

KAKATIYA UNIVERSITY - WARANGAL - TELANGANA

Under Graduate Courses (Under CBCS 2020 – 2021 onwards)

B.A. ECONOMICS I Year

SEMESTER – I

PAPER – I MICRO ECONOMICS

(Discipline Specific Course)

Theory: 5 Hours/Week; Credits: 5 Marks: 100 (Internal: 20; External: 80)

Module-I: Consumer Behaviour:

Cardinal Approach to Utility Analysis - Ordinal utility Analysis - Properties of Indifference curves - concept of budget line - equilibrium of consumer - price consumption curve - income consumption curve - derivation of demand curve with the help of Indifference Curves' Analysis - Concepts of price - income and substitution effects.

Module-II Production Analysis

Concept of Production Function - Linear and homogeneous production function - Short run and long run production function – Law of Variable Proportions - Laws of Returns to Scale - Properties of iso-product curves - concept of factor price line - analysis of least cost input combination - concepts of expansion path and economic region of production - Properties of Cobb-Douglas Production Function.

Module-III: Cost and Revenue Analysis

Cost concepts: Accounting, real, opportunity, explicit costs - Total cost- total fixed cost - total variable cost - average cost - average fixed cost - average variable cost - marginal cost and the relationship between average and marginal cost - derivation of long run average cost curve - Economies of scale: internal and external - Revenue concepts: total - average and marginal - relationship between Average revenue & marginal revenue and price elasticity of demand.

Module-IV: Analysis of Market Structure:

Concepts & Classification of Markets –Basic Features of Perfect Competition - Monopoly-Equilibrium of a monopolist – Concept of Price discrimination & degrees of price discrimination-Monopolistic competition – characteristics - concepts of product differentiation and selling cost - Equilibrium under Monopolistic competition – Oligopoly- characteristics of oligopoly – Price and output determination – Analysis of Kinked Demand Curve – Concept of Duopoly - Cournot's version of duopoly.

Module-V: Analysis of Business Firm and Profit

Characteristics of a business firm, objectives of business firm: profit maximization, sales revenue maximization, market share maximization, growth maximization. Profit concepts: Accounting and economic; break-even point and profit –volume analysis

References:

1. M L Seth : Micro Economics
2. M L Jhinguan: : Micro Economics
3. H L Ahuja: : Modern Micro Economics
4. Koutsainies; : Modern Micro Economics
5. Stonier and Hague : Micro Economics
6. Salvatore : Micro economics
7. Schaum Series : Micro economics
8. Pyndick : Micro economics
9. Gregory Mankiw : Principles of Micro Economics

TELANGANA STATE
B.A. (HISTORY) SYLLABUS
Semester - I
History of India (From Earliest Times to c.700 CE)
(BA-104) Discipline Specific Course - Paper - 1A
(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.

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) శకుంతలోపాఖ్యానం - నన్నయ
- 2) గోడగూచి కథ - పాల్కురికి సోమనాథుడు
- 3) సంవరణుడి తపస్సు-అద్దంకి గంగాధరుడు

Unit -II ఆధునిక కవిత్వం

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

Unit -III వచన కవిత్వం

రుద్రమదేవి (నవల) - ఒద్దిరాజు సోదరులు

Unit -IV భాషా భాగాలు-వ్యాకరణం

పర్యాయ పదాలు, నానార్థాలు, సంధులు, సమాసాలు, తెలుగు వాక్యం



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B.A Political Science
I st Semester
Paper - I
Understanding Political Theory

Unit- I Political Theory

- What is Political Theory, Evolution, Nature , Significance
- Debates on Political Theory
 - a) Normative b) Contemplative c) Explanatory

Unit-II What is Political?

- State: Theories of origin of the state, Divine, Social Contract, Evolution Theories
- Power and Authority
- Authoritative allocation of Values
- Sovereign state : Challenges

Unit- III Political Values and Theoretical Perspective

- Liberty :- A) Liberal B) Marxist C) Feminist
- Equality :- A) Liberal B) Marxist C) Feminist
- Justice :- A) Liberal B) Marxist C) Feminist

Unit-IV Political Ideologies

- Liberalism
- Nationalism
- Multiculturalism

Unit-V Political Institutions and Functions

- Legislature, Executive and Judiciary
- Political Parties, Pressure Groups, Media

Reading list : -

1. Rajeev Bhargava & Ashok Acharya , editions , Political Theory : An Introduction , Pearson ,2019
2. Sushila Ramaswamy, Political Theory : Ideas and Concept , PHI Learning Pvt , Ltd .2015
3. O.P. Gauba, An Introduction to Political Theory , Macmillan, 2019
4. Michael G. Roskin , Robert L. Cord, James A. Medeiros , Walter S. Jones , Political Science : An Introduction , Pearson ,2018
5. Hoveyda Abbas , Ranjay Kumar , Political Theory , Pearson ,2019
6. John Hottman , Paul Graham , Introduction to Political Ideologies , Pearson ,2014
7. A. Appadorai, (2000), *Substance of Politics*, Oxford University Press, New Delhi, India.
8. George H Sabine, Thomas L Thorson, (1973), A History of Political Theory, Oxford & IBH Publishing Co., New Delhi.
9. Heywood, Andrew, (2012) Political Ideologies: An Introduction, Palgrave Macmillan, UK.
10. Heywood, Andrew, (2013), Politics, Palgrave Macmillan (UK).
11. Leon P. Baradat, (2011), Political Ideologies, Routledge.
12. Michael Freeden, Lyman Tower Sargent, Marc Stears,(eds) (2013), The Oxford Handbook of Political Ideologies, Oxford University Press, UK.
13. Ernest Barker : Principles of Social and Political Theory (London , Oxford University Press 1951)
14. Norman P. Barry : An Introduction to Modern Political Theory (London Macmillan, 1989)
15. Richard Bellamy (ed) : Theories and Concepts of Politics (New York , Manchester University Press 1993.)
16. Anthoppny H. Birch : The Concepts and Theories of Modern Democracy (London , Routledge ,2001)
17. Martin Carnoy : The State and Political Theory (Princeton , Princeton University Press , 1984)

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

B.Com.
(GENERAL)
(CBCS)



FACULTY OF COMMERCE & BUSINESS MANAGEMENT
KAKATIYA UNIVERSITY
Vidyaranyaपुरi, Warangal

2019-2020

B.COM (GENERAL)

CBCS COURSE STRUCTURE

Sl.No.	Code	Course Title	HPW	Credits	Exam Hrs	Marks
(1)	(2)	(3)	(5)	(6)	(7)	(8)
I Year I Semester						
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	Environmental Science/ Basic Computer Skills	2	2		
4.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Foreign Trade	5	5	3 hrs	80U+20I
Total			25	25		
I Year II Semester						
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	Basic Computer Skills/ Environmental Science	2	2		
10.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Banking and Financial Services	5	5	3 hrs	80U+20I
Total			25	25		
II Year I Semester						
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	Principles of Insurance/ Foundation of Digital Marketing/ Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	Practice of Life Insurance/ Web Design & Analytics/ Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Financial Institutions and Markets	5	5	3 hrs	80U+20I
Total			25	25		

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Sl.No.	Code	Course Title	HPW	Credits	Exam Hrs	Marks
(1)	(2)	(3)	(5)	(6)	(7)	(8)
		II Year II Semester				
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	Practice of General Insurance/ Social Media Marketing Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	a) Regulation of Insurance Business/ b) Search Engine Optimization & Online Advertising c) Data Visualisation & Storytelling	2	2	1 ½ hrs	40U+10I
24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Corporate Accounting	5	5	3 hrs	80U+20I
		Total	25	25		
		1				
		III Year I Semester				
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	Business Economics	4	4	3 hrs	80U+20I
30.	DSE501	Cost Accounting/ Financial Planning & Performance/ Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	Computerized Accounting/ Financial Decision Making-I/ International Tax & Regulation	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
32.	DSE503	Auditing/ Advanced Corporate Accounting/ Financial Management	5	5	3 hrs	80U+20I
		Total	27/25	25		
		III Year II Semester				
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I +15V V
36.	DSE601	a) Cost Control and Management Accounting/ Financial control/ Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	Theory and Practice of GST/ Financial Decision Making-II / International Auditing	3T+4P/5	5	3 hrs	50T+35P + 15I/ 80U+20I
38.	DSE603	Accounting Standards/ Corporate Governance/ Investment management	5	5	3 hrs	80U+20I
		Total	29/27	25		
		GRAND TOTAL	156/152	150		

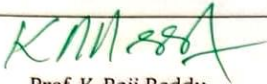
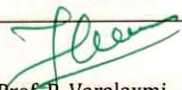
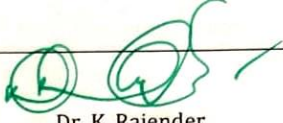






Faculty of Commerce & Business Management, Kakatiya University, Warangal.

ELS: English Language Skill; **SLS:** Second Language Skill; **AEC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T:** Theory; **P:** Practical; **I:** Internal Exam **U:** University Exam; **PR:** Project Report; **VV:** Viva- Voce Examination.

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
4	SEC	4	2	8
5	GE	1	4	4
6	Project Report	1	4	4
7	DSC	12	5	60
8	DSE	6	5	30
	TOTAL	38		150
	Commerce	24		106
CREDITS UNDER NON-CGPA		SS/NCC/Sports/Extra Curricular	Up to 6 (2 in each year)	
		Summer Internship	Up to 4 (2 in each after I & II years)	

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

Paper DSC 101: FINANCIAL ACCOUNTING – I

Objective: To acquire conceptual knowledge of basics of Accounting and preparation of final accounts of sole trader.

UNIT-I: ACCOUNTING PROCESS:

Financial Accounting: Introduction – Definition – Evolution – Functions - Advantages and Limitations – Users of Accounting Information - Branches of Accounting – Accounting Principles: Concepts and Conventions - Accounting Standards – Meaning – Importance – List of Accounting Standards issued by ASB - Accounting System - Types of Accounts – Accounting Cycle – Journal - Ledger and Trial Balance (Including problems)

UNIT-II: SUBSIDIARY BOOKS:

Meaning –Types: Purchases Book - Purchases Returns Book - Sales Book - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book: Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper (Including problems)

UNIT-III: BANK RECONCILIATION STATEMENT:

Meaning - Need - Reasons for differences between cash book and pass book balances – Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement (Including problems)

UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION:

Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure. Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit (Including problems)


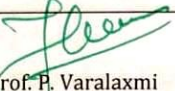
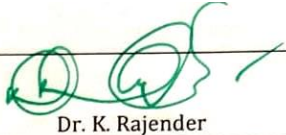




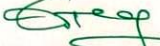
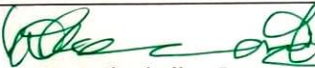
Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems)

UNIT-V: FINAL ACCOUNTS:

Final Accounts of Sole Trader: Meaning - Uses - Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy–I: Tulasian, Tata McGraw Hill Co.
5. Advanced Accountancy-I: S.N.Maheshwari& V.L.Maheswari, Vikas.
6. Financial Accounting: Jawahar Lal, Himalaya Publishing House.

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

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

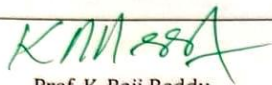
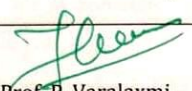

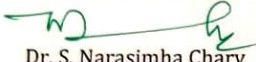
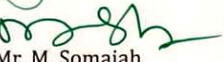


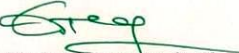
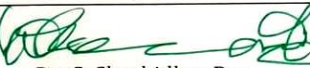
UNIT-IV: PLANNING AND ORGANISING: Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages - Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits - Weaknesses - Definition of Organizing - Organization - Process of Organizing - Principles of Organization - 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. NeeruVasith, Tax Mann Publications.

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Paper DSC 103: FOREIGN TRADE

Objective: To gain knowledge of India's foreign trade procedures policies, and international institutions.

UNIT-I: INTRODUCTION:

Foreign Trade: Meaning and Definition - Types - Documents used - Commercial Invoice - Bills of Lading / Airway Bill - Marine Insurance Policy and Certificate - Bills of Exchange - Consumer Invoice - Customs Invoice - Certificate of Origin - Inspection Certificate - Packing List

UNIT-II: BALANCE OF TRADE AND BALANCE OF PAYMENTS:

Introduction - Meaning - Components of BOT & BOP - Concept of Disequilibrium - Causes - Remedies for Correcting Balance of Payments in International Trade

UNIT-III: INDIAN TRADE POLICY:

Importance and its Implementation - Current Export Policy and Import Policy.

UNIT-IV: FOREIGN TRADE AND TRADE BLOCS:

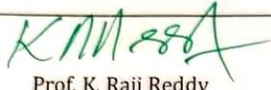
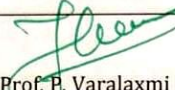
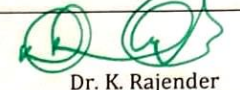



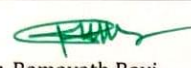
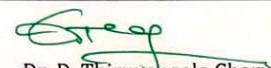

Growth - Significance of Foreign Trade - Merits - Demerits - Trade Blocs: Types - Preferential Trade Area, Free Trade Area, Customs Unions, Common Markets, Economic Unions, Monetary Unions, Customs and Monetary Unions, and Economic and Monetary Unions

UNIT-V: INTERNATIONAL ECONOMIC INSTITUTIONS:

IMF: Objectives - Functions - World Bank: Objectives - Functions - Subsidiaries of World Bank - IMF Vs. IBRD; New Development Bank (NDB) - Objective Functions - Features - Membership - Shareholding, Criticism, Asian Infrastructure Investment Bank (AIIB) - Objective Functions - Features - Membership - Shareholding, Criticism; Trans - Pacific Partnership (TPP) - Objective Functions - Features - Membership - Shareholding, Criticism; UNCTAD: Aims - Features; WTO - Aims - Features - Agreements

SUGGESTED READINGS:

1. International Marketing: Rathore & Jain, Himalaya Publishers.
2. International Marketing: Kushpat S. Jain & Rimi Mitra, Himalaya Publishers
3. Foreign Trade -Dr Srinivasa Narayana,Jyoti Mehra - PBP
4. International Economics: SSM Desai & Nirmal Bhalerao, Himalaya Publishers.
5. International Business Environment & Foreign Exchange Economies: Singh & S. Srivastava,
6. Foreign Trade and Foreign Exchange: O.P Agarwal & B.K.Chaudri, Himalaya Publishers
7. International Financial Markets & Foreign Exchange: Shashi K.Gupta & Praneet Rangi, Kalyani
8. International Economics: Theory & Practice: Paul R. Krugman, Pearson Publishers.

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

B.Com.
(Computer Applications)
(CBCS)



FACULTY OF COMMERCE & BUSINESS MANAGEMENT
KAKATIYA UNIVERSITY
Vidyaranyapuri, Warangal

2019-2020

B.COM (Computer Applications)

CBCS COURSE STRUCTURE

Sl.No.	Code	Course Title	HPW	Credits	Exam Hrs	Marks
(1)	(2)	(3)	(5)	(6)	(7)	(8)
I Year I Semester						
1.	ELS1	English (First Language)	4	4		
2.	SLS1	Second Language	4	4		
3.	AECC1	a)Environmental Science/ b)Basic Computer Skills	2	2	1 ½ hrs	40U+10I
4.	DSC101	Financial Accounting-I	5	5	3 hrs	80U+20I
5.	DSC102	Business Organization and Management	5	5	3 hrs	80U+20I
6.	DSC103	Fundamentals of Information Technology	3T+4P	5	1 ½ hrs	50T+35P+15I
Total			27	25		
I Year II Semester						
7.	ELS2	English (First Language)	4	4		
8.	SLS2	Second Language	4	4		
9.	AECC2	a)Basic Computer Skills/ b)Environmental Science	2	2	1 ½ hrs	40U+10I
10.	DSC201	Financial Accounting-II	5	5	3 hrs	80U+20I
11.	DSC202	Business Laws	5	5	3 hrs	80U+20I
12.	DSC203	Programming with C & C++	3T+4P	5	1 ½ hrs	50T+35P+15I
Total			27	25		
II Year I Semester						
13.	ELS3	English (First Language)	3	3		
14.	SLS3	Second Language	3	3		
15.	SEC1	a)Principles of Insurance/ b)Foundation of Digital Marketing/ c)Fundamentals of Business Analytics	2	2	1 ½ hrs	40U+10I
16.	SEC2	a)Practice of Life Insurance/ b)Web Design & Analytics/ c)Application of Business Analytics	2	2	1 ½ hrs	40U+10I
17.	DSC301	Advanced Accounting	5	5	3 hrs	80U+20I
18.	DSC302	Business Statistics-I	5	5	3 hrs	80U+20I
19.	DSC303	Relational Database Management System	3T+4P	5	1 ½ hrs	50T+35P+15I
Total			27	25		

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

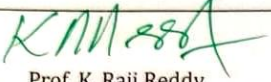
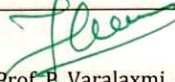
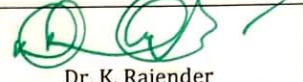

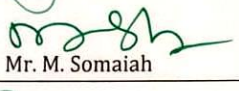

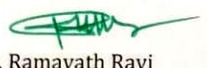
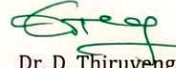
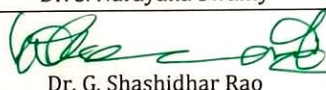
II Year II Semester						
20.	ELS4	English (First Language)	3	3		
21.	SLS4	Second Language	3	3		
22.	SEC3	a)Practice of General Insurance/ b)Social Media Marketing c)Business Intelligence	2	2	1 ½ hrs	40U+10I
23.	SEC4	a)Regulation of Insurance Business/ b)Search Engine Optimization & Online Advertising c)Data Visualisation & Storytelling	2	2	1 ½ hrs	40U+10I
24.	DSC401	Income Tax/Excel Foundation	5	5	3 hrs	80U+20I
25.	DSC402	Business Statistics-II	5	5	3 hrs	80U+20I
26.	DSC403	Web Technologies	3T+4P	5	1 ½ hrs	50T+35P+ 15I
		Total	27	25		
III Year I Semester						
27.	ELS5	English (First Language)	3	3		
28.	SLS5	Second Language	3	3		
29.	GE	a)Business Economics / b) Advanced Aspects of Income Tax	4	4	3 hrs	80U+20I
30.	DSE501	a) Cost Accounting/ b) Financial Planning & Performance/ c) International Financial Reporting-I	5	5	3 hrs	80U+20I
31.	DSE502	a) Computerized Accounting/ b) Financial Decision Making-I/ c) International Tax &Regulation	3T+4P/ 5	5	3 hrs	50T+35P+ 15I/ 80U+20I
32.	DSE503	a) Management Information Systems/ b) Ecommerce/c) Mobile Applications	3T+4P	5	1 ½ hrs	50T+35P+ 15I
		Total	29/27	25		
III Year II Semester						
33.	ELS6	English (First Language)	3	3		
34.	SLS6	Second Language	3	3		
35.	PR	Research Methodology and Project Report	2T+4R	4	1 ½ hrs	40U+10I 35R+15VV
36.	DSE601	a) Cost Control and Management Accounting/ b) Financial control/ c) International Financial Reporting-II	5	5	3 hrs	80U+20I
37.	DSE602	a) Theory and Practice of GST/ b) Financial Decision Making-II / c) International Auditing	3T+4P/ 5	5	3 hrs	50T+35P+ 15I/ 80U+20I
38.	DSE603	a) Multimedia Systems/ b) Cyber Security/c) Data Analytics	3T+4P	5	1 ½ hrs	50T+35P+ 15I
		Total	31/29	25		
		GRAND TOTAL	168/164	150		

ELS: English Language Skill; **SLS:** Second Language Skill; **AEC:** Ability Enhancement Compulsory Course; **SEC:** Skill Enhancement Course; **DSC:** Discipline Specific Course; **DSE:** Discipline Specific Elective; **GE:** Generic Elective; **T:** Theory; **P:** Practical; **I:** Internal Exam **U:** University Exam; **PR:** Project Report; **VV:** Viva- Voce Examination.

Note: If a student should opt for "a" in SEC in III semester, the student has to opt for "a" only in IV semester and so is the case with "b" and "c". In the case of DSE also the rule applies.

SUMMARY OF CREDITS

Sl. No.	Course Category	No. of Courses	Credits Per Course	Credits
1	English Language	6	4/3	20
2	Second Language	6	4/3	20
3	AECC	2	2	4
4	SEC	4	2	8
5	GE	1	4	4
6	Project Report	1	4	4
7	DSC	12	5	60
8	DSE	6	5	30
	TOTAL	40		150
	Commerce	24		106
CREDITS UNDER NON-CGPA		NSS/NCC/Sports/ Extra Curricular	Up to 6 (2 in each year)	
		Summer Internship	Up to 4 (2 in each after I & II years)	

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Paper DSC 101: FINANCIAL ACCOUNTING – I

Objective: To acquire conceptual knowledge of basics of Accounting and preparation of final accounts of sole trader.

UNIT-I: ACCOUNTING PROCESS:

Financial Accounting: Introduction – Definition – Evolution – Functions - Advantages and Limitations – Users of Accounting Information - Branches of Accounting – Accounting Principles: Concepts and Conventions - Accounting Standards – Meaning – Importance – List of Accounting Standards issued by ASB - Accounting System - Types of Accounts – Accounting Cycle – Journal - Ledger and Trial Balance (Including problems)

UNIT-II: SUBSIDIARY BOOKS:

Meaning –Types: Purchases Book - Purchases Returns Book - Sales Book - Sales Returns Book - Bills Receivable Book - Bills Payable Book – Cash Book: Single Column, Two Column, Three Column and Petty Cash Book - Journal Proper (Including problems)

UNIT-III: BANK RECONCILIATION STATEMENT:

Meaning - Need - Reasons for differences between cash book and pass book balances – Favourable and over draft balances – Ascertainment of correct cash book balance (Amended Cash Book) - Preparation of Bank Reconciliation Statement (Including problems)

UNIT-IV: RECTIFICATION OF ERRORS AND DEPRECIATION:

Capital and Revenue Expenditure – Capital and Revenue Receipts: Meaning and Differences - Differed Revenue Expenditure. Errors and their Rectification: Types of Errors - Suspense Account – Effect of Errors on Profit (Including problems)

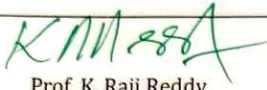
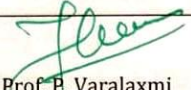
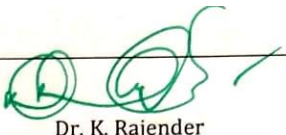



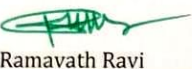
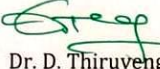
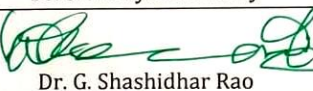
Depreciation (AS-6): Meaning – Causes – Difference between Depreciation, Amortization and Depletion - Objectives of providing for depreciation – Factors affecting depreciation – Accounting Treatment – Methods of depreciation: Straight Line Method - Diminishing Balance Method (Including problems)

UNIT-V: FINAL ACCOUNTS:

Final Accounts of Sole Trader: Meaning - Uses - Preparation of Manufacturing, Trading and Profit & Loss Account and Balance Sheet – Adjustments – Closing Entries (Including problems)

SUGGESTED READINGS:

1. Accountancy-I: Haneef and Mukherjee, Tata McGraw Hill Company.
2. Principles & Practice of Accounting: R.L.Gupta&V.K.Gupta, Sultan Chand.
3. Accountancy-I: S.P. Jain & K.L Narang, Kalyani Publishers.
4. Accountancy-I: Tulasian, Tata McGraw Hill Co.
5. Advanced Accountancy-I: S.N.Maheshwari& V.L.Maheswari, Vikas.
6. Financial Accounting: Jawahar Lal, Himalaya Publishing House.

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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

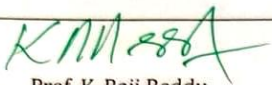
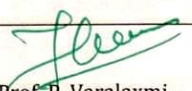

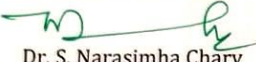



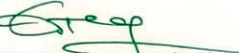
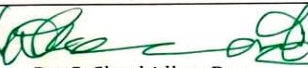
UNIT-IV: PLANNING AND ORGANISING: Meaning - Definition - Characteristics - Types of Plans - Advantages and Disadvantages - Approaches to Planning - Management by Objectives (MBO) - Steps in MBO - Benefits - Weaknesses - Definition of Organizing - Organization - Process of Organizing - Principles of Organization - 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. NeeruVasith, Tax Mann Publications.

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Paper DSC 103: FUNDAMENTALS OF INFORMATION TECHNOLOGY

Hours Per Week: 6 (4T+2P)

Credits: 5

Exam Hours: 1 ½

Marks: 50U+35P+15I

Objective: To understand the basic concepts and terminology of information technology and to identify issues related to information security.

UNIT-I: INTRODUCTION TO COMPUTERS:

Introduction, Definition, Characteristics of computer, Evolution of Computer, Block Diagram of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer.

Role of I/O devices in a computer system. **Input Units:** Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, **Output Units:** Monitors and its types. Printers: Impact Printers and its types. Non-Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

UNIT -II: COMPUTER ARITHMETIC & STORAGE FUNDAMENTALS:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another.

Primary Vs Secondary Storage, Data storage & retrieval methods. **Primary Storage:** RAM ROM, PROM, EPROM, EEPROM. **Secondary Storage:** Magnetic Tapes, Magnetic Disks.

Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

UNIT-III: SOFTWARE:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs - Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

UNIT-IV: OPERATING SYSTEM:

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters.

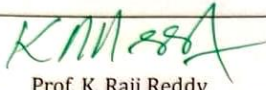
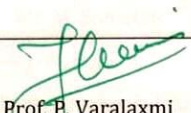
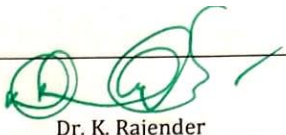



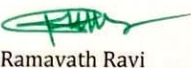
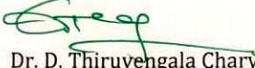
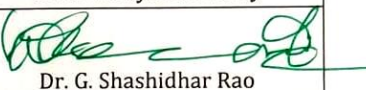
Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

UNIT-V: DATA COMMUNICATION:

Data, Communication, Basic Networking Devices, Communication Process, Data Transmission speed, Communication Types (modes), Data Transmission Media, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

SUGGESTED READINGS:

Computer Fundamentals : P.K.Sinha

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

KAKATIYA UNIVERSITY
B.SC I YEAR SEMESTER-I - CBCS
Ability Enhancement Compulsory Course (AECC)

ENVIRONMENTAL STUDIES

(2 hrs./week)

Credits – 2

UNIT - I : Ecosystem, Biodiversity & Natural Resources

(15 hrs.)

1. Definition, Scope & Importance of Environmental Studies.
2. Structure of Ecosystem – Abiotic & Biotic components Producers, Consumers, Decomposers, Food chains, Food webs, Ecological pyramids)
3. Function of an Ecosystem :Energy flow in the Ecosystem (Single channel energy flow model)
4. Definition of Biodiversity , Genetic,Species & Ecosystem diversity , Hot-spots of Biodiversity, Threats to Biodiversity , Conservation of Biodiversity (Insitu & Exsitu)
5. Renewable & Non – renewable resources, Brief account of Forest , Mineral & Energy (Solar Energy & Geothermal Energy) resources
6. Water Conservation , Rain water harvesting & Watershed management.

UNIT – II: Environmental Pollution , Global Issues & Legislation

(15 hrs.)

1. Causes, Effects & Control measures of Air Pollution, Water Pollution
2. Solid Waste Management
3. Global Warming & Ozone layer depletion.
4. Ill – effects of Fire- works
5. Disaster management – floods, earthquakes & cyclones
6. Environmental legislation :-
(a) Wild life Protection Act (b) Forest Act (c) Water Act (d) Air Act
7. Human Rights
8. Women and Child welfare
9. Role of Information technology in environment and human health

❖ **Field Study:**

(5 hours)

- Pond Ecosystem
- Forest Ecosystem

REFERENCES:

- Environmental Studies - from crisis to cure – by R. Rajagopalan (Third edition) Oxford University Press.
- Text book of Environmental Studies for undergraduate courses (second edition) by Erach Bharucha
- A text book of Environmental Studies by Dr.D.K.Asthana and Dr. Meera Asthana

Dr. G. SHAMITHA
Chairperson
Board of Studies
Department of Zoology & Sericulture Unit
KAKATIYA UNIVERSITY - WGL-506009 (T.S)

SEMESTER-I

2.1 Differential and Integral Calculus

DSC-1A

BS:101

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

Partial Differentiation: 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.

Unit- II

Theorem on Total Differentials - Composite Functions - Differentiation of Composite Functions - Implicit Functions - Equality of $f_{xy}(a, b)$ and $f_{yz}(a, b)$ - Taylor's theorem for a function of two Variables - Maxima and Minima of functions of two variables - Lagrange's Method of undetermined multipliers.

Unit- III

Curvature and Evolutes: Introduction - Definition of Curvature - Radius 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: Evolutes and Involutes - Properties of the evolute.

Envelopes: One Parameter Family of Curves - Consider the family of straight lines - Definition - Determination of Envelope.

Unit- IV

Lengths of Plane Curves: Introduction - Expression for the lengths of curves $y = f(x)$ - Expressions for the length of arcs $x = f(y)$; $x = f(t)$, $y = \varphi(t)$; $r = f(\theta)$

Volumes and Surfaces of Revolution: Introduction - Expression for the volume obtained by revolving about either axis - Expression for the volume obtained by revolving about any line - Area of the surface of the frustum of a cone - Expression for the surface of revolution - Pappus Theorems - Surface of revolution.

Text:

- Shanti Narayan, P.K. Mittal *Differential Calculus*, S.CHAND, NEW DELHI
- Shanti Narayan *Integral Calculus*, S.CHAND, NEW DELHI

References:

- William Anthony Granville, Percy F Smith and William Raymond Longley; *Elements of the differential and integral calculus*
 - Joseph Edwards , *Differential calculus for beginners*
 - Smith and Minton, *Calculus*
 - Elis Pine, *How to Enjoy Calculus*
 - Hari Kishan, *Differential Calculus*
-

Handwritten signatures in blue ink, including names like "R. Pine", "Joseph Edwards", "William Raymond Longley", and "Hari Kishan".

B.Sc I Yr CHEMISTRY
SEMESTER WISE SYLLABUS
SEMESTER I
Paper - I
Chemistry - I

Unit-I (Inorganic Chemistry)

15 h (1 hr/week)

S1- I-1. Chemical Bonding

8 h

Ionic solids- lattice and solvation energy, solubility of ionic solids, Fajan's rule, polarity and polarizability of ions. VSPER Theory - Common hybridization- sp , sp^2 , sp^3 , sp^3d , sp^3d^2 and sp^3d^3 , shapes of molecules. Molecular orbital theory: Shapes and sign convention of atomic orbitals. Modes of bonds. Criteria for orbital overlap. LCAO concept. π and σ overlapping. Concept of Types of molecular orbitals- bonding, antibonding and non bonding. MOED of homonuclear diatomics - H_2 , N_2 , O_2^- , O_2^{2-} , F_2 (unhybridized diagrams only) and heteronuclear diatomics CO , CN^- , NO , NO^+ and HF . Bond order, stability and magnetic properties.

S1-I-2. p-Block Elements 1

7 h

Group-13: Structure of diborane and higher Boranes (B_4H_{10} and B_5H_9), Boron nitrogen compounds ($B_3N_3H_6$ and BN), Lewis acid nature of BX_3 .
Group - 14: Carbides-Classification - ionic, covalent, interstitial - Structures and reactivity. Industrial applications. Silicones - Classification - straight chain, cyclic and cross-linked.
Group - 15: Nitrides - Classification - ionic, covalent and interstitial. Reactivity - hydrolysis. Reactions of hydrazine, hydroxyl amine, phosphazenes.

Unit - II (Organic Chemistry)

15h(1 hr/week)

S1-O-1: Structural Theory in Organic Chemistry

5 h

Bond polarization: Factors influencing the polarization of covalent bonds, electro negativity - inductive effect. Application of inductive effect (a) Basicity of amines (b) Acidity of carboxylic acids (c) Stability of carbonium ions. Resonance - Mesomeric effect, application to (a) acidity of phenol. (b) acidity of carboxylic acids and basicity of anilines. Stability of carbo cations, carbanions and free radicals. Hyper conjugation and its application to stability of carbonium ions, free radicals and alkenes.

S1-O-2: Acyclic Hydrocarbons

6 h

Alkanes- Methods of preparation: From Grignard reagent, Kolbe synthesis. Chemical reactivity - inert nature, free radical substitution, Halogenation example- reactivity, selectivity and orientation.

Alkenes - Preparation of alkenes (with mechanism) (a) by dehydration of alcohols (b) dehydrohalogenation of alkyl halides (c) by dehalogenation of 1,2 dihalides, Zaitsev's rule. Properties: Anti-addition of halogen and its mechanism. Addition of HX , Markonikov's rule, addition of H_2O , HOX , H_2SO_4 with mechanism and addition of HBr in the presence of peroxide (anti - Markonikov's addition). Oxidation (cis - additions) - hydroxylation by $KMnO_4$, OsO_4 ,

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anti addition- peracids (via epoxidation), hydroboration, ozonolysis – location of double bond. Dienes – Types of dienes, reactions of conjugated dienes – 1,2 and 1,4 addition of HBr to 1,3 – butadiene and Diels – Alder reaction.

Alkynes– Preparation by dehydrohalogenation of vicinal dihalides, dehalogenation of tetrahalides. Physical Properties: Chemical reactivity – electrophilic addition of X_2 , HX, H_2O (tautomerism), Oxidation (formation of enediol, 1,2 diones and carboxylic acids) and reduction (Metal-ammonia reduction, catalytic hydrogenation).

Aromatic Hydrocarbons

4h

Introduction to aromaticity: Huckel's rule – Benzene, Naphthalene and Anthracene. Reactions - General mechanism of electrophilic substitution, mechanism of nitration, sulphonation and halogenation, Friedel Craft's alkylation and acylation. Orientation of aromatic substitution - Definition of ortho, para, and meta directing groups. Ring activating and deactivating groups with examples. Orientation – (i) activating groups: Amino, methoxy and alkyl groups. (ii) Deactivating groups - nitro, nitrile, carbonyl, carboxylic acid, sulphonic acid and halo groups.

Unit – III (Physical Chemistry)

15h(1 hr/week)

S1-P-1: Atomic structure and elementary quantum mechanics

3 h

Black body radiation, heat capacities of solids, Rayleigh Jeans law, Planck's radiation law, photoelectric effect, Limitations of classical mechanics, Compton effect, de Broglie's hypothesis. Heisenberg's uncertainty principle.

S1-P-2: Gaseous State

5 h

Deviation of real gases from ideal behavior. van der Waals equation of state. Critical phenomenon. PV isotherms of real gases, continuity of state. Andrew's isotherms of CO_2 . The van der Waal's equation and critical state. Derivation of relationship between critical constants and van der Waal's constants. The law of corresponding states, reduced equation of states. Joule Thomson effect and inversion temperature of a gas. Liquifaction of gases: i) Linde's method based on Joule Thomson effect ii) Claude's method based on adiabatic expansion of a gas.

S1-P-3: Liquid State and Solutions

4h

Liquid State

Intermolecular forces, structure of liquids (qualitative description). Structural differences between solids, liquids and gases. Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only).

Solutions

3h

Liquid - liquid mixtures, ideal liquid mixtures, Raoult's and Henry's laws. Non ideal systems. Azeotropes: HCl- H_2O and $C_2H_5OH - H_2O$ systems. Fractional distillation. Partially miscible liquids: Phenol – Water, Trimethyl amine – Water and Nicotine – Water systems.

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R. D. Sharma
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Unit - IV (General Chemistry)

15h(1 hr/week)

S1-G-1. General Principles of Inorganic Qualitative Analysis

6 h

Anion analysis: Theory of sodium carbonate extract, classification and reactions of anions- CO_3^{2-} , Cl^- , Br^- , SO_4^{2-} , PO_4^{3-} , BO_3^{3-} , CH_3COO^- , NO_3^- . Interfering ions. Cation Analysis: Principles involved - Solubility product, common ion effect, general discussion for the separation and identification of group I individual cations (Hg_2^{2+} , Ag^+ , Pb^{2+}) with flow chart and chemical equations. Principle involved in separation of group II & IV cations. General discussion for the separation and identification of group II (Hg^{2+} , Pb^{2+} , Bi^{3+} , Cd^{2+} , Sb^{3+}), III (Al^{3+} , Fe^{3+}), IV (Mn^{2+} , Zn^{2+}) individual cations with flow chart and chemical equations. General discussion for the separation and identification of group V individual cations (Ba^{2+} , Sr^{2+} , Ca^{2+}) with flow chart and chemical equations. Theory of flame test. Identification of Group VI cations (Mg^{2+} , NH_4^+).

S1-G-2. Isomerism

5h

Isomerism: Definition of isomers. Classification of isomers: Constitutional and Stereoisomers - definition and examples. Constitutional isomers: chain, functional and positional isomers. Stereoisomers: enantiomers and diastereomers - definitions and examples. Representation of stereoisomers - Wedge, Fischer projection, Sawhorse, Newmann formulae.

Conformational analysis : Classification of stereoisomers based on energy. Definition and examples Conformational and configurational isomers. Conformational analysis of ethane, n-butane, 1,2-dichloroethane, 2-chloroethanol. Cyclic compounds: Baeyer's strain theory, Conformational analysis of cyclohexane

Cis-trans isomerism: E-Z-Nomenclature

S1-G-3: Solid state Chemistry

4 h

Laws of Crystallography: (i) Law of Constancy of interfacial angles (ii) Law of Symmetry-Symmetry elements in crystals (iii) Law of rationality of indices. Definition of space lattice, unit cell. Bravais Lattices and Seven Crystal systems (a brief review). X-ray diffraction by crystals; Derivation of Bragg's equation. Determination of structure of NaCl, KCl and CsCl (Bragg's method and Powder method).

References

General reference: B.Sc I Year Chemistry : Semester I, Telugu Academy publication, Hyd
Unit- I

1. Principles of Inorganic Chemistry by Puri, Sharma and Kalia Vishal Publications 1996.
2. Concise Inorganic Chemistry by J.D. Lee 3rd edn.
3. Basic Inorganic Chemistry by F.A.Cotton, G.Wilkinson and Paul.L. Gaus 3rd edn Wiley Publishers 2001. Chem.

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5. Inorganic Chemistry Principles of structure and reactivity by James E. Huhey, E.A. Keiter and R.L. Keiter 4th edn.
6. Chemistry of the elements by N.N. Greenwood and A. Earnshaw Pergamon Press 1989.
7. Inorganic Chemistry by Shriver and Atkins 3rd edn Oxford Press 1999.
9. Textbook of Inorganic Chemistry by R Gopalan.

Unit- II

1. Organic Chemistry by Morrison and Boyd.
2. Organic Chemistry by Graham Solomons.
3. Organic Chemistry by Bruice Yuranis Powla.
4. Organic Chemistry by L. G. Wade Jr.
5. Organic Chemistry by M. Jones, Jr
6. Organic Chemistry by John McMurry.
7. Organic Chemistry by Soni.
8. General Organic chemistry by Sachin Kumar Ghosh.
9. Organic Chemistry by C N pillai

Unit III

1. Principles of physical chemistry by Prutton and Marron.
2. Text Book of Physical Chemistry by Soni and Dharmahara..
3. Text Book of Physical Chemistry by Puri and Sharma.
4. Text Book of Physical Chemistry by K. L. Kapoor.
5. Physical Chemistry through problems by S.K. Dogra.
6. Text Book of Physical Chemistry by R.P. Verma.
7. Elements of Physical Chemistry by Lewis Glasstone.

Unit IV

1. Qualitative analysis by Welcher and Hahn.
2. Vogel's Qualitative Inorganic Analysis by Svehla.
3. Text Book of Organic Chemistry by Morrison And Boyd.
4. Text Book of Organic Chemistry by Graham Solomons.
5. Text Book of Organic Chemistry by Bruice Yuranis Powla.
6. Text Book of Organic Chemistry by Soni.
7. Text Book of Physical Chemistry by Soni And Dharmahara..
8. Text Book of Physical Chemistry by Puri And Sharma.
9. Text Book of Physical Chemistry by K. L. Kapoor.

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: CO_3^{2-} , SO_3^{2-} , S^{2-} , Cl^- , Br^- , I^- , CH_3COO^- , NO_3^- , PO_4^{3-} , BO_3^{3-} , SO_4^{2-} . .

Cations: Hg_2^{2+} , Ag^+ , Pb^{2+}

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

Al^{3+} , Cr^{3+} , Fe^{3+}

Zn^{2+} , Ni^{2+} , Co^{2+} , Mn^{2+}

Ba^{2+} , Sr^{2+} , Ca^{2+}

Mg^{2+} , NH_4^+

J. H. Thakur
26/06/19

G. S. P.
26/06/19

S. P. S.
26/6/19

M. D. S.
26/6/19

J. P. S.
26/6

**B.Sc. (Physics) Semester I-Theory Syllabus
Paper – I: Mechanics**

56 hrs

**(w. e. from academic year 2019-20)
(CBCS)**

Unit – I

1. Vector Analysis (14)

Scalar and vector fields, gradient of a scalar field and its physical significance. Divergence and curl of a vector field and related problems. Vector integration, line, surface and volume integrals. Stokes, Gauss and Greens theorems- simple applications.

Unit – II

2. Mechanics of Particles (07)

Laws of motion, motion of variable mass system, motion of a rocket, multi-stage rocket, conservation of energy and momentum. Collisions in two and three dimensions, concept of impact parameter, scattering cross-section.

3. Mechanics of rigid bodies (07)

Definition of Rigid body, rotational kinematic relations, equation of motion for a rotating body, angular momentum and inertial tensor. Euler's equation, precession of a top, Gyroscope.

Unit – III

4. Central forces (14)


Central forces – definition and examples, conservative nature of central forces, conservative force as a negative gradient of potential energy, equation of motion under a central force, gravitational potential and gravitational field, motion under inverse square law, derivation of Kepler's laws, Coriolis force and its expressions.

Unit – IV

5. Special theory of relativity (14)

Galilean relativity, absolute frames, Michelson-Morley experiment, Postulates of special theory of relativity. Lorentz transformation, time dilation, length contraction, addition of velocities, mass-energy relation. Concept of four vector formalism.

NOTE: Problems should be solved at the end of every chapter of all units.


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Textbooks

1. Berkeley Physics Course. Vol.1, **Mechanics** by C. Kittel, W. Knight, M.A. Ruderman - *Tata-McGraw hill Company Edition 2008.*
2. **Fundamentals of Physics.** Halliday/Resnick/Walker *Wiley India Edition 2007.*
3. **First Year Physics - Telugu Academy.**
4. **Introduction to Physics for Scientists and Engineers.** F.J. Ruche. *McGraw Hill.*
5. **Sears and Zemansky's University Physics** by Hugh D. Young, Roger A. Freedman *Pearson Education Eleventh Edition.*
6. **Theory of relativity - Resnick**

Reference Books

1. **Fundamentals of Physics** by Alan Giambattista et al *Tata-McGraw Hill Company Edition, 2008.*
2. **University Physics** by Young and Freeman, *Pearson Education, Edition 2005.*
3. **An introduction to Mechanics** by Daniel Kleppner & Robert Kolenkow. *The McGraw Hill Companies.*
4. **Mechanics.** Hans & Puri. *TMH Publications.*


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Question paper pattern

FIRST SEMESTER PRACTICALS

36 hrs
(3 hrs / week)

Practical Paper – I : Mechanics

1. Study of a compound pendulum determination of 'g' and 'k'.
2. Y' by uniform Bending
3. Y by Non-uniform Bending.
4. Moment of Inertia of a fly wheel.
5. Measurement of errors –simple Pendulum.
6. 'Rigidity moduli by torsion Pendulum.
7. Determine surface tension of a liquid through capillary rise method.
8. Determination of Surface Tension of a liquid by different methods.
9. Determine of Viscosity of a fluid.
10. Calculation of slope and intercept of a $Y = mX + C$ by theoretical method

Note: Minimum of eight experiments should be performed. Maximum of 15 students per batch and maximum of three students per experiment should be allotted in the regular practical class of three hours per week.

Text and reference books

1. D.P. Khandelwal, "A laboratory manual for undergraduate classes" (Vani Publishing House, New Delhi).
2. S.P. Singh, "Advanced Practical Physics" (PragatiPrakashan, Meerut).
3. "Practical Physics" R.K Shukla, AnchalSrivastava

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PROPOSED SYLLABUS (2019-20) for B.Sc Microbiology
Code: BS 104, DSC
B.Sc I year: I Semester Paper-I Theory

Paper Title: Introductory Microbiology

4HPW-credits: 4

1st Credit: Introduction

Microbiology: Definition and scope. History of microbiology: Contribution of Antony Van Leeuwenhoek, Edward Jenner, Louis Pasteur, Robert Koch, Iwanoswky, Beijernik, Winogradsky and Alexander Fleming.

Microbiological Techniques: Sterilization and Disinfection - Physical methods (dry and moist heat), filtration, radiation. Chemical methods (alcohols, phenols, aldehydes, fumigants)

2nd Credit: Microscopy and Staining methods

Principles and applications of Microscopy-Bright field, Dark field, Phase-contrast, Fluorescent and Electron microscopy (SEM and TEM). Ocular and stage micrometry.

Principles and types of stains-Simple stain, Differential stain, Negative stain.

Structural stain: spore, capsule, flagella

3rd Credit: Classification, Isolation and Identification of Microorganisms

Classification of living organisms; Haeckel, Whittaker and Carl Woese systems.

Differentiation of prokaryotes and eukaryotes. Classification and identification of bacteria as per the second edition of Bergey's manual of systematic bacteriology. Classification of protozoa, microalgae and fungi.

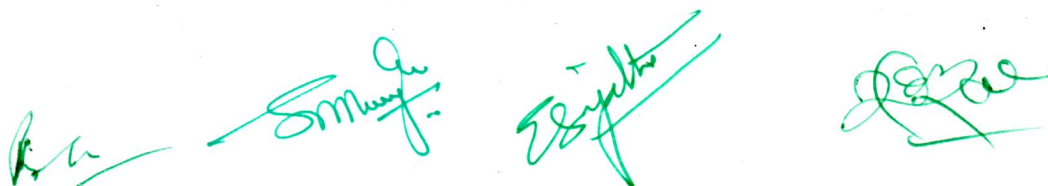
Growth media – synthetic, semi- synthetic, selective, enrichment and differential media. Isolation of Pure culture techniques - Enrichment culturing, Dilution plating, streak plate, spread plate, Micromanipulator. Preservation of Microbial cultures – Sub culturing, overlaying cultures with minerals oils, sand cultures, lyophilization, storage at low temperature.

4th Credit: Structure and General Characteristics of Microorganisms

General characteristics of prokaryotes: Bacteria, Archaea bacteria. Rickettsia, Mycoplasma, Cyanobacteria and Actinomycetes. Ultra structure of bacterial cell: cell wall, cell membrane, ribosomes, nucleoid, capsule, flagella, fimbriae, endospores & storage granules.

General characteristics of eukaryotes: protozoa, microalgae and fungi.

General characteristics and classification of virus. Morphology and structure of lambda bacteriophage (lytic and lysogeny), TMV and HIV.



References:

1. Michael J. Pelczar, Jr. E.C.S.Chan, Noel R. Krieg Microbiology Tata McGraw- Hill Publisher.
2. Prescott, M.J., Harley, J.P. and Klein Microbiology 5th Edition, WCB Mc GrawHill, New York.
3. Madigan, M.T., Martinkl, J.M and Parker, J. Broch Biology of Microorganism, 9th Edition, MacMillan Press, England.
4. Dube, R.C. and Maheshwari, D.K. General Microbiology S Chand, New Delhi.

I-Semester Practical Paper-I

Introductory Microbiology

2HPW-Credits-1

5th Credit: Practicals

1. Compound microscope and its handling.
2. Sterilization techniques: Autoclave, Hot air oven and filtration
3. Calibration of microscope by ocular , stage micrometer and measurement of bacterial and fungal spores.
4. Simple and differential staining (Gram staining), Spore staining, capsule staining and flagellar staining.
5. Microscopic observation of bacteria (Gram positive bacilli and cocci, Gram negative bacilli), cyanobacteria (Nostoc, Spirulina), fungi (Saccharomyces, Rhizopus, Aspergillus, Penicillium)
6. Bacterial motility: hanging drop method
7. Preparation of culture media: Solid/Liquid.
8. Isolation of bacteria by serial dilution and pure cultures methods (streak, spread and pour plate techniques)
9. Preservation of microbial cultures- Slant, Stab, mineral oil overlay and glycerol stocks
10. Bacterial biochemical identification-IMViC test, carbohydrate fermentation test

References:

1. Experiments in Microbiology by K.R. Aneja.
2. Gopal Reddy.M., Reddy. M.N., Sai Gopal, DVR and Mallaiah K.V. Laboratory Experiments in Microbiology.
3. Dubey, R.C. and Maheshwari, D.K. Practical Microbiology, S. Chand and Co New Delhi.
4. Alcamo, I.E. Laboratory Fundamentals of Microbiology. Jones and Bartlett Publishers, USA.

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

ANIMAL DIVERSITY – INVERTEBRATES
(Core Paper –I)

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

UNIT – I

1.1 Protozoa

- 1.1.1 General Characters and Classification of Protozoa up to Orders with examples
- 1.1.2 Type Study – *Elphidium*
- 1.1.3 Locomotion and Reproduction
- 1.1.4 Epidemiology of Protozoan diseases – Amoebiasis, Giardiasis, Leishmaniasis, Malaria

1.2 Porifera

- 1.2.1 General characters and Classification of Porifera up to Orders with examples
- 1.2.2 Type study - *Sycon*
- 1.2.3 Canal system in Sponges
- 1.2.4 Types of Cells and Spicules in Porifera.

UNIT – II

2.1 Cnidaria

- 2.1.1 General characters and Classification of Cnidaria up to classes with examples
- 2.1.2 Type study - *Obelia*
- 2.1.3 Polymorphism in Cnidarians with examples
- 2.1.4 Corals and Coral Reef formation

2.2 Helminthes


- 2.2.1 General characters and Classification of **Platyhelminthes** up to classes with examples
- 2.2.2 Type study - *Schistosoma*
- 2.2.3 General characters and Classification of **Nemathelminthes** up to classes with examples
- 2.2.4 Type study – *Dracanculus*; Parasitic Adaptations in Helminthes

UNIT– III

3.1 Annelida

- 3.1.1 General characters and Classification of Annelida up to classes with examples
- 3.1.2 Type study – *Hirudinaria granulosa*
- 3.1.3 Evolutionary significance of Coelome and Coelomoducts and Metamerism
- 3.1.4 Economic Importance of Annelida (Polychaeta, Oligochaeta and Hirudinea)


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3.2 Arthropoda

- 3.2.1 General characters; Classification of Arthropoda upto classes with examples
- 3.2.2 Type study – *Palaemon* (Prawn)
- 3.2.3 Crustacean Larvae; Insect metamorphosis; Useful and Harmful Insects
- 3.2.4 *Peripatus*- Structure and affinities

UNIT – IV

4.1 Mollusca

- 4.1.1 General characters; Classification of Mollusca upto classes with examples
- 4.1.2 Type study - *Pila* (Snail)
- 4.1.3 Pearl formation; Torsion and Detorsion in Gastropods
- 4.1.4 Molluscs as Bio-indicators, Vectors and Pests; Economic importance

4.2 Echinodermata

- 4.2.1 General characters and Classification of Echinodermata upto classes with examples
- 4.2.2 Type study- *Star Fish*
- 4.2.3 Echinoderm larvae and their evolutionary significance
- 4.2.4 Autotomy, Regeneration and Symmetry of Echinoderms

Suggested Readings:

1. L.H. Hyman 'The Invertebrates' Vol I, II and V. – M.C. Graw Hill Company Ltd.
2. Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. E.L. Jordan and P.S. Verma 'Invertebrate Zoology' S. Chand and Company.
4. R.D. Barnes 'Invertebrate Zoology' by: W.B. Saunders CO., 1986.
5. Barrington. E.J.W., 'Invertebrate structure and Function' by ELBS.
6. P.S. Dhama and J.K. Dhama. Invertebrate Zoology. S. Chand and Co. New Delhi.
7. Parker, T.J. and Haswell 'A text book of Zoology' by, W.A., Mac Millan Co. London.
8. Barnes, R.D. (1982). 'Invertebrate Zoology, V Edition'



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

ANIMAL DIVERSITY - INVERTEBRATES
(PRACTICAL)

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

- 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*
- 2. Demonstration of dissection / dissected / virtual dissection:**
Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst
- 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 abovementioned taxa. Different taxa/ topics may be given to different sets of students for this purpose.
- 5. Computer aided techniques should be adopted as per UGC guide lines.**

Suggested manuals:

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


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B.Sc. (CBCS) Geology - I Year
Semester - I : Theory Paper - I
Physical Geology and Crystallography

(4 hrs/week)

Credits-4
(60 hours)

Credit-1- Physical Geology - Earth

Definition of Geology – Basic assumptions of Geology – Its relationship with other sciences – Branches of Geology – Aim and Applications of Geology.

Earth: Its shape, size, and density – movement and their effects. Origin and age of Earth. Interior of the earth. Geological processes – exogenic and endogenic. Definition of weathering – Types of weathering of rocks – physical and chemical; Definition of erosion and denudation, agents of erosion, cycle of erosion; erosion, transportation and deposition;

Earth movements: Definition of diastrophism, epirogeny and orogeny – Mountains. Continental drift and plate tectonics.

Wind: Development of characteristic features by wind (arid cycle) erosion and deposition – pedestal rock-mushroom topography Inselberg – Ventifacts – locus – sand dunes.

Credit-2- Glaciers-Groundwater-Sea

Glaciers: Definition of a glacier – types of glaciers – development of typical land forms by glacial erosion and deposition – Cirque, U-shaped valley, Hanging valley, Monadnocks. Moraines, Drumlin, Eskers and Varves, Characteristic features of glaciated regions.

Groundwater: Storage, of ground water – porosity, permeability aquifer, water table, zone of saturation, artesian well, spring, geysers. Development of typical land form by erosion and deposition by groundwater (Karst topography) sinkhole, cavern, stalactites and stalagmites.

Seas: offshore profile – land forms of sea – marine deposits and coral reefs. Lacustrine (Lake) deposits.

Credit-3-Rivers-Earthquakes-Volcanoes

Rivers: Erosion, Transportation and deposition of river (fluvial) cycle in different stages – Development of typical land forms by river erosion and deposition. V-shaped valley. Waterfall, alluvial fans, Natural levees, Meander, Ox-bow lakes, flood plains, Peneplain and Deltas. Types of rivers.

Earthquakes: Causes and kinds of earthquake waves, and mode of propagation, intensity of earthquakes, Richters scale – seismograph and seismogram. Effects of earthquakes.

Volcanoes: Origin, products of Volcanoes.

Credit-4-Crystallography

Definition of a crystal – amorphous and crystalline states, Morphology of Crystals – face, edge, solid angle, interfacial angle.

Forms: Simple, combination, closed, and open forms.

Symmetry: Plane, axis, centre, crystallographic axes, Parameters, indices; crystallographic notation – parameter system of Weiss, index system of Miller.

Classification of Crystals into 7 Systems.

Morphological study of the following classes of symmetry.

- I. Cubic system – Normal class -Galena type
- II. Tetragonal system – Normal class -Zircon type
- III. Hexagonal system – Normal class - Beryl type
- IV. Trigonal system- Normal class - Calcite type
- V. Orthorhombic system – Normal class - Barytes type
- VI. Monoclinic system – Normal class - Gypsum type
- VII. Triclinic system – Normal class - Axinite type

Practicals:**Credit-5 – Crystallography-Geomorphology****45 hrs (Credits:1)
(3 hrs/week)**

1. Study of Symmetry Elements of Seven Crystal Systems – Orientation and description of crystals from different crystal systems
2. Study of important geomorphological models and charts

Text Books:

1. Holmes Principles of Physical Geology by D.L.Holmes (1978).
2. Physical Geology by A.N.Stracher (1981).
3. An introduction to Crystallography - R.C.Phillips.
4. Essential of Crystallography - E.Flint.
5. A text book of Mineralogy E.S.Dana and W.E.Ford.
6. Elements of Crystallography - F.A..Wade & R.B.Mattox.
7. Elements of Mineralogy - Rutlelys.

References:

1. Basic Physical Geology by E.S.Robinson (1982).
2. The evolving Earth: A text in Physical Geology by E.S.Sawkins et al., (1978).
3. Physical Geology by B.F.Mallory and D.N.Gargo (1979).



B.Sc., BOTANY
First Year, I -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) Stelar evolution, heterospory and seed habit in Pteridophytes.

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Shelva *Abhishek* *Almita* *BSR* *RPD*
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References:

- 1) Alexopolous, J. and W. M. Charles. 1988. *Introduction to Mycology*. Wiley Eastern, New Delhi.
- 2) Mckane, L. and K. Judy. 1996. *Microbiology – Essentials and Applications*. McGraw Hill, New York.
- 3) Pandey, B. P. 2001. *College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta*. S. Chand & Company Ltd, New Delhi.
- 4) Pandey, B. P. 2007. *Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics*. S. Chand & Company Ltd, New Delhi.
- 5) Sambamurthy, A. V. S. S. 2006. *A Textbook of Plant Pathology*. I. K. International Pvt. Ltd., New Delhi.
- 6) Sambamurthy, A. V. S. S. 2006. *A Textbook of Algae*. I. K. International Pvt. Ltd., New Delhi.
- 7) Sharma, O. P. 1992. *Textbook of Thallophyta*. McGraw Hill Publishing Co., New Delhi.
- 8) Thakur, A. K. and S. K. Bassi. 2008. *A Textbook of Botany: Diversity of Microbes and Cryptogams*. S. Chand & Company Ltd, New Delhi.
- 9) Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. *Botany for Degree Students: Algae*. S. Chand & Company Ltd, New Delhi.
- 10) Vashishta, B. R. 1990. *Botany for Degree Students: Fungi*, S. Chand & Company Ltd, New Delhi.
- 11) Dutta A.C. 2016. *Botany for Degree Students*. Oxford University Press.
- 12) Watson, E. V. 1974. *The structure and life of Bryophytes*, B. I. Publications, New Delhi.
- 13) Pandey, B. P. 2006. *College Botany, Vol. II: Pteridophyta, Gymnosperms and Palcobotany*. S. Chand & Company Ltd, New Delhi.
- 14) Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. *Botany - Pteridophyta (Vascular Cryptogams)*. S. Chand & Company Ltd, New Delhi.
- 15) Pandey, B. P. 2001. *College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta*. S. Chand & Company Ltd, New Delhi.
- 16) Pandey, B. P. 2007. *Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics*. S. Chand & Company Ltd, New Delhi.
- 17) Thakur, A. K. and S. K. Bassi. 2008. *A Textbook of Botany: Diversity of Microbes and Cryptogams*. S. Chand & Company Ltd, New Delhi.
- 18) Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. *Botany for Degree Students: Bryophyta*. S. Chand & Company Ltd, New Delhi.

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Name of
Signature
Received for
A. K.

Practical Syllabus

(45 hours)

1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
Algae: Oscillatoria, Nostoc, Volvox, Oedogonium, Chara, Ectocarpus and Polysiphonia.
Fungi: Albugo, Mucor, Saccharomyces, Penicillium, Puccinia and Cercospora
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products:
Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g. Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Bryophytes: Marchantia, Anthoceros and Polytrichum.
10. Study of Morphology (vegetative and reproductive structures) and anatomy of the following
Pteridophytes: Lycopodium, Equisetum and Marsilea.
11. Study of Anatomical features of Lycopodium stem, Equisetum stem and Marsilea petiole & rhizome by preparing double stained permanent mounts.

Practical Model Paper

Max. Marks: 25

Time : 3 hrs

1. Identify the given components 'A' & 'B' in the algal mixture .
Describe with neat labeled diagrams & give reasons for the classifications. 2 X 2 = 4M
2. Classify the given bacterial culture 'D' using Gram – staining technique. 3M
3. Take a thin transverse section of given diseased material 'E'.
Identify & describe the symptoms caused by the pathogen. 4M
4. Identify the given specimens 'F', 'G' & 'H' by giving reasons .
(Fungal-1, Bacteria-1 & Viral-1) 3 X 1 = 3M
5. Comment on the given slides 'I' & 'J' (Algae-1, Fungi-1) 2 X 2 = 4M
6. Identify the given specimen 'K' & slide 'L' (Bryophytes & Pteridophytes) 2 X 2 = 4M
7. Record 3M

[Handwritten signatures and marks]

3 | Page

KAKATIYA UNIVERSITY
U.G. Statistics (Under CBCS)
B.Sc. First Year, Semester-I
w.e.f: Academic Year: 2019-20
(With Mathematics Combination)

Paper-I: Descriptive Statistics and Probability

[4 HPW:: 4 Credits :: 100 Marks (External:80, Internal:20)]

Unit-I

Descriptive Statistics: Concept of primary and secondary data, Methods of collection and editing of primary data, Designing a questionnaire and a schedule, Sources and editing of secondary data, Classification and tabulation of data, Measures of central tendency (Arithmetic mean, median, mode, geometric mean and harmonic mean) with simple applications, Absolute and relative measures of dispersion (range, quartile deviation, mean deviation, standard deviation and variance) with simple applications, Importance of moments, central and non-central moments, their inter-relationships, Sheppard's correction for moments for grouped data, Measures of skewness based on quartiles and moments, kurtosis based on moments with real life examples.

Unit-II

Probability: Basic concepts of probability, deterministic and random experiments, trial, outcome, sample space, event, operations of events, mutually exclusive and exhaustive events, equally likely and favorable events with examples, Mathematical, Statistical and Axiomatic definitions of probability, their merits and demerits. Properties of probability based on axiomatic definition, Conditional probability and independence of events, Addition and multiplication theorems for 'n' events, Boole's inequality and Bayes' theorem, Problems on probability using counting methods and theorems.

Unit-III

Random Variables: Definition of random variable, discrete and continuous random variables, functions of random variables, probability mass function and probability density function with illustrations. Distribution function and its properties, Transformation of one-dimensional random variable (simple 1-1 functions only), Notion of bivariate random variable, bivariate distribution, statements of its properties, Joint, marginal and conditional distributions, Independence of random variables.

Unit-IV

Mathematical Expectation: Mathematical expectation of a function of a random variable, Raw and central moments, covariance using mathematical expectation with examples, Addition and multiplication theorems of expectation. Definitions of moment generating function (m.g.f), characteristic function (c.f), cumulant generating function (c.g.f), probability generating function (p.g.f) and statements of their properties with applications, Chebyshev's and Cauchy-Schwartz's inequalities and their applications.

List of reference books:

1. William Feller: Introduction to Probability theory and its applications, (Vol-I), Wiley.
2. V. K. Kapoor and S. C. Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
3. Goon A M, Gupta M K, Das Gupta B: Fundamentals of Statistics, (Vol-I), The World Press (Pvt) Ltd., Kolkata.
4. M. Jagan Mohan Rao and Papa Rao: A Text book of Statistics (Paper-I).
5. Sanjay Arora and Bansilal: New Mathematical Statistics, Satya Prakashan , New Delhi.
6. Hogg, Tanis, Rao: Probability and Statistical Inference, (7th edition), Pearson.
7. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC, PHI.
8. Gerald Keller: Applied Statistics with Microsoft Excel, Duxbury, Thomson Learning.
9. Levine, Stephen, Krehbiel, Berenson: Statistics for Managers using Microsoft Excel (4th edition), Pearson Publication.

KAKATIYA UNIVERSITY
U.G. Statistics (Under CBCS)
B.Sc. First Year, Semester-I
w.e.f: Academic Year: 2019-20
(With Mathematics Combination)

Practical-1
Descriptive Statistics and Probability
(3 HPW:: 1 Credit :: 50 Marks)

Part - 1 (Using calculator)

1. Graphical presentation of data (Histogram, frequency polygon, Ogives). s
2. Diagrammatic presentation of data (Bar and Pie).
3. Computation of non-central and central moments – Sheppard's corrections for grouped data.
4. Computation of coefficients of Skewness and Kurtosis – Karl Pearson's, Bowley's, β_1 and β_2 .

Part - 2 (Using MS-Excel)

1. Basics of Excel- data entry, editing and saving, establishing and copying formulae, built in Functions in excel, copy and paste and exporting to MS word document.
2. Graphical presentation of data (Histogram, frequency polygon, Ogives) using MS-Excel
3. Diagrammatic presentation of data (Bar and Pie) using MS-Excel
4. Computation of Measures of central tendency, dispersion, Coefficient of Variation and coefficients of Skewness, Kurtosis using MS-Excel.

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 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
CHAIRMAN
Board of Studies
Department of Computer Science
KAKATIYA UNIVERSITY
WARANGAL-506002 (T.S.)

With Effect from the Academic Year 2019-2020

C Lab Semester -I

Practical

3 Hours/Week


1 credit


- 1 Write a program to find the largest two (three) numbers using if and conditional operator.
- 2 Write a program to print the reverse of a given number.
- 3 Write a program to print the prime number from 2 to n where n is given by user.
- 4 Write a program to find the roots of a quadratic equation using switch statement.
- 5 Write a program to print a triangle of stars as follows (take number of lines from user):

```
      *
     ***
    *****
   ********
  **********
```
- 6 Write a program to find largest and smallest elements in a given list of numbers.
- 7 Write a program to find the product of two matrices..
- 8 Write a program to find the GCD of two numbers using iteration and recursion.
- 9 Write a program to illustrate use of storage classes.
- 10 Write a program to demonstrate the call by value and the call by reference concepts.
- 11 Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
- 12 Write a program to illustrate use of data type enum.
- 13 Write a program to demonstrate use of string functions string.h header file.
- 14 Write a program that opens a file and counts the number of characters in a file.
- 15 Write a program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
- 16 Write a program that opens an existing text file and copies it to a new text file with all lowercase letters changed to capital letters and all other characters unchanged.

Note

Write the Pseudo Code and draw Flow Chart for the above programs.
Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows 10.




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