of important cultivable and edible crustaceans - Any five
3. Identification different larvae of silk worm- Using specimens / pictures
4. Identification of mulberry and non mulberry silkworms
5. Mounting of mouth parts of adult silk worm and silk gland of larva
6. Estimation of quality of milk from different dairy farm units – specific gravity, fat content, pH viscosity.
7. Identification of purity of Honey in different samples
8. Field visits to a Vermiculture / Sericulture / fisheries / apiculture / poultry / dairy farm-  
submission of any 3 Reports

- Laboratory Record work shall be submitted at the time of practical examination
- Computer aided techniques should be adopted as per UGC guide lines.



**Prof. T. RAVINDER REDDY**

*Chairman, BOS*  
*Department of Zoology*  
**KAKATIYA UNIVERSITY, WGL-595 009 (T.S)**



KAKATIYA UNIVERSITY  
Under Graduate Courses (Under CBCS 2019 - 2022)  
B.Sc. ZOOLOGY I Year  
SEMESTER - II

ANIMAL DIVERSITY - VERTEBRATES  
(Core Paper - II)

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

UNIT - I

1.1 Hemichordata

- 1.1.1 General characters and Classification of Hemichordates upto classes with examples
- 1.1.2 *Balanoglossus*- Structure and affinities
- 1.1.3. Larval Significance (Tomaria)

1.2. Protochordata

- 1.2.1 General Characters and Classification of Chordates up to orders with examples
- 1.2.2 Salient features of Urochordata; Retrogressive metamorphosis in Urochordata
- 1.2.3 Salient features and affinities of Cephalochordata
- 1.2.4 General Characters of Cyclostomata; Comparison of *Petromyzon* and *Myxine*

UNIT - II

2.1 Pisces

- 2.1.1 General characters of and Classification of Pisces up to orders with examples
- 2.1.3 *Scoliodon*- Digestive, Respiratory, Circulatory and Nervous system
- 2.1.4 Types of Scales, Types of Fins
- 2.1.5 Migration in Fishes

2.2 Amphibia

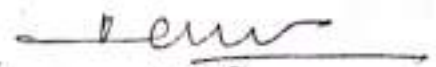
- 2.2.1 General characters and Classification of Amphibians up to orders with examples.
- 2.2.2 *Rana tigrina*- Respiratory, Circulatory and Nervous systems
- 2.2.3 Parental care in Amphibians; Neoteny and Paedogenesis
- 2.2.4 Metamorphosis in Amphibians and its hormonal control

Unit - III

3.1 Reptilia

- 3.1.1 General characters and Classification of Reptilia up to orders with examples
- 3.1.2 *Calotes*- Digestive, Respiratory, Circulatory and Nervous systems
- 3.1.3 Temporal fossa in Reptiles and its evolutionary importance
- 3.1.4 Distinguished characters of Poisonous and Non-poisonous snakes

  
Dr. G. SHAMITHA  
Chairperson  
Board of Studies  
Department of Zoology & Sericulture Unit  
KAKATIYA UNIVERSITY - WGL-508009 (T.S)

  
HEAD  
Department of Zoology  
University College  
Kakatiya University  
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### 3.2 Aves

- 3.2.1 General characters and Classification of Aves upto orders with examples.
- 3.2.2 *Columba livia*- Digestive, Respiratory, Circulatory and Nervous systems
- 3.2.3 Migration in Birds
- 3.2.4 Flight adaptation in Birds

### Unit – IV

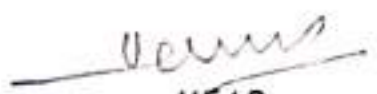
#### 4.1 Mammalia


- 4.1.1 General characters and Classification of Mammalia upto orders with examples
- 4.1.2 *Rabbit*- Digestive, Respiratory, Circulatory and Nervous systems
- 4.1.3 Dentition in Mammals
- 4.1.4 Aquatic adaptations in Mammals

#### Suggested Readings:

1. E.L. Jordan and P.S. Verma 'Chordate Zoology' - S. Chand Publications.
2. Mohan P. Arora. 'Chordata - I, Himalaya Publishing House Pvt. Ltd.
3. Marshal, Parker and Haswell 'Text book of Vertebrates'. ELBS and McMillan, England.
4. Alfred Sherwood Romer. Thomas S. Pearson 'The Vertebrate Body, Sixth edition, CBS College Publishing, Saunders College Publishing
5. George C. Kent, Robert K. Carr. *Comparative Anatomy of the Vertebrates*, 9th ed. McGraw Hill.
6. Kenneth Kardong *Vertebrates: Comparative Anatomy, Function and Evolution*, 4th ed, McGraw Hill
7. J.W. Young, *The Life of Vertebrates*, 3rd ed, Oxford University press.
8. Harvey Pough F, Christine M. Junis, B. Heiser, *Vertebrate Life*, Pearson, 6th ed, Pearson Education Inc. 2002.

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**HEAD**  
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**KAKATIYA UNIVERSITY**  
Under Graduate Courses (Under CBCS 2019 - 2022)  
**B.Sc. ZOOLOGY I Year**  
**SEMESTER – II**

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**ANIMAL DIVERSITY - VERTEBRATES**  
**(PRACTICAL)**

Instruction: 3 hrs per week

No. of Credits: 1

**I. Study of museum slides / specimens / models (Classification of animals up to orders)**

1. **Hemichordata:** *Balanoglossus, Tornaria larva*
2. **Protochordata:** *Amphioxus, Amphioxus* T.S. through pharynx
3. **Cyclostomata:** *Petromyzon, Myxine, Ammocoetes larva*
4. **Pisces:** *Sphyrna, Pristis, Torpedo, Channa, Pleuronectes, Hippocampus, Exocoetus, Echieneis, Labeo, Catla, Clarias, Anguilla, Protopterus*, Scales: Placoid, Cycloid, Ctenoid
5. **Amphibia:** *Ichthyophis, Amblystoma, Siren, Hyla, Rachophous, Bufo, Rana*, Axolotal larva
6. **Reptilia :** *Draco, Chamaeleon, Gecko, Uromastix, Vipera russeli, Naja, Bungarus, Euhydria, Typhlops, Ptyas, Testudo, Trionyx, Crocodilus*
7. **Aves:** *Archaeopteryx, Passer, Psittacula, Bubo, Alcedo, Columba, Corvus, Pavo*, Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
8. **Mammalia:** *Ornithorynchus, Tachyglossus, Pteropus, Funambulus, Manis, Loris*, Hedgehog;
9. **Histology:** T.S. of Liver, Pancreas, Kidney, Stomach, Intestine, Lung, Artery, Vein, Bone T.S., Spinal Cord. T.S.

**II. Osteology:**

Rabbit – Axial Skeleton (Bones of Skull and Vertebral Column),

Varanus, Pigeon and Rabbit - Appendicular skeleton (Bones of Limbs and Girdles)

**III. Demonstration of dissection / dissected / virtual dissection: Labeo / Tilapia**

1. Digestive system 2. Brain, Weberian Oscicles 3. V, VII, IX, X cranial nerves

**IV. Laboratory Record work shall be submitted at the time of practical examination**

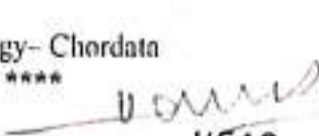
**V. An "Animal album" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.**

**VI. Computer aided techniques should be adopted as per UGC guide lines.**

**Suggested manuals:**

1. S.S.Lal, Practical Zoology – Vertebrata
2. P.S.Verma, A manual of Practical Zoology- Chordata

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**HEAD**  
Department Of Zoology  
University College  
Kakatiya University,  
WARANGAL.-506009/T.S

  
**Dr. G. SHAMITHA**  
Chairperson  
Board of Studies

Department of Zoology & Sericulture Unit  
KAKATIYA UNIVERSITY - WGL-500001 (T.S)

**KAKATIYA UNIVERSITY**  
Under Graduate Courses (Under CBCS 2019 - 2022)  
**B.Sc. ZOOLOGY III Year**  
**SEMESTER – VI**

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**ECOLOGY, ZOOGEOGRAPHY AND EVOLUTION**

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

**UNIT – I**

**1.1 Ecology- I**

- 1.1.1 Ecosystem Structure and Functions; Types of Ecosystems – Aquatic and Terrestrial
- 1.1.2 Bio-geo chemical nutrient cycles - Nitrogen, Carbon, Phosphorus and Water
- 1.1.3 Energy flow in ecosystem
- 1.1.4 Food chain, food web and ecological pyramids
- 1.1.5 Animal Associations-Mutualism; Commensalism; Parasitism; Competition, Predation

**UNIT – II**

**2.1 Ecology – II**

- 2.1.1 Concept of Species, Population dynamics and Growth curves
- 2.1.2 Community Structure and dynamics and Ecological Succession
- 2.1.3 Ecological Adaptations
- 2.1.4 Environmental Pollution- Sources, Effect and Control measures of Air, Water, Soil and Noise Pollution
- 2.1.5 Wildlife conservation - National Parks and Sanctuaries of India, Endangered species; Biodiversity and Hotspots of Biodiversity in India.

**UNIT – III**


**3.1 Zoogeography**

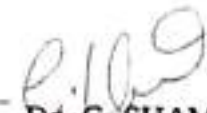
- 3.1.1 Zoogeographical regions
- 3.1.2 Climatic and faunal peculiarities of Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions
- 3.1.3 Wallace line, Discontinuous distribution
- 3.1.4 Continental Drift

**Unit – IV**

**4.1. Evolution**

- 4.1.1 Theories of Evolution – Lamarckism, Neo-Lamarckism, Darwinism, Neo-Darwinism, Modern synthetic theory, Evidences of Evolution.
- 4.1.2 Forces of Evolution–Natural Selection, Genetic drift, Gene flow, Genetic load, Organic variations, Hardy Weinberg Equilibrium.
- 4.1.3 Isolation –Premating and post mating isolating mechanisms.
- 4.1.4 Speciation: Methods of Speciation - Allopatric and Sympatric; Causes and Role of Extinction in Evolution.

  
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**KAKATIYA UNIVERSITY**  
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**B.Sc. ZOOLOGY III Year**  
**SEMESTER - VI**

**ECOLOGY, ZOOGEOGRAPHY AND EVOLUTION**  
**PRACTICAL**

**Instruction: 3 hrs per week**  
**No. of Credits: 1**

**Ecology**

1. Determination of pH of Soil and Water.
2. Estimation of Salinity (Chlorides) of water in given samples.
3. Estimation of Carbonates and Bicarbonates in the given water samples.
4. Estimation of dissolved Oxygen of Pond water, sewage, effluents.
5. Identification of Zooplankton from different water bodies.
6. Study of Pond Ecosystem / Local polluted site - Report submission.

**Zoogeography**

1. Study of at least 3 endangered or threatened wild animals of India through photographs/specimens/models
2. Field visit to Zoo Park to study the management, behavior and enumeration of wild animals.
3. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.

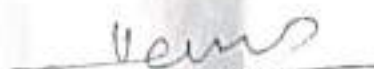
**Evolution**

1. Museum Study of fossil animals: *Peripatus*; *Coelacanth* fish, *Dipnoi* fishes; *Sphenodon*; *Archaeopteryx*.
2. Study of homology and analogy from suitable specimens and pictures
3. Problems on Hardy-Weinberg Law
4. Macroevolution using Darwin finches (pictures)

- Laboratory Record work shall be submitted at the time of practical examination
- Computer aided techniques should be adopted as per UGC guide lines.

**Suggested manuals:**

1. Ecology Student Lab Manual, Biology Labs - Robert Desharnais, Jeffrey Bell.
2. Ecology Lab manual - Darrell S Vodopich.

  
**HEAD**

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**Introduction to Soil Chemistry-** Basic Concepts. Effect of pH on nutrient availability. Macronutrients and their effect on plants -Carbon, Hydrogen, Oxygen, Nitrogen and Phosphorus other macronutrients-Calcium, Magnesium and Sulfur. Micronutrients and their effect on plants. Boron ( $B_4 O_7^{2-}$ ), Copper ( $Cu^{2+}$ ), Iron ( $Fe^{2+}$ ,  $Fe^{3+}$ ) Manganese ( $Mn^{2+}$ ) Molybdenum ( $MoO_4^{2-}$ ) Zinc ( $Zn^{2+}$ ) Cobalt ( $Co^{2+}$ ) Chlorine ( $Cl^-$ ) and Others. Determination of soil nitrogen by Kjeldahl method- Illustration through charts (Or) demonstration of experiment. Visit to nearby agricultural farms and interaction with farmers. Discussion with farmers on the use of Soil Analysis Kits.

Dr. Neelgale

Er. G. J.

B. D.

Dr. M. S.

M. S. S. P. U.



Unit - III (Physical Chemistry)

15 hr (1h / week)

S4-P-1: Electrochemistry & EMF

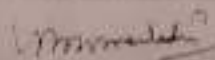
15 h

Electrical transport - conduction in metals and in electrolyte solutions, specific conductance and equivalent conductance, measurement of equivalent conductance, variation of specific and equivalent conductance with dilution. Migration of ions and Kohlrausch's law. Arrhenius theory of electrolyte dissociation and its limitations, weak and strong electrolytes, Ostwald's dilution law, its uses and limitations. Debye-Huckel-Onsager's equation for strong electrolytes (elementary treatment only). Transport number, definition and determination by Hittorf's method for attackable electrodes. Applications of conductivity measurements: Determination of degree of dissociation, determination of  $K_a$  of acids, determination of solubility product of a sparingly soluble salt, conductometric titrations.

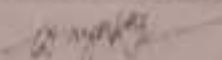
Electrolyte and Galvanic cells - reversible and irreversible cells, conventional representation of electrochemical cells EMF of a cell and its measurement Computation of EMF. Types of reversible electrodes- the gas electrode, metal-metal ion, metal-insoluble salt and redox electrodes. Electrode reactions, Nernst equation, cell EMF and single electrode potential, standard Hydrogen electrode - reference electrodes (calomel electrode) - standard electrode potential, sign conventions, electrochemical series and its significance.

Applications of EMF measurements, Calculation of thermodynamic quantities of cell reactions ( $\Delta G$ ,  $\Delta H$  and  $K$ ). Determination of pH using hydrogen electrode, glass electrode and quinhydrone electrode. Solubility product of AgCl. Potentiometric titrations.

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Prof. Gade Dayakar, Chairperson, BOS in Chemistry, KU,

Page 19

## UNIT II: Drinking Water and Soil Fertility Standards and Analysis

15 h (1 hr/week)

Water Quality and Common Treatments for ~~Private~~ <sup>Public</sup> Drinking Water Systems: Drinking Water Standards-Primary Drinking Water Standards : Inorganics, Organics and Volatile Organic Chemicals. Secondary Drinking Water Standards-Inorganics and Physical Problems. Water Testing, Mineral Analysis, Microbiological Tests, Pesticide and Other Organic Chemical Tests. Principle involved in Water Treatment Techniques. (i) Reverse osmosis (ii) Disinfection methods such as chlorination, ultraviolet light, ozonation etc (iii) Chemical oxidation and (iv) Ion exchange (water softeners). Visit to nearby drinking water plants and interaction at sites.



### Paper III- Quantitative Analysis - I

45hrs (3 h / w)

#### Acid - Base titrations

1. Estimation of Carbonate in Washing Soda.
2. Estimation of Bicarbonate in Baking Soda.
3. Estimation of Carbonate and Bicarbonate in the Mixture.
4. Estimation of Alkali content in Antacid using HCl.

Serotonin: SSRIs- fluoxetine. Dopamine: Antiparkinson drug- Levodopa .

**Health promoting drugs:** Introduction, sources, Deficiency disorders and remedy of Vitamins A,B, C, D, E, K and micronutrients – Na, K, Ca, Cu, Zn and I .

### Reference books

1. G.L. Patrick: Introduction to Medicinal Chemistry, Oxford University Press, New York. 2013.
2. Thomas Nogrady, Medicinal Chemistry, Oxford Univ. Press, New York.2005.
3. David William and Thomas Lemke, Foye's Principles of Medicinal Chemistry, Lippincott Williams & Wilkins, 2008.
4. Ashutosh Kar Medicinal Chemistry, New Age International, 2005.
5. O.D.Tyagi & M.Yadav Synthetic Drugs by, Anmol Publications,1998.
6. Medicinal Chemistry by Alka L. Gupta, Pragati Prakashan.
7. G. L. David Krupadanam, D.Vijaya Prasad, K.Varaprasad Rao, K. L. N. Reddy, C. Sudhakar, Drugs, Universities Press (India) Ltd. 2012.



## Laboratory Course

45h (3 h / week)

### Paper I - Qualitative Analysis - Semi micro analysis of mixtures

Analysis of two anions (one simple, one interfering) and two cations in the given mixture.

Anions:  $\text{CO}_3^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{CH}_3\text{COO}^-$ ,  $\text{NO}_3^-$ ,  $\text{PO}_4^{3-}$ ,  $\text{BO}_3^{3-}$ ,  $\text{SO}_4^{2-}$  . . .

Cations:  $\text{Hg}_2^{2+}$ ,  $\text{Ag}^+$ ,  $\text{Pb}^{2+}$

$\text{Hg}^{2+}$ ,  $\text{Pb}^{2+}$ ,  $\text{Bi}^{3+}$ ,  $\text{Cd}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{As}^{3+/5+}$ ,  $\text{Sb}^{3+/5+}$ ,  $\text{Sn}^{2+/4+}$

$\text{Al}^{3+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Fe}^{3+}$

$\text{Zn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Mn}^{2+}$

$\text{Ba}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ca}^{2+}$

$\text{Mg}^{2+}$ ,  $\text{NH}_4^+$

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## UNIT II: Drinking Water and Soil Fertility Standards and Analysis

15 h (1 hr/week)

Water Quality and Common Treatments for <sup>Primary</sup> ~~Private~~ Drinking Water Systems: Drinking Water Standards-Primary Drinking Water Standards : Inorganics, Organics and Volatile Organic Chemicals. Secondary Drinking Water Standards-Inorganics and Physical Problems. Water Testing, Mineral Analysis, Microbiological Tests, Pesticide and Other Organic Chemical Tests. Principle involved in Water Treatment Techniques. (i) Reverse osmosis (ii) Disinfection methods such as chlorination, ultraviolet light, ozonation etc (iii) Chemical oxidation and (iv) Ion exchange (water softeners). Visit to nearby drinking water plants and interaction at sites.

**Introduction to Soil Chemistry-** Basic Concepts. Effect of pH on nutrient availability. Macronutrients and their effect on plants -Carbon, Hydrogen, Oxygen, Nitrogen and Phosphorus other macronutrients-Calcium, Magnesium and Sulfur. Micronutrients and their effect on plants. Boron ( $B_4O_7^{2-}$ ), Copper ( $Cu^{2+}$ ), Iron ( $Fe^{2+}$ ,  $Fe^{3+}$ ) Manganese ( $Mn^{2+}$ ) Molybdenum ( $MoO_4^{2-}$ ) Zinc ( $Zn^{2+}$ ) Cobalt ( $Co^{2+}$ ) Chlorine ( $Cl^-$ ) and Others. Determination of soil nitrogen by Kjeldahl method- Illustration through charts (Or) demonstration of experiment. Visit to nearby agricultural farms and interaction with farmers. Discussion with farmers on the use of Soil Analysis Kits.

*[Handwritten signatures and initials]*



**KAKATIYA UNIVERSITY**  
**U.G. CHEMISTRY (Under CBCS)**  
**B.Sc. Final Year (DSE-1F)**  
**SEMESTER – VI**

**ELECTIVE-B**

**DSE-IIB (T): AGRICULTURAL AND FUEL CHEMISTRY**

**(03 Hrs per week, 03 Credits) 45 Hrs**

**Unit I: Pesticides**

**12Hrs**

**S6-E-B-I: Introduction**, Definition, classification of pesticides based on use (target). Toxicity and chemical structure with examples. Adverse effects of pesticides and its impact on environmental pollution. Synthesis, technical manufacture and uses of representative pesticides in the following classes: Organochlorines (Cypermethrin); Organophosphates (Parathion); Carbamates (carbaryl); Quinones (Chloranil), Anilides (Alachlor).

**Pesticide formulations**: Dusts, Granules, Wettable powders, Emulsions and Aerosols.

**Biopesticides** : Introduction: Potential pesticidal plants of India, Role of Neem in plant protection-constituents, Azadirachtin and its role in pest control, Structure and mode of action of Pyrethrins( pyrethrin-1) and Pyrethroids (permethrin) and nicotinoids (Imidacloprid).

**Unit II: Fertilizers**

**11Hrs**

**S6-E-B-II: Introduction**: (need of fertilizers), functions of essential plant nutrients (N, P, K), Classification formula and uses of fertilizers:

**Nitrogenous fertilizers**: Ammonium nitrate, Urea, Calcium Cyanamide, Calcium Ammonium Nitrate, Sodium Nitrate, Ammonium Chloride and their uses.

**Phosphate fertilizers**: Normal super phosphate, Triple Super Phosphate, Ammonium Phosphate and their uses.

**Potassium fertilizers**: Potassium chloride, potassium nitrate, potassium sulphate and uses.

**Complex fertilisers**: Diaammonium Phosphate and mixed fertilizers their uses. Manufacture of urea and Super phosphate of lime and their reactions in the soil.

**Biofertilizers**: Introduction, definition, classification, Rhizobium, Azatobactor, Azospirillum, Azolla, Blue Green Algae, Vermicomposting and uses.

**Organic farming**: The principal methods, crop rotation, green manures and compost, biological pest control, and mechanical cultivation and uses.

**Unit III: Energy Sources and Coal**

**11Hrs**

**S6-E-B-III: Review of energy sources** (renewable and non-renewable). Classification of fuels and their calorific value.

**Coal**: Uses of coal (fuel and nonfuel) in various industries, its composition, carbonization of coal. Coal gas, producer gas and water gas—composition and uses. Fractionation of coal tar, uses of coal tar bases chemicals, requisites of a good metallurgical coke, Coal gasification (Hydro gasification and Catalytic gasification), Coal liquefaction and Solvent Refining.

**Unit IV: Petroleum, Petrochemical Industry and Lubricants**

**11Hrs.**

**LABORATORY COURSE-II**  
**Practical Paper – II (Inorganic Chemistry)**

90 hrs(3h/w)

**I. Titrimetric analysis:**

- 1) Determination of carbonate and bicarbonate in a mixture
- 2) Determination of Fe(II) using  $K_2Cr_2O_7$
- 3) Determination of Fe(II) using  $KMnO_4$  with oxalic acid as primary standard
- 4) Determination of Cu(II) using  $Na_2S_2O_3$  with  $K_2Cr_2O_7$  as primary standard
- 5) Determination of Zinc using EDTA
- 6) Determination of hardness of water
- 7) Determination of Zinc by ferrocyanide

**II. Gravimetric analysis (any three of the following)**

- 1) Determination of barium as barium sulphate
- 2) Determination of sulphate as barium sulphate
- 3) Determination of lead as lead chromate
- 4) Determination of nickel as Ni-DMG complex
- 5) Determination of magnesium as magnesium pyrophosphate



Faculty of Commerce & Business Management, Kakatiya University, Warangal  
Paper DSC 202: BUSINESS LAWS

*Objective: To understand basics of contract act, sales of goods act, IPRs and legal provisions applicable for establishment, management and winding up of companies in India.*

**UNIT-I: INDIAN CONTRACT ACT:**

Agreement and Contract - Essentials of a valid contract - Types of contracts - Offer and Acceptance - Essentials of valid offer and acceptance - Communication and revocation of offer and acceptance - Consideration - definition - Essentials of valid consideration - Modes of Discharge of a contract - Performance of Contracts - Breach of Contract - Remedies for Breach - Significance of Information Technology Act

**UNIT-II: SALE OF GOODS ACT AND CONSUMER PROTECTION ACT:**

Contract of Sale: Essentials of Valid Sale - Sale and Agreement to Sell - Definition and Types of Goods - Conditions and Warranties - Caveat Emptor - Exceptions - Unpaid Seller - Rights of Unpaid Seller, Consumer Protection Act 1986: Definition of Consumer - Person - Goods - Service - Consumer Dispute - Consumer Protection Councils - Consumer Dispute Redressal Agencies - Appeals

**UNIT-III: INTELLECTUAL PROPERTY RIGHTS:**

Trade Marks: Definition - Registration of Trade Marks - Patents: Definition - Kinds of Patents - Transfer of the Patent Rights - Rights of the Patentee - Copy Rights: Definition - Rights of the Copyright Owner - Terms of Copy Right - Copy Rights Infringement - Other Intellectual Property Rights: Trade Secrets - Geographical Indications

**UNIT-IV: MANAGEMENT OF COMPANIES AND MEETINGS:**

Director: Qualification - Disqualification - Position - Appointment - Removal - Duties and Liabilities - Loans - Remuneration - Managing Director - Corporate Social Responsibility - Corporate Governance. Meeting: Meaning - Requisites - Notice - Proxy - Agenda - Quorum - Resolutions - Minutes - Kinds - Shareholder Meetings - Statutory Meeting - Annual General Body Meeting - Extraordinary General Body Meeting - Board Meetings

**UNIT-V: WINDING UP:**

Meaning - Modes of Winding Up - Winding Up by tribunal - Voluntary Winding Up - Compulsory Winding Up - Consequences of Winding Up - Removal of name of the company from Registrar of Companies - Insolvency and Bankruptcy code - 2016.

**SUGGESTED READINGS:**

- 1) Company Law: ND Kapoor, Sultan Chand and Co.
- 2) Company Law: Rajashree. - HPH
- 3) Business Law - Kavitha Krishna, Himalaya Publishing House
- 4) Business Laws - Dr. B. K. Hussain, Nagalakshmi - PBP
- 5) Company Law: Prof. G. Krishna Murthy, G. Kavitha, PBP
- 6) Company Law and Practice: GK Kapoor & Sanjay Dhamija, Taxmann Publication.
- 7) Company Law: Bagriyal AK, Vikas Publishing House.

 Prof. K. Raji Reddy	 Prof. P. Varalakshmi	 Dr. K. Rajender
 Dr. S. Narasimha Chary	 Mr. M. Somalah	 Dr. S. Narayana Swamy
 Dr. Rameshwar Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

Faculty of Commerce & Business Management, Kakatiya University, Warangal  
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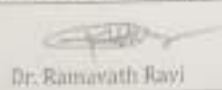
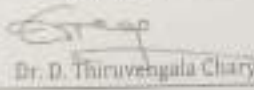
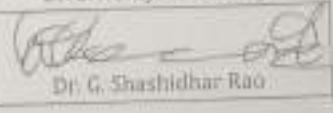
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 Dr. Ramavath Jav	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao



Project work 2019-20.

Faculty of Commerce & Business Management, Kakatiya University, Warangal  
Paper DSC 202: BUSINESS LAWS

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 Dr. Ramesh Ravi	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Pan

Project work 2019-20

**Kakatiya University, Warangal.**  
**Faculty of Commerce & Business Management,**

**B.Com. V Semester - Paper DSE 502 (a): COMPUTERIZED ACCOUNTING**

*Objective: To make the students to acquire the knowledge of computer software*

**UNIT I: MAINTAINING CHART OF ACCOUNTS IN ERP:**

Introduction-Getting Started with ERP - Mouse/Keyboard Conventions-Company Creation-Shut Company-Select a Company-Alter Company Details-Company Features and Configurations-F11: Company Features-F12: Configuration-Chart of Accounts-Ledger-Group-Ledger Creation-Single Ledger Creation-Multi Ledger Creation-Altering and Displaying Ledgers-Group Creation-Single Group Creation-Multiple Group Creation-Displaying Groups and Ledgers-Displaying Groups-Display of Ledgers-Deletion of Groups and Ledgers - P2P procure to page.

**UNIT II: MAINTAINING STOCK KEEPING UNITS (SKU):**

Introduction-Inventory Masters in ERP - Creating Inventory Masters-Creation of Stock Group-Creation of Units of Measure-Creation of Stock Item-Creation of Godown-Defining of Stock Opening Balance in ERP Stock Category-Reports.

**UNIT III: RECORDING DAY-TO-DAY TRANSACTIONS IN ERP:**

Introduction-Business Transactions-Source Document for Voucher-Recording Transactions in ERP - Accounting Vouchers-Receipt Voucher (F6)-Contra Voucher (F4)-Payment Voucher (F5)-Purchase Voucher (F9)-Sales Voucher (F8)-Debit Note Voucher-Credit Note (Ctrl+F8)-Journal Voucher (F7).

**UNIT IV: ACCOUNTS RECEIVABLE AND PAYABLE MANAGEMENT:**



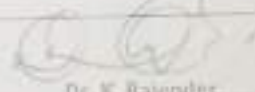

Introduction-Accounts Payables and Receivables-Maintaining Bill-wise Details-Activation of Maintain Bill-wise Details Feature-New Reference-Against Reference-Advance-On Account-Stock Category Report-Changing the Financial Year in ERP.

**UNIT V: MIS REPORTS:**

Introduction-Advantages of Management Information Systems-MIS Reports in ERP - Trial Balance - Balance Sheet-Profit and Loss Account-Cash Flow Statement-Ratio Analysis-Books and Reports - Day Book-Receipts and Payments-Purchase Register-Sales Register-Bills Receivable and Bills Payable.

**SUGGESTED READINGS:**

1. Computerised Accounting: Garima Agarwal, Himalaya
2. Computerised Accounting: A. Murali Krishna, Vaagdevi publications
3. Computerised Accounting: Dr. G. Yogeshweran, PBP.
4. Implementing Tally ERP 9: A.K Nadhani and K.K Nadhani, BPB Publications
5. Computerised Accounting and Business Systems: Kalyani Publications
6. Manuals of Respective Accounting Packages
7. Tally ERP 9: J.S. Arora, Kalyani Publications.

 Prof. K. Rao Reddy	 Prof. B. Varalakshmi	 Dr. K. Rajender
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 Dr. Ramarath Ray	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao



Paper DSC 201: FINANCIAL ACCOUNTING-II

Objective: To acquire Accounting knowledge of bills of exchange and other business accounting methods.

UNIT-I: BILLS OF EXCHANGE:

Bills of Exchange - Definition - Distinction between Promissory note and Bills of exchange - Accounting treatment of Trade bills; Books of Drawer and Acceptor- Honour and Dishonour of Bills - Renewal of bills - Retiring of bills under rebate - Accommodation bills (Including problems)

UNIT-II: CONSIGNMENT ACCOUNTS:

Consignment - Meaning - Features - Proforma invoice - Account sales - Del credere commission-Accounting treatment in the books of the consignor and the consignee - Valuation of consignment stock -Treatment of Normal and abnormal Loss - Invoice of goods at a price higher than the cost price (Including problems)

UNIT-III: JOINT VENTURE ACCOUNTS:

Joint Venture - Meaning - Features - Difference between Joint Venture and Consignment - Accounting Procedure - Methods of Keeping Records for Joint Venture Accounts - Method of Recording in co-ventures books - Separate Set of Books Method - Joint Bank Account - Memorandum Joint Venture Account (Including problems)

UNIT-IV: ACCOUNTS FROM INCOMPLETE RECORDS:


Single Entry System - Meaning - Features - Difference between Single Entry and Double Entry systems - Defects in Single Entry System - Books and accounts maintained - Ascertainment of Profit - Statement of Affairs and Conversion method (Including problems)

UNIT-V: ACCOUNTING FOR NON-PROFIT ORGANIZATIONS:

Non- Profit Organization - Meaning - Features - Receipts and Payments Account - Income and Expenditure Account - Balance Sheet (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Co.
2. Principles and Practice of Accounting: R.L. Gupta & V.K. Gupta, Sultan Chand & Sons.
3. Accountancy-I: Tulasian, Tata McGraw Hill Co.
4. Accountancy-I: S.P. Jain & K.L. Narang, Kalyani.
5. Advanced Accountancy-I: S.N. Maheshwari & V.L. Maheshwari, Vikas.
6. Advanced Accountancy: M Shrinivas & K Sreelatha Reddy, Himalaya Publishers.
7. Financial Accounting: M.N Arora, Tax Mann Publications.

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2016-17 Project work

**Kakatiya University, Warangal.**

*Faculty of Commerce & Business Management,*

**B.Com. V Semester - Paper DSE 501 (a) : COST ACCOUNTING**

*Objective: To make the students acquire the knowledge of cost accounting methods.*

**UNIT-I: INTRODUCTION:**

Cost Accounting: Definition - Features - Objectives - Functions - Scope - Advantages and Limitations - Essentials of a good cost accounting system - Difference between Cost Accounting and Financial Accounting - Cost concepts - Cost Classification. (Theory Only)

**UNIT-II: MATERIAL:**

Direct and Indirect Material cost - Inventory Control Techniques - Stock Levels - EOQ - ABC Analysis - JIT - VED - FSN - Issue of Materials to Production - Pricing methods: FIFO - LIFO with Base Stock and Simple and Weighted Average methods. (Problems)

**UNIT-III: LABOUR AND OVERHEADS:**

Labour: Direct and Indirect Labour Cost - Methods of Payment of Wages (only Incentive Plans): Halsey, Rowan, Taylor Piece Rate and Merrick Multiple Piece Rate Methods.

Overheads: Classification - Methods of Allocation - Apportionment and Absorption of overheads. (Problems)

**UNIT-IV: UNIT AND JOB COSTING:**

Unit Costing: Features - Cost Sheet - Tender and Estimated Cost Sheet.

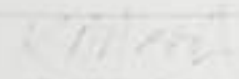

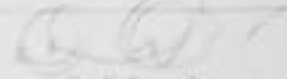


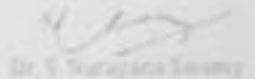



Job Costing: Features - Objectives - Procedure - Preparation of Job Cost Sheet. (Problems)

**UNIT-V: CONTRACT AND PROCESS COSTING:**

Contract Costing: Features - Advantages - Procedure of Contract Costing - Guidelines to Assess profit on incomplete Contracts. Process Costing: Meaning - Features - Preparation of Process Account - Normal and Abnormal Losses. (Problems)

**SUGGESTED READINGS:**

1. Cost Accounting: Jain and Narang, Kalyani
2. Cost Accounting: Srihari Krishna Rao, Himalaya
3. Cost and Management Accounting: Prashanta Athma, Himalaya
4. Cost Accounting: Dr. G. Yogeshweran, PBP.
4. Cost Accounting: Jawaharlal, Tata Mcgraw Hill
5. Cost Accounting: Theory and Practice: Banerjee, PHI

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 Dr. Kamavathi Rao	 Dr. D. Thirumangala Chary	 Dr. G. Shashidhar Rao



**Kakatiya University, Warangal**  
**Faculty of Commerce & Business Management,**

**B.Com. III Semester - Paper SEC1 (a): PRINCIPLES OF INSURANCE**

**Objectives:** To make Students to learn Principles of Insurance.

**UNIT I: RISK MANAGEMENT AND INSURANCE:**

Risk Management - Types of Risks - Actual and Consequential Losses - Management of Risks - Different Classes of Insurance - Importance of Insurance - Management of Risk by Individuals and Insurers - Fixing of Premiums - Reinsurance - Role of Insurance in Economic Development and Social Security - Constituents of Insurance Market - Operations of Insurance Companies - Operations of Intermediaries - Specialist Insurance Companies - Role of Regulators - Common and specific terms in Life and Non-Life Insurance - Understanding Insurance Customers - Customer Behavior at Purchase Point - Customer Behavior when Claim Occurs - Importance of Ethical Behavior

**UNIT II: INSURANCE CONTRACT AND INSURANCE PRODUCTS:**

Insurance Contract Terms - Principles of Insurance: Principle of Insurable Interest, Principle of Indemnity, Principle of Subrogation, Principle of Contribution, Relevant Information Disclosure, Principle of utmost Good Faith, Relevance of Proximate Cause - Life Insurance Products: Risk of Dying Early - Risk of Living too Long - Products offered - Term Plans - Pure Endowment Plans - Combinations of Plans - Traditional Products - Linked Policies - Features of Annuities and Group Policies - General Insurance Products: Risks faced by Owner of Assets - Exposure to Perils - Features of Products Covering Fire and Allied Perils - Products covering Marine and Transit Risks - Products covering Financial Losses due to Accidents - Products covering Financial Losses due to Hospitalization - Products Covering Miscellaneous Risks

**SUGGESTED READINGS:**

1. Principles of Insurance : A Publication of the Insurance Institute of India
2. Principles of Insurance : Telugu Academy, Hyderabad
3. Guide to Risk Management : Sagar Sanyal
4. Principles of Insurance : Dr V Padmavathi, Dr V Jayalakshmi - PBP
5. Insurance and Risk Management: P.K. Gupta
6. Insurance Theory and Practice : Tripathi PHI
7. Principles of Insurance Management: Neelam C Gulati, Excel Books

**Suggested Websites:** 1) [www.irda.gov.in](http://www.irda.gov.in) 2) [www.policyholder.gov.in](http://www.policyholder.gov.in)  
3) [www.irdaindia.org.in](http://www.irdaindia.org.in)

 Prof. K. Raj Reddy	 Prof. P. Saralamba	 Dr. H. Rajender
 Dr. S. Narayana Chary	 Mr. M. Sumanah	 Dr. S. Narayana Sanyal
 Dr. Ramasath Reddy	 Dr. D. Thirumengala Chary	 Dr. G. Shanmughan Reddy

**Kakatiya University, Warangal**  
**Faculty of Commerce & Business Management,**  
**B.Com. III Semester - Paper SEC2 (a): PRACTICE OF LIFE INSURANCE**

*Objective: To make students to learn Practice of Life Insurance.*

**UNIT-I: INTRODUCTION TO LIFE INSURANCE AND TYPES OF LIFE INSURANCE**


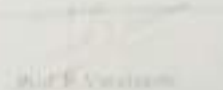



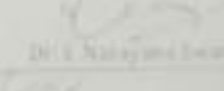

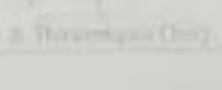
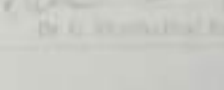
**POLICIES AND PREMIUM CALCULATION:** Meaning evolution, growth and principles of Life Insurance - Life Insurance Organizations in India - Competition and Regulation of Life Insurance - Types of Life Insurance Policies - Term, Whole Life, Endowment, Unit Linked and with or without Profit Policies - Customer Evaluation - Policy Evaluation - Group and Pension Insurance Policies - Special features of Group Insurance/Super Annuation Schemes - Group Gratuity Schemes, Computation of Premiums - Meaning of Premium, its calculation- Rebates - Mode of Rebates - Large sum assured Rebates - Premium Loading - Rider Premiums - Computation of Benefits - Surrender value - Paid up value.

**UNIT-II: SETTLEMENT OF CLAIMS RISK & UNDERWRITINGS AND FINANCIAL**

**PLANNING & TAX SAVING:** Settlement of claims: Intimation Procedure, documents and settlement procedures - Underwriting: The need for underwriting - Guiding principles of Underwriting - Factors affecting Insurability - Methods of Life Classification - Laws affecting Underwriting - Financial Planning and taxation: Savings - Insurance vis-à-vis- investment in the Units Mutual Funds, Capital Markets - Life Insurance in Individual Financial Planning - Implications in IT treatment.

**SUGGESTED READINGS:**

1. Practice of Life Insurance: Insurance Institute of India, Mumbai.
2. Insurance and Risk Management: P.K.Gupta, Himalaya Publishing House, Mumbai.
3. Fundamentals of Life Insurance Theories and Applications: Kanika Mishra, Prentice Hall
4. Principles of Life Insurance - Dr. V. Padmavathi, Dr. V. Jayalakshmi - PBP
5. Managing Life Insurance: Kutty, S.K., Prentice Hall of India: New Delhi
6. Life and Health Insurance: Black, Jr. Kenneth and Harold Skipper Jr., Prentice Hall, Inc., England.
7. Life Insurance: Principles and Practice: K.C. Mishra and C.S. Kumar, Cengage Learning, New Delhi.
8. Life Insurance in India: Sadhak, Respose Books, New Delhi.

 Prof. K. Venkatesh	 Prof. P. Venkatesh	 Dr. K. Venkatesh
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**B.Com. IV Semester - Paper SEC3 (a): PRACTICE OF GENERAL INSURANCE**

*Objective: To make the student understand general policies and accounting.*

**UNIT I: GENERAL INSURANCE POLICIES:**

Introduction to General Insurance-Origin of general insurance—Classification of General Insurance Companies—Indian and International Insurance Market—various roles in Insurance industry—Policy Documents and forms—insurance proposals and forms—General Insurance Products-Fire, Marine, Motor, Liability, Personal Accident and Specialty Insurance, Engineering and other insurance.

**UNIT II: UNDERWRITING, PREMIUMS, CLAIMS AND INSURANCE RESERVES AND ACCOUNTING:**

Concept of Underwriting—Underwriting Process—Risk sharing and its methods—risk management and steps involved in it—Rating and Premiums—concept of soft and hard markets—Concept of Claim-understanding the process of claim management—claims fraud and fraud prevention—Insurance reserves and accounting—different types of reserves of insurance companies—reserving process followed by insurance companies—Insurance accounting.

**SUGGESTED READINGS:**

1. Practice of General Insurance - Insurance Institute of India.
2. Practice of General Insurance - D.S. Vittal-HPH.
3. Principles & Practice of Insurance- Dr. P. Periasamy - HPH.
4. Risk Management: A Publication of the Insurance Institute of India.
5. Practice of General Insurance: Dr. V. Padmavathi, Dr. V. Jayalakshmi, PBP.
6. Insurance Theory and Practice: Tripathi PHI
7. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
8. Risk Management and Insurance : Trieschman, Gustavson and Hoyt
9. South Western College Publishing Cincinnati, Ohio.

 Prof. A. Eswar Reddy	 Prof. T. Varadasi	 Dr. K. Rajender
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 Dr. Ramavathi Eswar	 Dr. D. Thiruvengala Chary	 Dr. G. Shashidhar Rao

B.Com. IV Semester - Paper SEC4 (a): REGULATION OF INSURANCE BUSINESS

Objective: To equip the students with the knowledge regarding Insurance Business Regulations.

UNIT I: INSURANCE LEGISLATION IN INDIA:

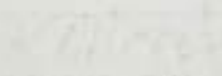
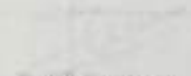




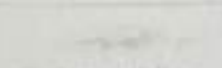


History of life and non-life insurance legislation—nationalization—insurance reforms—insurance business Act, 1972—IRDA and its functions including licensing functions—Web aggregators—regulation for intermediaries—CCS-SPV-PoS—insurance repositories-TPAs—Role and duties of surveyors—Origin and development of micro-insurance—regulation of ULIPs— pension schemes—money laundering—KYC—methods of receipt of premium—Exchange control regulations relating to General and Life Insurance—IRDA Health Insurance Regulations, 2016—Health plus life combo products.

UNIT II: POLICY HOLDERS RIGHTS OF ASSAINGMENT, NOMINATION AND TRANSFER:

Assignment and transfer of insurance policies—provisions related to nomination—repudiation— Fraud—protection of policyholder interest—stages in insurance policy—presale stage—post sale stage—free look period—grievance redressal—claim settlement—key feature document—dispute resolution mechanism—insurance ombudsman—solvency margin and investments — international trends in insurance regulation.

SUGGESTED READINGS:

1. Regulation of Insurance Business - Insurance Institute of India
2. Regulation of Insurance Business - D.S. Vittal, HPH
3. Regulation of Insurance Business: Dr. V. Padmavathi, PBP
4. Risk Management : A Publication of the Insurance Institute of India
5. Insurance Theory and Practice: Tripathi PHI
6. Life and Health Insurance: Black, JR KENNETH & Harold Skipper, Pearson
7. Risk Management and Insurance : Trieschman ,Gustavson and Hoyt
8. South Western College Publishing Cincinnati, Ohio.
9. Insurance Management - S.C. Sahoo & S.C. Das-HPH.

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 Dr. S. Narasimha Chari	 Mr. M. Srinivas	 Dr. S. Venkatesh Chari
 Dr. Anaswathi Rao	 Dr. D. Thiruvengila Chari	 Dr. G. Shashidhar Rao



Government Degree College(033)-Bhadrachalam  
B.Com III Yr -VI Semester  
Academic year 2021-2022

S.No	Hall Ticket Number	Name of the Student
1	33202001	A Naveen
2	33202207	G Supriya
3	33202209	I Divyasri
4	33202226	P Sai Gowtharni
5	33202005	B Vamshi
6	33202016	K Ramya
7	33202206	G Krishna Sahithi
8	33202221	NVVSS Ramya
9	33202007	Ch Naveen
10	33202038	SK Jahed Pasha
11	33202013	G Ravi Teja
12	33202029	P Nagaraju
13	33202234	T Srinivas
14	33202215	K Venkatesh
15	33202039	S Durga Prasad
16	33202214	K Satyanarayana
17	33202224	P Kalyan kumar
18	33202027	O Suryanarayana
19	33202225	P Rakesh
20	33202205	E Bhanuprakash
21	33202048	Y Sai Venkata Bhavani
22	33202026	O Sai Prasad
23	33202004	B Dinesh Sai Kumar
24	33202019	K Mounika
25	33202227	P Sai Surya
26	33202228	P Sai Vennala
27	33202212	K Jetendar
28	33202203	Ch Jeshma
29	33202021	K Salamma
30	33202042	T Lavanya
31	33202036	S Yamuna
32	33202202	A Anil
33	33202241	Y Sai Ram
34	33202023	M Jyothirmai
35	33202024	M Kiranmai
36	33202044	U Divya
37	33202012	G Ravi
38	33202003	B Venkata vennala
39	33202235	T Divya
40	33202211	K Sandhyasri
41	33202230	R Shiva narayana
42	33202210	J Sriram Dinesh
43	33202204	D Vardhan
44	33202025	N Mukesh
45	33202020	K Jogamma
46	33202034	P Akhila

47	33202213	K Prameela
48	33202233	T Sangeetha
49	33202222	N Kavya
50	33202031	P Divya
51	33202232	S Karuna
52	33202208	G Prameelarani



**Govt. Degree College - Bhadrachalam**  
**Department of Commerce**  
**YEAR & SEM: B.COM (CA) IIIYEAR V SEM (EM)2021-22**

S.NO	HT.NO	Name
1	033-20-2201	APAKA MADHU
2	033-20-2202	ARPINENI ANIL
3	033-20-2203	CHALLA JESHMA
4	033-20-2204	DEGALA VARDHAN
5	033-20-2205	EKKILA BHANU PRAKASH
6	033-20-2206	GANDIKOTA KRISHNA SAHITH
7	033-20-2207	GANGA SUPRAJA
8	033-20-2208	GUNDI PRAMEELA RANI
9	033-20-2209	ITHARAJU DIVYASRI
10	033-20-2210	IADI SRIRAMAVE DINESH
11	033-20-2211	KALTI SANDHYA SRI
12	033-20-2212	KANDUKURI JETENDAR
13	033-20-2213	KARAM PRAMEELA
14	033-20-2214	KESUPAKA SATYANARAYANA
15	033-20-2215	KESUPAKA VENKATESH
16	033-20-2216	KOMARAJU RAMANA
17	033-20-2217	KUNJA ASHWIN
18	033-20-2218	MADAKAM BINDU
19	033-20-2219	MADIPALLI BHANU PRASAD
20	033-20-2220	MUPPA AKASH
21	033-20-2221	NANDURI VASANTHA VENKATA SAI SWETHA RANYA
22	033-20-2222	NUPA KAVYA
23	033-20-2223	PANDAVULA SAIRAM
24	033-20-2224	PONAGANTI KALYANKUMAR
25	033-20-2225	PONAGANTI RAKESH
26	033-20-2226	PUPPALA SAI GOWTHAMI
27	033-20-2227	PUPPALA SAI SURYA
28	033-20-2228	PUPPALA SAI VENNELA
29	033-20-2229	PURELLA RAJESH
30	033-20-2230	RAYALA SHIVA NARAYANA
31	033-20-2231	SEKU THARUN KUMAR
32	033-20-2232	SODI KARUNA
33	033-20-2233	TELLAM SANGEETHA
34	033-20-2234	THOKALA SRINIVAS
35	033-20-2235	TURSAM DIVYA
36	033-20-2236	VALLAMKONDA BALAKRISHNA

S.NO	HT.NO	Name
37	033-20-2237	VANKA VAMSHI
38	033-20-2238	VARSA ANJI BABU
39	033-20-2239	VEMURI PRADEEP KUMAR
40	033-20-2240	YADAMAKANTI TRIVENI
41	033-20-2241	YALAMADDI SAI RAM
42	033-20-2242	KORSA NARSAMMA
43	033-20-2243	MADAKAM VENKATESWARLU
44	033-20-2244	PISOD KARTHIK
45	033-20-2245	THELLAM RAJKUMAR



Govt. Degree College - Bhadrachalam

Department of Commerce

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S.NO	HT.NO	Name
1	033-20-2001	ATHMAKURI NAVEEN
2	033-20-2002	BANDARU REVATHI
3	033-20-2003	BANDARU VENKATA VENNELA
4	033-20-2004	BASARAMANI DINESH SAIKUMAR
5	033-20-2005	BATTA VAMSHI
6	033-20-2006	BODA MADHAVI
7	033-20-2007	CHELIKANI NIVAS
8	033-20-2008	CHIMIDI SAVEEN
9	033-20-2009	EESAM PRAVEEN
10	033-20-2010	GAMINI VASAVI
11	033-20-2011	GAMPA NAGALAXMI
12	033-20-2012	GARE RAVI
13	033-20-2013	GIRISHETTI RAVITEJA
14	033-20-2014	IRPA BIKSHAPATHI
15	033-20-2015	JINNEKA VENKATARAMANA
16	033-20-2016	KALIVETI RAMYA
17	033-20-2017	KANITHI JAMPANNA
18	033-20-2018	KORSA SANDHYARANI
19	033-20-2019	KOTAMARTHI MOUNIKA
20	033-20-2020	KUNJA JOGAMMA
21	033-20-2021	KURASAM SALAMMA
22	033-20-2022	LANJAPALLI NAVEEN
23	033-20-2023	MALLADI JYOTHIRMA
24	033-20-2024	MALLADI KIRANMAI
25	033-20-2025	NARAPOGU MUKESH
26	033-20-2026	OGIRALA SAIPRASAD
27	033-20-2027	ORSU SURYANARAYANA
28	033-20-2028	PAGILLA SWAROOPA
29	033-20-2029	PARSABOINA NAGARAJU
30	033-20-2030	PASALA RAGADEEPIKA
31	033-20-2031	PAYAM DIVYA
32	033-20-2032	PAYAM PADMA
33	033-20-2033	PAYAM VEERESH
34	033-20-2034	PUNEM AKHILA
35	033-20-2035	SANABOYANA MANI KIRAN
36	033-20-2036	SEGGAM YAMUNA
37	033-20-2037	SETTI LKHITHA KIRAN
38	033-20-2038	SHAIK JAHED PASHA
39	033-20-2039	SIDDI DURGAPRASAD
40	033-20-2040	SODE SYAMALA
41	033-20-2041	SRIRAM ANUSHA

S.NO	HT.NO	Name
42	033-20-2042	TELLAM LAVANYA
43	033-20-2043	TELLAM VAMSHI
44	033-20-2044	UPPERLA DIVYA
45	033-20-2045	VELPULA ARUNA
46	033-20-2046	VELPULA KRISHNAVENI
47	033-20-2047	YALABAKA DURGA PRASAD
48	033-20-2048	YERRAMALLA SAIVENKATABHAVANI
49	033-20-2049	BOKKA NAGARAJU
50	033-20-2050	LODANGI VENNELA
51	033-20-2051	MALLAM SWAPNA
52	033-20-2052	MURIKIPUDI BHUMIXA



**Govt. Degree & P.G College - Bhadrachalam**  
**Department of Commerce ( 2020-2021)**  
**YEAR & SEM: B.COM (CA) I YEAR II SEM (T/M)**

S.no	Ht.no	Name
1	033212001	AKKINAPALLI AJAY
2	033212002	ALLA PAVANI
3	033212003	ANDRA GANESH
4	033212004	ANUMULAGURTHI AKHILA
5	033212005	BADDI SHRESHI KUMAR
6	033212006	BAMDHA SRUTHILA
7	033212007	BANOTH CHANDULAL
8	033212008	BAPANNAPALLI SAI
9	033212009	BODDHOJU HARINI
10	033212010	BOLLE PRUDHVI
11	033212011	BOTA HIMAVARSHA
12	033212012	CHARUNEELA KAVYA SRI
13	033212013	CHEKKA DURGAPRASAD
14	033212014	CHIMIDI MANISHA
15	033212015	ERPULA ANIL
16	033212016	GOTTALA PARIMALA
17	033212017	GUNDI SHEKHAR BABU
18	033212018	GURAJAPU NAGALAXMI
19	033212019	IMMADI SRINIVAS
20	033212020	JAJJARI CHANDU
21	033212021	JAKKULA NAGADEVI
22	033212022	KAKATI SAGAR
23	033212023	KALLURI MOUNIKA
24	033212024	KOMARAM ANIL KUMAR
25	033212025	KORAM JAGAN
26	033212026	KORAM SHIVAIAH
27	033212027	KOTHAPALLI SATHISH
28	033212028	KOYYALA SRAVYA
29	033212029	KUPPA AJAY
30	033212030	KUPPA USHA SRI
31	033212031	LAKAVATH CHAITHANYA
32	033212032	MADIPALLY RAJA
33	033212033	NANDURI JYOTHI
34	033212034	PASUPULETI SAILAKSHMI
35	033212035	PODAPATI SHANKAR
36	033212036	PUNEM GANESH
37	033212037	SHAIK ABEED
38	033212038	SHAIK ASIF

S.no	Ht.no	Name
39	033212039	SODI BARGAVI
40	033212040	SODI PAVANI
41	033212041	SUNNAM SAMITHA
42	033212042	TELLAM DEEPIKA
43	033212043	TELLAM SURESH
44	033212044	THARUPATHI PAVAN KUMAR
45	033212045	VARSAA SAMPATH
46	033212046	VELUPULA ARUNA
47	033212047	BHASKARNI NAGA VENJAKA PAVAN SRIRAM
48	033212048	KODEM MUTHYALA RAO
49	033212049	KODEM SUNEHA
50	033212050	VANTASALA INDUPRIYA
51	033212051	ADADI RAJU
52	033212052	KATTAM PRASAD
53	033212053	KOTA LAVANYA
54	033212054	MAHAMMAD SHAHEEN SHA

**Govt. Degree & P.G College - Bhadrachalam**  
**Department of Commerce ( 2020-2021)**  
**YEAR & SEM: B.COM (CA) I YEAR II SEM (E/M)**

S.NO	HT.NO	Name
1	033212201	ACHANTI SAI TEJA
2	033212202	ALURI VASUNDHARA
3	033212203	ARAVAPALLI NAGA VIKRAMA CHARYBAKTINENI
4	033212204	BAKTINENI SHARANYA
5	033212205	BANDHAM HEMANTH SAI RAM
6	033212206	BANDAPELly MAHESH
7	033212207	BANDELA JAYA SURYA
8	033212208	BANDELA LAVAN CHANDRA
9	033212209	BANDI SAI SVANI
10	033212210	BANOTH NAGA MANI
11	033212211	BANOTH SAI KUMAR
12	033212212	BARAMPURAM YASHWANTH
13	033212213	BORRA RAMYA
14	033212214	BURAM JYOSHANA DEVI
15	033212215	CHENDU SAMPATH
16	033212216	CHINTHA NAVEEN
17	033212217	CHIRUMARRI UDAYA SAI
18	033212218	CHODISETTI MEGHANANJANI
19	033212219	DANUGURI SOWMYA
20	033212220	DASARI VENU BABU
21	033212221	DHOMMETI SAI RACHANA
22	033212222	GADDALA VENKATA SAI NATH
23	033212223	GUNJA MALLIKA
24	033212224	KARAM PRASANNA KUMARI
25	033212225	KARUPATI SRINU
26	033212226	KOPPISETTI VAMSHI
27	033212227	KUCHIPUDI SANDEEP
28	033212228	LAKHAVATH RAJESH
29	033212229	MADIRA MANJU BHARGAVI
30	033212230	MAHAMMAD EZAZAHMAD PERVEZ
31	033212231	MAMIDIKUDURU RAMA TULASI
32	033212232	MEDAGAM KIRAN KUMAR REDDY
33	033212233	MUTHEBOINA SRIDHAR
34	033212234	MUTHYALA SAI PODJITHA
35	033212235	NAGULA LAXMAN



76	033212236	PADIGELA RAJESH
77	033212237	PATHAN ALTHAF
78	033212238	PAYAM TRINESH
79	033212239	PILAKA SATEESH REDDY
80	033212240	PILAKA SANTOSH REDDY
81	033212241	PINGALI SAI KIRAN
82	033212242	PONAGANTI VIVEK
83	033212243	PINEM UDAY KIRAN
84	033212244	RAPAKA JOSHI MANOHAR
85	033212245	SANDA PRANEETH KUMAR
86	033212246	SIDI ANUSHA
87	033212247	SILIVERU JAHNAVI
88	033212248	SK AMEER SOHEL
89	033212249	SODI PAVANI
90	033212250	SODI SUNIL
91	033212251	SUTHARI PAVAN KALYAN
92	033212252	TELLAM SARAOKA
93	033212253	THEGALA ESWAR
94	033212254	THOTA DHANUNJAYA RAM
95	033212255	THUMMALA PRAVALLIKA
96	033212256	VAJJA VENKATA RAVI
97	033212257	VELPULA VINIL KUMAR
98	033212258	YARRAM VASU REDDY
99	033212259	YEDALI ROHITH
60	033212260	AKULA ALEKHYA
61	033212261	CHEEMALA BHANU PRAKASH
62	033212262	MOHAMMED SAHINGAJALA
63	033212263	VELAPULA ANIL KUMAR
64	033212264	GANGIREDDY VARUN REDDY
65	033212265	KAMMAMPATI SUNIL
66	033212266	MOTHUKURI SAI
67	033212267	NAGULA VANI
68	033212268	UYEKA NITHIN
69	033212269	BHUKYA ANUSH
70	033212270	G. RAJA KUMARI

## 2.2 Differential Equations

DSC-1B

BS:201

Theory: 5 credits and Tutorials: 0 credits  
 Theory: 5 hours /week and Tutorials: 1 hours /week

**Objective:** The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

**Outcome:** After learning the course the students will be equipped with the various tools to solve few types differential equations that arise in several branches of science.

## Unit- I

**Differential Equations of first order and first degree:** Introduction - Equations in which Variables are Separable - Homogeneous Differential Equations - Differential Equations Reducible to Homogeneous Form - Linear Differential Equations - Differential Equations Reducible to Linear Form - Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form  $\frac{dx}{p} = \frac{dy}{q} = \frac{dz}{r}$ .

## Unit- II

**Differential Equations first order but not of first degree:** Equations Solvable for  $p$  - Equations Solvable for  $y$  - Equations Solvable for  $x$  - Equations that do not contain  $x$  (or  $y$ ) - Equations Homogeneous in  $x$  and  $y$  - Equations of the First Degree in  $x$  and  $y$  - Clairaut's equation. **Applications of First Order Differential Equations :** Growth and Decay - Dynamics of Tumour Growth - Radioactivity and Carbon Dating - Compound Interest - Orthogonal Trajectories

## Unit- III

**Higher order Linear Differential Equations:** Solution of homogeneous linear differential equations with constant coefficients - Solution of non-homogeneous differential equations  $P(D)y = Q(x)$  with constant coefficients by means of polynomial operators when  $Q(x) = be^{ax}, b \sin ax/b \cos ax, bx^k, Ve^{ax}$  - Method of undetermined coefficients.

## Unit- IV

Method of variation of parameters - Linear differential equations with non constant coefficients - The Cauchy - Euler Equation - Legendre's Linear Equations - Miscellaneous Differential Equations. **Partial Differential Equations:** Formation and solution- Equations easily integrable - Linear equations of first order.

## Text:

- Zafar Ahsan, *Differential Equations and Their Applications*

## References:

- Frank Ayres Jr, *Theory and Problems of Differential Equations.*

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**Kakatiya University**  
**B.Sc. Mathematics, VI Semester**  
**VECTOR CALCULUS**

**DSE-1F/B**  
**BS:606**

**Theory: 3 credits and Practicals: 1 credits**  
**Theory: 3 hours/week and Practicals: 2 hours/week**

**Objective:** Concepts like gradient, divergence, curl and their physical relevance will be taught.

**Outcome:** Students realize the way vector calculus is used to address some of the problems of physics.

**UNIT- I**

Line Integrals: Introductory Example : Work done against a Force-Evaluation of Line Integrals Conservative Vector Fields

**UNIT- II**

Surface Integrals: Introductory Example : Flow Through a Pipe Evaluation of Surface Integrals. Volume Integrals: Evaluation of Volume integrals

**UNIT- III**

Gradient, Divergence and Curl: Partial differentiation and Taylor series in more than one variable. Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of the gradient.

**UNIT- IV**

Divergence of a vector field -Physical interpretation of divergence-Laplacian of a scalar field- Curl of a vector field-Physical interpretation of curl-Relation between curl and rotation-Curl and conservative vector fields.

**TEXT:** P.C. Matthews, *Vector Calculus*

**References:**

- G.B. Thomas and R.L. Finney, *Calculus*
- H. Anton, I. Bivens and S. Davis ; *Calculus*
- Smith and Minton, *Calculus*



Kakatiya University  
B.Sc. Mathematics, V Semester  
**LINEAR ALGEBRA**

OSC-1E  
18:503

Theory: 3 credits and Practicals: 1 credits  
Theory: 3 hours/week and Practicals: 2 hours/week

**Objective:** The students are exposed to various concepts like vector spaces, bases, dimension, Eigen values etc.

**Outcome:** After completion this course students appreciate its interdisciplinary nature.

**UNIT-I**

Vector Spaces : Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations -Linearly Independent Sets; Bases -Coordinate Systems

**UNIT-II**

The Dimension of a Vector Space, Rank-Change of Basis - Eigenvalues and Eigenvectors .

**UNIT-III**

The Characteristic Equation, Diagonalization -Eigenvectors and Linear Transformations -Complex Eigenvalues - Applications to Differential Equations .

**UNIT-IV**

Orthogonality and Least Squares : Inner Product, Length, and Orthogonality -Orthogonal Sets

**TEXT:** David C Lay, *Linear Algebra and its Applications 4e*  
**References:**

- S Lang, *Introduction to Linear Algebra*
- Gilbert Strang, *Linear Algebra and its Applications*
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence: *Linear Algebra*
- Kuldeep Singh; *Linear Algebra*
- Sheldon Axler; *Linear Algebra Done Right*

## 2.2 Differential Equations

DSC-1B

BS:201

Theory: 5 credits and Tutorials: 0 credits  
Theory: 5 hours /week and Tutorials: 1 hours /week

**Objective:** The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

**Outcome:** After learning the course the students will be equipped with the various tools to solve few types differential equations that arise in several branches of science.

### Unit- I

**Differential Equations of first order and first degree:** Introduction - Equations in which Variables are Separable - Homogeneous Differential Equations - Differential Equations Reducible to Homogeneous Form - Linear Differential Equations - Differential Equations Reducible to Linear Form - Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form  $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ .

### Unit- II

**Differential Equations first order but not of first degree:** Equations Solvable for  $p$  - Equations Solvable for  $y$  - Equations Solvable for  $x$  - Equations that do not contain  $x$  (or  $y$ ) - Equations Homogeneous in  $x$  and  $y$  - Equations of the First Degree in  $x$  and  $y$  - Clairaut's equation. **Applications of First Order Differential Equations :** Growth and Decay - Dynamics of Tumour Growth - Radioactivity and Carbon Dating - Compound Interest - Orthogonal Trajectories

### Unit- III

**Higher order Linear Differential Equations:** Solution of homogeneous linear differential equations with constant coefficients - Solution of non-homogeneous differential equations  $P(D)y = Q(x)$  with constant coefficients by means of polynomial operators when  $Q(x) = be^{ax}, b \sin ax / b \cos ax, bx^k, V$  - Method of undetermined coefficients.

### Unit- IV

Method of variation of parameters - Linear differential equations with non constant coefficients - The Cauchy - Euler Equation - Legendre's Linear Equations - Miscellaneous Differential Equations. **Partial Differential Equations:** Formation and solution- Equations easily integrable - Linear equations of first order.

### Text:

- Zafar Ahsan, *Differential Equations and Their Applications*

### References:

- Frank Ayres Jr, *Theory and Problems of Differential Equations.*

*[Handwritten signatures and scribbles at the bottom of the page]*



Kakatiya University  
B.Sc. Mathematics, VI Semester  
VECTOR CALCULUS

OSE-1F/H  
BS:606

Theory: 3 credits and Practicals: 1 credits  
Theory: 3 hours/week and Practicals: 2 hours/week

Objective: Concepts like gradient, divergence, curl and their physical relevance will be taught.

Outcome: Students realize the way vector calculus is used to address some of the problems in physics.

### UNIT- I

Line Integrals: Introductory Example : Work done against a Force-Evaluation of Line Integrals of Conservative Vector Fields

### UNIT- II

Surface Integrals: Introductory Example : Flow Through a Pipe-Evaluation of Surface Integrals-Volume Integrals: Evaluation of Volume integrals

### UNIT- III

Gradient, Divergence and Curl: Partial differentiation and Taylor series in more than one variable-Gradient of a scalar field-Gradients, conservative fields and potentials-Physical applications of gradient.

### UNIT- IV

Divergence of a vector field -Physical interpretation of divergence-Laplacian of a scalar field-Curl of a vector field-Physical interpretation of curl-Relation between curl and rotation-Curl and conservative vector fields.

TEXT: P.C. Matthews, *Vector Calculus*

References:

- G.B. Thomas and R.L. Finney, *Calculus*
- H. Anton, I. Bivens and S. Davis ; *Calculus*
- Smith and Minton, *Calculus*



Kakatiya University  
B.Sc. Mathematics, V Semester  
**LINEAR ALGEBRA**

DSC-1E  
BS:503

Theory: 3 credits and Practicals: 1 credits  
Theory: 3 hours/week and Practicals: 2 hours/week

**Objective:** The students are exposed to various concepts like vector spaces, bases, dimension, Eigen values etc.

**Outcome:** After completion this course students appreciate its interdisciplinary nature.

**UNIT-I**

Vector Spaces : Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations -Linearly Independent Sets; Bases -Coordinate Systems

**UNIT-II**

The Dimension of a Vector Space, Rank-Change of Basis - Eigenvalues and Eigenvectors

**UNIT-III**

The Characteristic Equation, Diagonalization -Eigenvectors and Linear Transformations -Complex Eigenvalues - Applications to Differential Equations .

**UNIT-IV**

Orthogonality and Least Squares : Inner Product, Length, and Orthogonality -Orthogonal Sets.

**TEXT:** David C Lay, *Linear Algebra and its Applications 4e*

**References:**

- S Lang, *Introduction to Linear Algebra*
- Gilbert Strang, *Linear Algebra and its Applications*
- Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence; *Linear Algebra*
- Kuldeep Singh; *Linear Algebra*
- Sheldon Axler, *Linear Algebra Done Right*

Theory: 4 credits and Practical 1 credit  
 Theory: 4 hours/week and Practicals 2 hours/week

**Objective :** The course is aimed at exposing the students to the foundations of analysis which will be useful in understanding various physical phenomena.

**Outcome:** After the completion of the course students will be in a position to appreciate beauty and applicability of the course.

### Unit- I

Sequences- Limits of sequences- A Discussion about Proofs- Limit Theorems for Sequences  
 - Monotone Sequences and Cauchy Sequences

### Unit- II

Subsequences- Lim sup's and Lim inf's Series- Alternating Series and Integrals Tests.  
 Continuity : Continuous functions- Properties of Continuous functions.

### Unit - III

Sequence and Series of Functions: Power Series- Uniform Convergence – More on Uniform Convergence- Differentiation and Integration of Power Series (Theorems in this section without Proofs)

### Unit - IV

Integration : The Riemann Integral- Properties of Riemann Integral- Fundamental Theorem of Calculus.

**Text :** Kenneth A Ross, Elementary Analysis- The Theory of Calculus

**References :**

SEMESTER-VI

20.16-17  
2019-20

(A) Numerical Analysis

(w.e.f. academic year 2019-20 batch onwards)

DSE-VI

Theory: 5 credits and Tutorials: 0 credits  
Theory: 5 hours /week and Tutorials: 1 hours /week

**Objective.** Students will be made to understand some methods of numerical analysis.  
**Outcome** Students realize the importance of the subject in solving some problems of algebra and calculus.

**Unit-I**

**Errors in Numerical Calculations** - Solutions of Equations in One Variable. The Bisection Method - The Iteration Method - The Method of False Position-Newton's Method - Muller's Method - solution of Systems of Nonlinear Equations.

**Unit-II**

**Interpolation and Polynomial Approximation** Interpolation - Finite Differences - Differences of Polynomials - Newton's formula for Interpolation - Gauss's central differences formulae - Stirling's and Bessel's formula - Lagrange's Interpolation Polynomial - Divided differences - Newton's General Interpolation formula - Inverse Interpolation.

**Unit-III**

**Curve Fitting:** Least Square Curve Fitting Fitting a Straight Line-Nonlinear Curve Fitting  
**Numerical Differentiation and Integration:** Numerical Differentiation - Numerical Integration: Trapezoidal Rule-Simpson's 1/3rd-Rule and Simpson's 3/8th-Rule - Boole's and Weddle's Rule - Newton's Cotes Integration Formulae

**Unit-IV**

**Numerical Solutions of Ordinary Differential Equations:** Taylor's Series Method - Picard's Method - Euler's Methods - Runge Kutta Methods

**Text:**

S.S Sastry, Introductory Methods of Numerical Analysis, PHI

**References:**

- 1] Richard L. Burden and J. Douglas Faires, Numerical Analysis (9e)
- 2] M K Jain, S R K Iyengar and R K Jain, Numerical Methods for Scientific and Engineering computation
- 3] B. Brade , A Friendly introduction to Numerical Analysis



2016-17

Programming in C Semester-I

Theory  
Practical

4 Hours/Week  
3 Hours/Week

4 credit  
1 credit

Unit - I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.  
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.  
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.  
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation- precedence and associativity, Type Conversions.

Unit - II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences.  
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch, Iterative Statements-while, for, do-while, Special Control Statement-goto, break, continue, return, exit.  
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

Unit - III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.  
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, **Dynamic Memory Allocation**.

Unit - IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures verses Unions, Enumeration Types.  
Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Text

Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References  
BOOKS

Ivor Horton, Beginning C  
Ashok Kamthane, Programming in C  
Herbert Schildt, The Complete Reference C  
Paul Deitel, Harvey Deitel, C How To Program  
Byron S. Gottfried, Theory and Problems of Programming with C  
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language  
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

2017-18

With Effect from the Academic Year 2019-2020

Programming in C Semester-I

Theory	4 Hours/Week	4 credit
Practical	3 Hours/Week	1 credit

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.  
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development  
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept  
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation—precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences  
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements—while, for, do-while; Special Control Statement—goto, break, continue, return, exit  
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion  
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

Unit – IV

User-defined Data Types: **Declaring a Structure (Union) and its members**, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types  
Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Text Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

References  
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Ashok Kamthane, Programming in C  
Herbert Schildt, The Complete Reference C  
Paul Deitel, Harvey Deitel, C How To Program  
Byron S. Gottfried, Theory and Problems of Programming with C  
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language  
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C



2018-19

With Effect from the Academic Year 2019-2020

## Programming in C Semester-I

Theory	4 Hours/Week	4 credit
Practical	3 Hours/Week	1 credit

### Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.  
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development  
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept  
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation—precedence and associativity, Type Conversions.

### Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences.  
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma-operator, conditional operator, switch; Iterative Statements—while, for, do-while; Special Control Statement—goto, break, continue, return, exit.  
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays.

### Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion.  
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

### Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types.  
Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

**Text:** Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2c)

### References

#### BOOKS

Ivor Horton, Beginning C  
Ashok Kamthane, Programming in C  
Herbert Schildt, The Complete Reference C  
Paul Deitel, Harvey Deitel, C How To Program  
Byron S. Gottfried, Theory and Problems of Programming with C  
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language  
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C



2019-20

With Effect from the Academic Year 2019-2020

### Programming in C Semester I

Theory	4 Hours/Week	4 credits
Practical	3 Hours/Week	1 credit

#### Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU  
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development  
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concepts  
Basis of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program  
Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation—precedence and associativity, Type Conversions.

#### Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences  
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch, Iterative Statements—while, for, do-while; Special Control Statement—goto, break, continue, return, exit.  
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays

#### Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion  
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation.

#### Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types  
Files: Introduction, Using Files in C, Working with Text Files, Working with Binary Files, Files of Records, Random Access to Files of Records, Other File Management Functions.

Text Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

#### References BOOKS

Ivor Horton, Beginning C  
Ashok Kamthane, Programming in C  
Herbert Schildt, The Complete Reference C  
Paul Deitel, Harvey Deitel, C How To Program  
Byron S. Gottfried, Theory and Problems of Programming with C  
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language  
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

2020-21

With Effect from the Academic Year 2019-2020

## Programming in C Semester - I

Theory	4 Hours/Week	4 credit
Practical	3 Hours/Week	1 credit

### Unit - I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU  
Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development  
Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept  
Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation-precedence and associativity, Type Conversions

### Unit - II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,  
Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements – while, for, do-while; Special Control Statement – goto, break, continue, return, exit  
Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h, Multidimensional Arrays

### Unit - III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Scope of Variables, Storage Classes, Inline Functions, and Recursion  
Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Pointers to Pointers, Array of Pointers, Pointer to Array, Dynamic Memory Allocation

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User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Array of Structures (Union), Structures versus Unions, Enumeration Types  
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**Text:** Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)

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Ivor Horton, Beginning C  
Ashok Kamthane, Programming in C  
Herbert Schildt, The Complete Reference C  
Paul Deitel, Harvey Deitel, C How To Program  
Byron S. Gottfried, Theory and Problems of Programming with C  
Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language  
B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

Project work on

Festivals of Adivasis

2020-2021

Name: Y. Sai Ram

Group: II B. Com

sub: ENGLISH

H.T. NO: 033202241





## Festivals in Koya's (Adivasis)

The Koya peoples are very different in the dressing style and speaking language and different cultures. The Koyas are two types they are (1)

- 1) ST Koya's and
- 2) Konda reddies

those Koyas are some culture and some activities and also festivals in same in the Koyas festivals are very different that is they are.

- 1) Bhumi Festival
- 2) Kothala Festival
- 3) vana bajanalu
- 4) Bodrai
- 5) Alupaku Festival
- 6) Animals Festival
- 7) Kudumula Festival
- 8) Muthyalamma Festival
- 10) potharaju Festival

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Bidar, Karnataka-507 111.  
Bh. Varadri Kothagudom 1<sup>st</sup> St.

## Bhumi Festival

This Festival is very important of the Koya's people and Koya's farmers. First all the villages people attached a group and the girls are due to Hall because in the hall put in kumbhara, pasupu and flowers. Sweet corn, caritt and meat put in the hall and it closed and next women's are participation in cultural activities first they singing songs and dancing with sing's a new songs in Koya. and played drums musical all peoples are prayers the next caritt are another Agriculture are more development.

## Kothada Festival

This is village Festival the god of methyadamma devatha this devatha is very powerfull and this festival on the day of festival all people cooking sammerice (payasam) and verify sweets and hats Hems and put in coconut and prayers series the here's cut the methyadamma temple and Goat's, sheeps etc...



## Varabojana (Picnic)

This Festival the peoples are wake up early and ready. All peoples attached early and ready. At a place all members first go to polimera devatha and prayers and next go to forest all families, sitting on a one tree and they are stay in one day that forest from morning to evening that all families are cooking verity verity sweets are Tiffin's the family meets that day on that day rain comes and people are playing, singing and dancing feels so happy.

## Bodrai

This is a culture in all village. that the Bodrai is saves the people in that village.

This festival



# Sammakka Saralamma Jatara

Sammakka Saralamma Jatara or medaram Jatara is a tribal festival of honouring the goddesses celebrated in the state of Telangana, India. The Jatara begins at medaram in Tadval mandal in Adilabad district. It commemorates the fight of a mother and daughter, Sammakka and Saralamma, with the reigning rulers against an unjust law. It is believed that after Kumba mela, the medaram jatara attracts the largest number of devotees in the country, an estimated billion people gathered in 2012. It is celebrated in medaram during the time the goddesses of the tribals is believed to visit them. medaram is a remote place in the etimagarani wildlife sanctuary, a part of Bandipuraranya, the largest surviving forest belt in the Deccan.

There are many legends about the miraculous powers about Sammakka. According to a tribal story, about 6-7 centuries ago that is in the 13th century, some tribal leaders who went for a hunting found a new born girl.

(Sammakka) enitling enormous list playing a midst tigers she was taken to Thikil habita-tion. the head of the tribe adopted her and brought up as a chief traicsho later became the savious of the tribals of the fasion in she was married to pagidickla Raju a tendetary tribal chief of Kakatigal who ruled the country of Andhra from warangal city between 1000 AD and 1380 AD) she was blessed with daughters and one son named sarakka Nagulama and Jampama respectively.

  
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KAKATIYA UNIVERSITY - WARANGAL - TELANGANA  
UNDER GRADUATE COURSES (UNDER CBCS 2021 - 2022 ONWARDS)  
B.SC. BOTANY III YEAR  
SEMESTER - V

PAPER - V:: (C) SEED TECHNOLOGY  
(DSE-1: ELECTIVE)

Theory: 4 Hours/Week;  
Practical 3 Hours/Week;

Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Credits: 1 Marks: 25

UNIT-I

1. Seed: Structure and types. Seed development in cultivated plants, seed quality concept, importance of genetic purity of seed. Hybrid seed production and Heterosis.
2. Cross pollination, Emasculation, role of pollinators and their management.
3. Collection and storage of pollen for artificial pollination.

UNIT-II

4. Seed germination: Internal and external factors affecting germination.
5. Physiological processes during seed germination; seed respiration, breakdown and mobilization of stored seed reserves.
6. Seed dormancy: Types, causes and methods of breaking dormancy. Role of Phytochrome.

UNIT-III

7. Cultural practices and harvesting of Seed: Isolation, Sowing, Cultural practices, harvesting and threshing of the following crops: a) Rice b) Cotton c) Sunflower
8. Seed treatment to control seed borne disease - General account
9. Seed testing- Procedures of seed testing, seed testing laboratories and importance of seed testing.

UNIT-IV

10. Seed viability, factors affecting seed viability and genetic erosion.
11. Seed storage: Long term and short term storage. Orthodox and recalcitrant seeds. Packing of seeds - Principles, practices, bagging and labelling.
12. Seed banks- National, International and Millennium seed banks. Seed certification- History, Seed certification agency, Indian millennium, general and specific seed certification standard.



**KAKATIYA UNIVERSITY - WARANGAL - TELANGANA**  
**UNDER GRADUATE COURSES (UNDER CBCS 2021 – 2022 ONWARDS)**  
**B.SC. BOTANY III YEAR**  
**SEMESTER – V**

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**PAPER – V: (B) ECONOMIC BOTANY**  
**(DSE-1: ELECTIVE)**

Theory: 4 Hours/Week; Credits: 4 Marks: 100 (Internal: 20; External: 80)  
Practical 3 Hours/Week; Credits: 1 Marks: 25

**UNIT - I**

Origin of Cultivated Plants: Major plants introduction, Crop domestication and examples of crops / varieties

1. Vegetables: Nutritional and Commercial values of root crops, leafy and fruit vegetables.
2. Millets: Nutrient significance of Sorghum, Finger millet, Pearl millet, Foxtail millet.
3. Cereals: Rice, Wheat and maize - Origin, morphology and uses.

**UNIT - II**

4. Legumes: General account, importance to man and ecosystem.
5. Fruits and nuts: Commercial and nutritional value of South Indian fruits. Cashew nut, Almond and Walnut.
6. Sugars & Starches: Morphology and processing of sugarcane, products and by-products of sugarcane industry. Potato – morphology, propagation & uses.
7. Spices: Listing of important spices, part used, economic importance with special reference to fennel, saffron, clove and black pepper

**UNIT - III**

8. Beverages: Tea, Coffee (morphology, processing & uses)
9. Edible oils & Fats: General description, extraction, uses and health implications of groundnut, sunflower, coconut, linseed, and mustard.
10. Essential Oils: General account, extraction methods, comparison with fatty oils & their uses.
11. Natural Rubber: Para-rubber - tapping, processing and uses.

**UNIT - IV**

12. Drug-yielding plants: Therapeutic and habit-forming drugs with special reference to *Cinchona*, *Digitalis*, *Papaver* and *Cannabis*.
13. Tobacco processing, uses and health hazards
14. Timber plants: General account with special reference to teak and pine
15. Fibres: Classification based on the origin of fibres, extraction methods and uses of Cotton and Jute.

## COMMUNICATION SKILLS

### SYLLABUS

1. **What Is My Name?** — *P. Sathyavathi*  
Paragraphs \* Listening for sounds, stress and intonation  
\* Greeting, taking leave and introducing oneself and others  
\* Nouns + Homonyms
2. **Pochamma's Goddess** — *Radha D'Souza*  
Essays + Listening for theme \* Making requests  
\* Pronouns + Homophones
3. **The Woodrose**—*Abhuri Chaya Devi*  
Descriptive essays \* Listening for theme  
\* Asking for the time and directions \* Articles + Homographs
4. **The Kitchen** — *Vimala*  
Narrative essays \* Listening for main ideas  
\* Inviting \* Adjectives + Synonyms
5. **Yanadi Kotadu** — *Sujatha Gidla*  
Expository essays \* Listening for main ideas  
+ Apologising + Kinds of verbs + Antonyms
6. **Adivasis** — *Kancha Ilaiah*  
Argumentative essays + Listening for details  
\* Interrupting \* Tenses \* Prefixes
7. **For Vegetarians Only** — *Sky Baaba*  
Formal letters + Listening for details  
+ Asking for and giving opinions \* Adverbs \* Suffixes
8. **Hunger**—*Jayanta Mahapatra*  
Emails + Listening for information  
+ Agreeing and disagreeing  
\* Declarative; interrogative, imperative and exclamatory sentences  
\* Compound words
9. **From Untouchable Spring** — *G. Kalyana Rao*  
Application letters and curricula vitae \* Listening for information - Suggesting  
and advising - Simple, compound and complex sentences,  
-Collocations

## Syllabus

Culture of the Adivasis  
in Various parts of Telangana.