



DANTULURI NARAYANA RAJU COLLEGE

(Autonomous)

BHIMAVARAM, W.G.DIST, ANDHRA PRADESH, INDIA, PIN- 534202

(Accredited at 'B' level by NAAC)

(Affiliated to Adikavi Nannaya University, Rajamahendravaram)

Academic council

As per the recommendations of BOS of various departments and after discussions in the academic council it is decided to introduced the following new courses from the academic year 2022-2023.

S. No	Title of the course	Course code	Academic year	Programmes
1.	Telugu bhasha swarupam	1313A-6	2022-2023	BA, B.com, B. Sc, B.voc
2.	Telugu rachanarethulu	1313A-7	2022-2023	BA, B.com, B. Sc, B.voc
3.	Lalitha Kalalu	1313B-6	2022-2023	BA, B.com, B. Sc, B.voc
4.	Jaapada Kalalu	1313B-7	2022-2023	BA, B.com, B. Sc, B.voc
5.	Madyamalaku Rachana	1313C-6	2022-2023	BA, B.com, B. Sc, B.voc
6.	Anuvaadham	1313C-7	2022-2023	BA, B.com, B. Sc, B.voc
7.	Telugu Bodhana Paddatulu	1313D-6	2022-2023	BA, B.com, B. Sc, B.voc
8.	Vachika abivrudi	1313D-7	2022-2023	BA, B.com, B. Sc, B.voc
9.	Numerical Methods	2314A-6	2022-2023	B.Sc. MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
10.	Mathematical Special Functions	2314A-7	2022-2023	B.Sc. MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
11.	Multiple Integrals and Applications of Vector Calculus	2314B-6	2022-2023	B. Sc .MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
12.	Integral Transforms with Applications	2314B-7	2022-2023	B.Sc. MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
13.	Partial Differential Equations and Fourier Series	2314C-6	2022-2023	B.Sc. MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
14.	Number Theory	2314C-3B	2022-2023	B.Sc. MPC, GMP, MPCs, MECs, SMP, MGCs, MSCs, MCCs,
15.	Optical Instruments and Optometry	2315A-6	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC
16.	Optical Imaging and Photography	2315A-7	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC
17.	Low Temperature Physics & Refrigeration	2315B-6	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC
18.	Solar Energy and Applications	2315B-7	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC
19.	Applications of Electricity & Electronics	2315C-6	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC
20.	Electronic Instrumentation	2418B-5B	2022-2023	B.Sc. MPC, GMP, MPCs, SMP, GPC

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21.	Operation Research-I	2317A-6	2022-2023	B.Sc. SMP
22.	Operation Research-II	2317A-7	2022-2023	B. Sc .SMP
23.	Statistical process and quality control practical	2317B-6	2022-2023	B. Sc .SMP
24.	Computational techniques and R-Programming	2317B-7	2022-2023	B.Sc. SMP
25.	Econometrics	2317C-6	2022-2023	B.Sc. SMP
26.	Regression Analysis	2317C-7	2022-2023	B.Sc SMP
27.	Synthetic Organic Chemistry	2316A-6	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
28.	Analysis Of Organic Compounds	2316A-7	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
29.	Analytical Methods In Chemistry-1	2316B-6	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
30.	Analytical Methods In Chemistry-2	2316B-7	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
31.	Industrial Chemistry-1	2316C-6	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
32.	Industrial Chemistry-2	2316C-7	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
33.	Environmental Chemistry	2316B-3B	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
34.	Green Chemistry And Nano Technology	2316D-7	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
35.	Analytical Methods In Chemistry	2316A-3B	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
36.	Cosmetics And Pharmaceutical Chemistry	0.0002316	2022-2023	B.Sc. BZC, ZCAT, B.voc, GPC, MPC, MCG, MBCCs, MCCs
37.	Vegetable crops-cultivation practices	2321B-6	2022-2023	B.Sc. BZC
38.	Vegetable Crops Post Harvest Practices	2321B-7	2022-2023	B.Sc. BZC
39.	Plant Propagation	2321A-6	2022-2023	B.Sc. BZC
40.	Seed technology	2321A-7	2022-2023	B.Sc. BZC
41.	Plant Tissue culture	2321C-6	2022-2023	B.Sc. BZC
42.	Mushroom cultivation	2321C-7	2022-2023	B.Sc. BZC
43.	Gardening and Land Scaping	2321D-6	2022-2023	B.Sc. BZC
44.	Agro forestry	2321D-7	2022-2023	B.Sc. BZC
45.	Sustainable aquaculture management	2322A-6	2022-2023	B.Sc. BZC, ZCAT, B.voc,
46.	Post harvesting technology in fish and fisheries	2322A-7	2022-2023	B.Sc. BZC, ZCAT, B.voc,

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47.	Live stock management-1(Biology of dairy animal)	2322B- 6	2022-2023	B.Sc. BZC, ZCAT, B.voc,
48.	Live stock management-2(Dairy production and management)	2322B-7	2022-2023	B.Sc. BZC, ZCAT, B.voc,
49.	Poultry management-1 (POULTRY FARMING)	2322C-6	2022-2023	B.Sc. BZC, ZCAT, B.voc,
50.	Poultry management-2 ((POULTRY PRODUCTION AND MANGEMENT)	2322C-7	2022-2023	B.Sc. BZC, ZCAT, B.voc,
51.	Seri culture -1 (BIOLOGY AND CULTIVATION OF MULBERRY)	2322D-6	2022-2023	B.Sc. BZC, ZCAT, B.voc,
52.	Seri-culture- 2 (BIOLOGY AND REARING OF SILKWORM)	2322D-7	2022-2023	B.Sc. BZC, ZCAT, B.voc,
53.	Inland and Marine Fisheries Aquaculture nutrition	2227-6	2022-2023	B.Sc. B.voc.
54.	Aquaculture Nutrition	2227-7	2022-2023	B.Sc. B.voc.
55.	Pathology in Aquaculture	2227-8	2022-2023	B.Sc. B.voc.
56.	Aquarium management and Ornamental fish culture	2327-9	2022-2023	B.Sc. B.voc.
57.	Post harvest technology of Fish and Fisheries	2327-10	2022-2023	B.Sc. B.voc.
58.	Soil and Water Quality Management	2327-11	2022-2023	B.Sc. B.voc.
59.	Fisherish Extension economic and marketing	2327-12	2022-2023	B.Sc. B.voc.
60.	Basics of Ground Water Geology, Mineral Exploration & Engineering Geology	2320A-6	2022-2023	B.Sc. GMP, GPC, MGCs, MCG
61.	Basics of Remote Sensing, GIS, & Environmental Geology	2320B-6	2022-2023	B.Sc. GMP, GPC, MGCs, MCG
62.	Remote Sensing & Gis	2320A-7	2022-2023	B.Sc. GMP, GPC, MGCs, MCG
63.	Mining Geology	2320B-7	2022-2023	B.Sc. GMP, GPC, MGCs, MCG
64.	Field Geology	2320C-7	2022-2023	B.Sc. GMP, GPC, MGCs, MCG
65.	Economic Geography	1310-3A	2022-2023	BA.GHT, GHP
66.	Industrial Geography	1310A-7	2022-2023	BA.GHT, GHP
67.	Environmental Geography	1310B-6	2022-2023	BA.GHT, GHP
68.	Disaster Management	1310B-3B	2022-2023	BA.GHT, GHP
69.	Tourism Geography	1310C-6	2022-2023	BA.GHT, GHP
70.	Resource Geography	1310C-7	2022-2023	BA.GHT, GHP
71.	Agriculture Geography	1310D-6	2022-2023	BA.GHT, GHP
72.	Remote sensing & GIS	2320A-7	2022-2023	BA.GHT, GHP

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73.	Modern Indian History and Culture (1764-1947 A. D)	1207-3	2022-2023	BA.HEP,GHT,GHP
74.	History and Culture of Andhra (from 1512 to 1956 AD)	1107-4	2022-2023	BA.HEP,GHT,GHP
75.	History of Modern World (From 15 th Century AD to 1945 AD)	1207-5	2022-2023	BA.HEP,GHT,GHP
76.	Archival Sources and Techniques	1107A-6	2022-2023	BA.HEP,GHT,GHP
77.	Techniques of History Writing	1107A-7	2022-2023	BA.HEP,GHT,GHP
78.	Tourism and Hospitality Services	1107B-6	2022-2023	BA.HEP,GHT,GHP
79.	Tourism Guidance and Operating skills	1107B-7	2022-2023	BA.HEP,GHT,GHP
80.	Journalistic Reporting and Editing Techniques	1107C-6	2022-2023	BA.HEP,GHT,GHP
81.	Evolution of Telugu Cinema and Script Writing	1107C-7	2022-2023	BA.HEP,GHT,GHP
82.	Modern Principles and Techniques of Archaeology	1107D-6	2022-2023	BA.HEP,GHT,GHP
83.	Museum Management	1107D-7	2022-2023	BA.HEP,GHT,GHP
84.	E-Governance	1309A-6	2022-2023	BA.HEP,SEP,GHP
85.	Local Administration	1309A-7	2022-2023	BA.HEP,SEP,GHP
86.	Legal Literacy Right Awareness	1309B-6	2022-2023	BA.HEP,SEP,GHP
87.	Office Management	1309B-7	2022-2023	BA.HEP,SEP,GHP
88.	Personnel Administration	1309C-6	2022-2023	BA.HEP,SEP,GHP
89.	Electoral Politics And Voting Behaviour	1309C-7	2022-2023	BA.HEP,SEP,GHP
90.	Legislative Procedures And Practice	1309D-6	2022-2023	BA.HEP,SEP,GHP
91.	Major Internship	1309D-7	2022-2023	BA.HEP,SEP,GHP
92.	Insurance Services	1308A-6	2022-2023	BA.HEP,SEP.
93.	Banking and Financial Services	1308A-7	2022-2023	BA.HEP,SEP.
94.	Rural Entrepreneurship and MSME's	1308B-6	2022-2023	BA.HEP,SEP.
95.	Farmer Producer Organization	1308B-7	2022-2023	BA.HEP,SEP.
96.	Urban Entrepreneurship and MSME's	1308C-6	2022-2023	BA.HEP,SEP.
97.	Retail and Digital Marketing	1308C-7	2022-2023	BA.HEP,SEP.
98.	Inferential Statistics and Software Packages	1308D-6	2022-2023	BA.HEP,SEP.
99.	Project Designing and Report Writing	1308D-7	2022-2023	BA.HEP,SEP.
100.	Counseling skills in Social Work	1312A- 6	2022-2023	BA.SEP
101.	Social Work Practice with Differently abled Persons	1312A- 7	2022-2023	BA.SEP

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102.	Rehabilitation Service & Skills in Social Work	1312B- 6	2022-2023	BA.SEP
103.	Professional Competence for Social Work Practice	1312B- 7	2022-2023	BA.SEP
104.	Skills in Group Work	1312C- 6	2022-2023	BA.SEP
105.	Social Welfare Administration Skills	1312C- 7	2022-2023	BA.SEP
106.	Web Interface Designing Technologies	2319A-6	2022-2023	B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
107.	Web Applications Development using PHP&MYSQL	2319A-7	2022-2023	B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
108.	Internet of Things	2319b-6	2022-2023	B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
109.	Application Development using Python	2319B-7	2022-2023	B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
110.	Data science	2319C-6	2022-2023	B.Sc. MPCs, MECs, B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
111.	Python for Data science	2319C-7	2022-2023	B.Sc. MPCs, MECs, MSCs, MGCs, MCCs, MB BC Cs, MB CCs
112.	Practical Industrial , Electronics , Electronic Instrumentation	2318-3B	2022-2023	B.Sc. MECs
113.	Industrial Electronics	2318A-6	2022-2023	B.Sc. MECs
114.	Electronic Instrumentation	2418B-5B	2022-2023	B.Sc. MECs
115.	Embedded system design	2318B-6	2022-2023	B.Sc. MECs
116.	Consumer electronics	2418-4A	2022-2023	B.Sc. MECs
117.	VLSI design	2318C-6	2022-2023	B.Sc. MECs
118.	Data communication and networking	2318C-7	2022-2023	B.Sc. MECs
119.	Food, Agriculture And Environmental Microbiology	2324A-6	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
120.	Management Of Human Microbial Diseases And Diagnosis	2324A-7	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
121.	Microbial Biotechnology And R - DNA Technology	2324B-6	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
122.	Biostatistics And Bioinformatics	2324B-7	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
123.	Microbial Quality Control Instrumentation And Techniques	2324C-6	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
124.	Drug Design, Discovery And Intellectual Property Rights (IPR)	2324C-7	2022-2023	B.Sc. MB BC Cs, MB C Cs BMB
125.	Organic farming	2323B-6	2022-2023	B.Sc. BMB
126.	Bio-fertilizers and Bio-pesticides	2424-6B	2022-2023	B.Sc. BMB

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127.	Techniques in nursery development	2323A-6	2022-2023	B.Sc. BMB
128.	Hydroponics cultivation	2323A-7	2022-2023	B.Sc. BMB
129.	Apiculture	2323C-6	2022-2023	B.Sc. BMB
130.	Pearl culture	2323C-7	2022-2023	B.Sc. BMB
131.	Physiology, Nutritional and Clinical Biochemistry	2125-4	2022-2023	B.Sc. BMB.MB BC Cs
132.	Microbiology, Immunology and Molecular Biology	2125-5	2022-2023	B.Sc. BMB.MB BC Cs
133.	Genetic Engineering	2125A-6	2022-2023	B.Sc. BMB.MB BC Cs
134.	Bioinformatics	2322C-3B	2022-2023	B.Sc. BMB.MB BC Cs
135.	Clinical Biochemistry	2422B-4B	2022-2023	B.Sc. BMB.MB BC Cs
136.	Hematological and Immunological Techniques	2125B-7	2022-2023	B.Sc. BMB.MB BC Cs
137.	Organizational Behaviour	4207-3	2022-2023	BBA
138.	Human Resource Management	4208-3	2022-2023	BBA
139.	Financial Management	4209-3	2022-2023	BBA
140.	Training and Development	4210-4	2022-2023	BBA
141.	Business Law	3221-4	2022-2023	BBA
142.	Micro, Small & Medium Enterprises Management	4212-4	2022-2023	BBA
143.	International Business	4213-4	2022-2023	BBA
144.	Cost and Management Accounting	3218-4	2022-2023	BBA
145.	Financial Services	4215-4	2022-2023	BBA
146.	Management Accounting -6	3334-5	2022-2023	B.Com. (Gen, CA)
147.	Cost Control Techniques -7	3335-5	2022-2023	B.Com. (Gen, CA)
148.	Life Insurance With Practice-6	3231 -5	2022-2023	B.Com. (Gen, CA)
149.	General Insurance With Practice-7	3232 -5	2022-2023	B.Com. (Gen, CA)
150.	Digital Marketing -6	3233 -5	2022-2023	B.Com. (Gen, CA)
151.	Service Marketing -7	3234 -5	2022-2023	B.Com. (Gen, CA)
152.	Advertising & Media Planing	3336-5	2022-2023	B.Com. (Gen, CA)
153.	Sales Promotion & Practice	3337-5	2022-2023	B.Com. (Gen, CA)
154.	E Commerce	3338-5	2022-2023	B.Com. (Gen, CA)
155.	E Filling	3339-5	2022-2023	B.Com. (Gen, CA)
156.	Risk Management 1	3340-5	2022-2023	B.Com. (Gen, CA)
157.	Risk Management 2	3341-5	2022-2023	B.Com. (Gen, CA)
158.	Advanced Corporate Accounting	3342-5	2022-2023	B.Com. (Gen, CA)
159.	Software Solutions to Accounting -7	3343-5	2022-2023	B.Com. (Gen, CA)
160.	Stock Markets - 6	3344-5	2022-2023	B.Com. (Gen, CA)
161.	Stock Market Analysis - 7	3345-5	2022-2023	B.Com. (Gen, CA)
162.	Logistics Services & Practice	3346-5	2022-2023	B.Com. (Gen, CA)

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163.	EXIM Procedure and Practice – 7	3347-5	2022-2023	B.Com. (Gen, CA)
164.	E Commerce Application Development	3348-5	2022-2023	B.Com. (Gen, CA)
165.	Real Time Governance System	3349-5	2022-2023	B.Com. (Gen, CA)
166.	Digital Imaging	3350-5	2022-2023	B.Com. (Gen, CA)
167.	Income Tax Procedure and Practice -6	3351-5	2022-2023	B.Com. (Gen, CA)
168.	GST Procedure and Practice – 7	3352-5	2022-2023	B.Com. (Gen, CA)
169.	Tools And Techniques For Biology	AQC 101	2022-2023	PG AQUACULTURE
170.	Biosystematics, Biodiversity And Evolution	AQC 102	2022-2023	PG AQUACULTURE
171.	Bio Molecules	AQC 103	2022-2023	PG AQUACULTURE
172.	Molecular Cell Biology	AQC 104	2022-2023	PG AQUACULTURE
173.	Tools And Techniques For Biology Lab	AQC 105	2022-2023	PG AQUACULTURE
174.	Biosystematics, Biodiversity And Evolution Lab	AQC 106	2022-2023	PG AQUACULTURE
175.	Bio Molecules Lab	AQC 107	2022-2023	PG AQUACULTURE
176.	Molecular Cell Biology Lab	AQC 108	2022-2023	PG AQUACULTURE
177.	Biostatistics & Bio-Informatics	AQC 201	2022-2023	PG AQUACULTURE
178.	Animal Physiology	AQC 2 02	2022-2023	PG AQUACULTURE
179.	Immunology	AQC 2 03	2022-2023	PG AQUACULTURE
180.	Molecular Biology	AQC 204	2022-2023	PG AQUACULTURE
181.	Biostatistics & Bio-Informatics Lab	AQC 205	2022-2023	PG AQUACULTURE
182.	Animal Physiology Lab	AQC 206	2022-2023	PG AQUACULTURE
183.	Immunology Lab	AQC 207	2022-2023	PG AQUACULTURE
184.	Molecular Biology Lab	AQC 208	2022-2023	PG AQUACULTURE

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DEPARTMENT OF TELUGU
(w.e.f:2022-2023)

బి.ఏ., తదితర ప్రోగ్రాములు
అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5
6-A తెలుగు భాషా స్వరూపం

పీరియడ్లు : 75

క్రిడిట్లు : 4

మొత్తం మార్కులు : 75

◆ **అభ్యసన ఫలితాలు**

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. తెలుగు వ్యాకరణ ప్రయోజనాలు
2. తెలుగు వ్యాకరణపరిభాష పట్ల అవగాహన
3. ప్రాచీన, ఆధునిక తెలుగులోని సంధులను, సమాసాలను తెలుసుకోవడం ద్వారా రచనానైపుణ్యాల అభివృద్ధి
4. క్రియావిజ్ఞానాన్ని అవగాహన చేసుకోవడం ద్వారా తెలుగు క్రియారూపాల వైవిధ్యాన్ని గమనించడం
5. వాక్యవిజ్ఞానం ద్వారా మహాకవుల, రచయితల వాక్యనిర్మాణ రీతులను తెలుసుకోవడం.

◆ **పాఠ్యప్రణాళిక**

(మొత్తం పీరియడ్లు 75 ; బోధన: 60; శిక్షణ/ ఇతరాలు : 15)

యూనిట్: I తెలుగు వ్యాకరణ పరిచయం

15 పీరియడ్లు

వ్యాకరణం- పరిచయం, ప్రయోజనాలు

వ్యాకరణ సంజ్ఞలు: అచ్చు, హల్లు, తత్సమము, తద్భవము, దేశ్యము, ఆచ్చికము, గ్రామ్యము
అన్యదేశ్యం, వర్ణం-సవర్ణం, పదాంశం-సపదాంశం.

యూనిట్-II సంధి, సమాసం

15 పీరియడ్లు

తెలుగులో 'సంధి' స్వరూపం: ఆగమ, ఆదేశ, లోప సంధులు (బాలవ్యాకరణం సంధిపరిచేదం)

ఆధునికభాషలో సంధి స్వరూపం

సమాసం: నిర్వచనం, సమాసం-స్వరూపం : సాంఘృతికం, ఆచ్చికం, మిశ్రం

సమాసం-రకాలు: అవ్యయాభావ, తత్సమ, కర్మధారయ, బహువ్రీహి, ద్వంద్వం (బాలవ్యాకరణం-సమాస పరిచేదం);

ఆధునిక భాషలో సమాస స్వరూపం

యూనిట్-III క్రియావిజ్ఞానం

10 పీరియడ్లు

తెలుగు క్రియారూపాలు-వైవిధ్యం; సకర్మక, ఆకర్మక, ప్రేరణార్థక క్రియలు;

సమాపక, అసమాపక క్రియలు, సంయుక్త క్రియలు;

ధాతువులకు క్రియారూపాలు నిర్మించడం: 'పాడు, పంచు, చేయు, అను, ఉండు'

యూనిట్: IV వాక్య విజ్ఞానం

10 పీరియడ్లు

వాక్యం-కారకం: నిర్వచనాలు; తెలుగు వాక్యస్వరూపం: సామాన్య, సంజ్ఞిష్ట, సంయుక్తవాక్యాలు;

వాక్య భేదాలు: నిశ్చయార్థక, ప్రశ్నార్థక, విధ్యర్థక, నిర్బంధార్థక, నిషేధార్థక, అనుమత్యర్థక,

సంభావనార్థక, సందేహార్థక, ప్రేరణార్థక, ప్రార్థనార్థక, ఆశీర్వాద క్రియలు.


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యూనిట్-V వాక్యప్రయోగ రీతులు: ప్రాచీన, ఆధునిక ప్రయోగాలు

10 పీరియడ్లు

సమాన సన్నివేశంలో వివిధ కవుల వాక్యప్రయోగశైలులు : భేదసామ్యాలు

I. ప్రాతఃకాల, సంధ్యావర్జనలు: ధూర్జటి-తిలక్

ధూర్జటి: శ్రీకాళహస్తిమాహాత్మ్యము: ద్వితీయాశ్వాసం

ప్రాతఃకాల వర్జన : నిర్విద్ర పూర్వాది అరుణ శోభాంశురాజి (138వ పద్యం)

సంధ్యావర్జన : ప్రాగ్విధూమణి భానుబింబంబు గ్రుంకె. (128వ పద్యం)

తిలక్: 'అమృతం కురిసిన రాత్రి'

ప్రాతఃకాలవర్జన: 'ప్రాతఃకాలం' (4,5 పేజీలు)

సంధ్యావర్జన : 'సంధ్య' (6వ పేజీ)

II. సామాన్యని వర్జన: విశ్వనాథ- రావిశాస్త్రి

విశ్వనాథ సత్యనారాయణ - పులుల సత్యాగ్రహం-పుటలు 20-22

(ఇట్లా ఉండగా ఆ ఊరికి పట్టేలు వచ్చినప్పుడు పట్వారీ రాడు... ఎలాగౌతుంది?)

రాచకొండ విశ్వనాథశాస్త్రి - అల్పజీవి - పుటలు 5-8

(సుబ్బయ్య సుందరుడు కాదు..... తర్వాత ఏమి జరిగిందో సుబ్బయ్యకు జ్ఞప్తి లేదు)

◆ ఆధారగ్రంథాలు/వ్యాసాలు

1. బాలవ్యాకరణము - చిన్నయసూరి
2. ప్రాథ వ్యాకరణం - బహుజనపల్లి, సీతారామాచార్యులు
3. సంధి - కోరాడ రామకృష్ణయ్య
4. ఆంధ్రభాషా వికాసము - ఆచార్య గంటి జోగిసోమయాజి.
5. తెలుగుభాషాచరిత్ర - సం.భద్రరాజు కృష్ణమూర్తి
6. ఆధునిక తెలుగుభాషాసంగ్రహవర్ణన - చేకూరి రామారావు, తెలుగుభాషాచరిత్ర-సం.భద్రరాజు కృష్ణమూర్తి
7. తెలుగువాక్యం - చేకూరి రామారావు
8. అమృతం కురిసిన రాత్రి (మూడో కూర్పు) - దేవరకొండ బాలగంగాధర తిలక్, విశాలాంధ్ర ప్రచురణ
9. అంతర్జాలం లోని సంబంధిత ఆధారాలు

◆ సహపాఠ్య కార్యక్రమాలు

10 పీరియడ్లు

అధ్యాపకులు, విద్యార్థులు తప్పనిసరిగా చేయాల్సిన పనులు :

1. అధ్యాపకులు :- విద్యార్థులకు తరగతిగదిలో (అవసరమైతే ప్రత్యేక నిపుణుల ద్వారా) తెలుగు వ్యాకరణాంశాలపై అధ్యాపకులు నైపుణ్యశిక్షణ ఇవ్వాలి. తెలుగుభాషపై సంస్కృతభాషా ప్రభావాన్ని తెలియజేస్తూ, వ్యాకరణంలోని సంజ్ఞ, సంధి, సమాస, క్రియ,వాక్యాది భేదాలపై శిక్షణ ఇవ్వాలి.
2. విద్యార్థులు:- విద్యార్థులు పై యూనిట్లలోని సంజ్ఞ,సంధి,సమాస,క్రియ,వాక్యాది విషయాలలో ఏదోఒక అంశం మీద క్షేత్రస్థాయిలో/ అంతర్జాలం ద్వారా వాడుకలో ఉన్న వాటిని పరిశీలించాలి. వాటిపై తమపరిశీలనను క్రోడీకరిస్తూ, స్వీయ దస్తూరిలో, పది పేజీలకు మించని ఒక 'నివేదిక'ను తయారుచేసి, అధ్యాపకుడికి సమర్పించాలి. ఉదా: 'పాడు, పంచు, చేయు, అను, ఉండు' ధాతువులకు క్రియారూపాలు నిర్మించడం-మొదలైనవి.

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అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5

7-A తెలుగు రచనారీతులు

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ అభ్యసన ఫలితాలు

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. వివిధ రంగాలలోని తెలుగు రచనారీతులపై ప్రాథమిక అవగాహన
2. అనువాద రంగంలో, ముద్రణ మాధ్యమరంగంలోని రచనారీతులను తెలుసుకోవడం
3. ప్రసార మాధ్యమాలు, సామాజిక మాధ్యమాల లోని రచనావిధానాలను అవగాహన
4. భాషలోని అర్థపరిణామ, ధ్వనిపరిణామాలు, అన్వయేచ్ఛాలపై అవగాహన
5. సృజనరంగంలోని ప్రధాన ప్రక్రియల రచనావిధానాలను తెలుసుకోవడం.

◆ పాఠ్యప్రణాళిక

(మొత్తం పీరియడ్లు 75 ; బోధన: 60; శిక్షణ/ ఇతరాలు : 15)

యూనిట్-I తెలుగు రచనారీతులు-పరిచయం

10 పీరియడ్లు

తెలుగు రచనా రీతులు- అనువాదరంగం, ముద్రణ-ప్రసార-సామాజిక మాధ్యమ రంగాలు: ప్రాథమిక అవగాహన
అనువాదరంగం: నిఘంటువులు, పారిభాషిక పదకోశాలు, అనువాద రచనావిధానాలు
ముద్రణమాధ్యమరంగం: వార్తా రచన, శీర్షికారచన, సంపాదకీయాలు, సమీక్షలు, పత్రికారచనా విధానాలు

యూనిట్-II తెలుగు-రచనారీతులు-ప్రసార, సామాజిక మాధ్యమాలు

15 పీరియడ్లు

ప్రసారమాధ్యమరంగం: రేడియో రచన, టెలివిజన్ రచన, సినిమా రచనా విధానాలు
సామాజిక మాధ్యమరంగం: వెబ్ సైట్, ఫేస్ బుక్, యూట్యూబ్, ట్విట్టర్, వాట్సాప్, బ్లాగ్-రచనావిధానాలు

యూనిట్-III అర్థపరిణామ, ధ్వనిపరిణామ రీతులు

10 పీరియడ్లు

అర్థపరిణామం: కారణాలు, రకాలు; తెలుగులో అర్థపరిణామం

ధ్వని పరిణామం: కారణాలు, రకాలు, తెలుగులో ధ్వనుల మార్పులు

యూనిట్-IV మాండలిక విజ్ఞానం

10 పీరియడ్లు

మాండలికం: నిర్వచనం, స్వరూపం, భేదాలు; మాండలికాలు-కారణాలు, ప్రయోజనాలు, రకాలు;
తెలుగు మాండలికాల గుర్తింపు; శిష్టభాష-ప్రామాణిక భాష.

యూనిట్-V సృజనరంగంలో తెలుగు

15 పీరియడ్లు

'కవిత, కథ, వ్యాసం, 'నాటకం-నాటిక-ఏకాంకిక', ప్రకటన, పాట- పరిచయం

ప్రకటన: ముద్రణ రంగం, ప్రసార మాధ్యమాలు; ప్రకటన రచన, విషయనేకరణ-కూర్పు, కంపోజింగ్, వ్యాఖ్యానం (యాంకరింగ్), పాట (సినిమా, లలితసంగీతం; జానపద, మాండలిక గేయాలు) - రచనా విధానం: పరిచయం

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6-B లలితకళలు

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ అభ్యసన ఫలితాలు

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. కళల ప్రాధాన్యాన్ని, లలిత కళల్లోని సౌందర్యాన్ని గ్రహించడం
2. తెలుగు పాలకుల కళాభిరుచిని తెలుసుకోవడం; భారతీయ శిల్పకళల పట్ల, చిత్రకళల పట్ల అవగాహన
3. భారతీయ సంగీత రీతుల విశిష్టతను తెలుసుకోవడం; నాట్య-నృత్య-నృత్యాంశాలపై అభిరుచిని వృద్ధి చేసుకోవడం
4. లలితకళల్లో కవిత్వ ప్రాధాన్యాన్ని గుర్తించి, సృజనరీతులపట్ల అభిరుచి పెంచుకోవడం
5. తెలుగు వాగ్గేయకారుల గేయాల ప్రాధాన్యాల గుర్తింపు ; 'సంకీర్తన-పద-కృతుల' పై అవగాహన.

◆ పాఠ్యప్రణాళిక

(మొత్తం పీరియడ్లు 75 ; బోధన: 60; శిక్షణ/ ఇతరాలు : 15)

యూనిట్-I కళలు

10 పీరియడ్లు

కళలు-నిర్వచనం, ఉత్పత్తి వికాసాలు; కళలు-వర్గీకరణ; లలితకళలు-ప్రత్యేకత

యూనిట్-II శిల్పం, చిత్రలేఖనం

15 పీరియడ్లు

భారతీయ శిల్పకళ, చిత్రకళలు-ప్రాథమిక అవగాహన;

తెలుగువారి శిల్పకళారీతులు:

రామప్పదేవాలయం (కాకతీయులు) లేపాక్షి ఆలయాలు, హంపీ హజారా రామాలయం (విజయనగర రాజులు);

తెలుగు వారి ఆధునిక కళారీతులు- దామెర్ల రామారావు, బాపు, పి.టి.రెడ్డి.

యూనిట్-III సంగీతం, నాట్యం

15 పీరియడ్లు

భారతీయ సంగీత సంప్రదాయాలు - హిందూస్థానీ, కర్ణాటక

తెలుగులో లలితగీతాలు, సంకీర్తనలు

నాట్యం-సమాహార కళ, తెలుగు నాట్య రీతులు-కూచిపూడి, ఆంధ్రనాట్యం, పేరిణి.

యూనిట్-IV సాహిత్యం-కవిత్వం

10 పీరియడ్లు

సాహిత్య రూపాలు- కవిత్వం; కవిత్వం-ప్రాచ్య, పాశ్చాత్యుల నిర్వచనాలు; లలితకళల్లో కవిత్వ స్థానం

కవిత్వం-భేదాలు: పద్యకవిత్వం, వచనకవిత్వం

యూనిట్-V సంప్రదాయ గేయసాహిత్యం-వాగ్గేయకారులు

10 పీరియడ్లు

సంప్రదాయ గేయసాహిత్యం-పరిచయం, విభాగాలు

వాగ్గేయకారుల సాహిత్యం-అవగాహన: 'అన్నమయ్య త్యాగయ్య, కైత్రయ్య, రామదాసు'

"సంకీర్తన - కీర్తన-పదం-కృతి" - ప్రక్రియలు: అవగాహన


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బి.ఏ., తదితర ప్రోగ్రాములు
అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5
7-B జానపద కళలు

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ అభ్యసన ఫలితాలు

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. విద్యార్థులు జానపదవిజ్ఞానం పట్ల ప్రాథమిక అవగాహన
2. జానపద సాహిత్యాన్ని, దాని ప్రాధాన్యాన్ని విశిష్టతను తెలుసుకోవడం
3. జానపద భాషాసంస్కృతుల వైవిధ్యాన్ని గూర్చి అవగాహన చేసుకోవడం
4. జానపద ప్రదర్శనకళలైన యక్షగానం, బుర్రకథ మొదలైన ప్రక్రియలను గూర్చి అవగాహన
5. మన గ్రామాల జాతీయ సంపదగా జానపదగేయాలను గుర్తిస్తూ, వాటిని పాడే విధానాన్ని గమనించడం

◆ పాఠ్యప్రణాళిక

మొత్తం పీరియడ్లు - 75; బోధన: 60; శిక్షణ/ఇతరాలు: 15

యూనిట్-I జానపద విజ్ఞానం: పరిచయం

10 పీరియడ్లు

జానపదవిజ్ఞానం: పరిచయం, వర్గీకరణ (శాఖలు), ప్రయోజనాలు, ఆవశ్యకత

జానపద విజ్ఞానం పై ప్రాచ్యపాశ్చాత్యుల కృషి

యూనిట్-II జానపద సాహిత్యం: పరిచయం

15 పీరియడ్లు

జానపద గేయం, కథాగేయాలు: లక్షణాలు-పరిచయం

జానపద గద్యం: కథలు, పురాణాలు, ఐతిహ్యాలు : పరిచయం

యూనిట్-III జానపదుల భాష, సంస్కృతి

10 పీరియడ్లు

జానపదుల భాష సంస్కృతి: ఆహారం, దుస్తులు, వేషభాషలు, నమ్మకాలు, పండుగలు, వైద్యం.

యూనిట్-IV జానపద కళలు

15 పీరియడ్లు

జానపద కళలు- పరిచయం

తెలుగు వారి కళారూపాలు: తోలుబొమ్మలాటలు, యక్షగానం, బుర్రకథ, హరికథ, ఒగ్గుకథ,

జానపదనాటకం (పద్యనాటకం-రంగస్థల పద్యాలు: పరిచయం)

జానపద నృత్యాలు : కోలాటం, భజనలు, థింసా-గొరవ నృత్యాలు, చిందుభాగవతం.

యూనిట్-V జానపద గేయాలు

10 పీరియడ్లు

జానపద గేయం: నిర్వచనం, లక్షణాలు, వైశిష్ట్యం

గేయం-గీతం, పాట, పదం, జావళీలు; జానపద గేయాలు-విభజన; జానపద బాణీలు, పాడే విధానం

జానపద గాయకులు - రకాలు:

పిచ్చుకకుంటు, శారదకాండ్రు, బైండ్లవారు, వీరముష్టివారు, గొల్లసుద్దులు, జంగములు, దాసరివారు

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బి.ఎ., తదితర ప్రోగ్రాములు

అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5

6-C మాధ్యమాలకు రచన

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ **అభ్యసన ఫలితాలు**

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. మాధ్యమాల్లోని విస్తృతి, ప్రయోజనాలపై అవగాహన
2. పత్రికా సంపాదకులుగా వివిధ రకాల రచనాంశాల్లో రాజించగలగడం
3. ముద్రణ, ప్రసారమాధ్యమ రంగాల్లోని అవకాశాలను, ప్రాధాన్యాన్ని గమనించడం
4. ప్రసార మాధ్యమాల్లోని రచనల తీరుతెన్నులను గుర్తించడం
5. ప్రసారమాధ్యమాలకు రచనలు చేసే నైపుణ్యాన్ని సంపాదించగలగడం.

◆ **పాఠ్యప్రణాళిక**

(మొత్తం పీరియడ్లు 75 ; బోధన: 60; శిక్షణ/ఇతరాలు:15)

యూనిట్-I: 'మాధ్యమాలు'-పరిచయం

10 పీరియడ్లు

'మాధ్యమాలు'-నిర్వచనం, రకాలు; మాధ్యమాల్లో భాషా ప్రయోగం

మాధ్యమాల విస్తృతి, ప్రాధాన్యత; మాధ్యమాలు-చట్టాలు; మాధ్యమాలు-ఉపాధి అవకాశాలు

యూనిట్-II: ముద్రణామాధ్యమం-పరిచయం

10 పీరియడ్లు

వివిధ రకాల పత్రికలు - పరిశీలన

పత్రికా భాష-కైలి, వైవిధ్యం; పత్రికారచన- భాషాపరమైన మెళకువలు

యూనిట్-III: ముద్రణా మాధ్యమం-నైపుణ్యాభివృద్ధి

15 పీరియడ్లు

పత్రికలు: వార్తా రచన; శీర్షికా రచన; వార్తల సంక్షిప్తీకరణ, విపులీకరణ; సంపాదకీయాలు;

పుస్తక సమీక్షలు, ఇంటర్వ్యూలు, నివేదికలు, ప్రకటనలు, కరపత్రాల రచన; విరామ చిహ్నాలు-అవగాహన,

యూనిట్-IV: ప్రసార మాధ్యమం -పరిచయం

10 పీరియడ్లు

ప్రసార మాధ్యమాలు-విస్తృతి, ప్రయోజనాలు

ప్రసారమాధ్యమాల్లో కార్యక్రమాల నిర్వహణ-తీరుతెన్నులు

ప్రసార మాధ్యమాల్లోని వివిధ రచనలు- పరిశీలన, అవగాహన

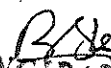
యూనిట్-V ప్రసార మాధ్యమం-నైపుణ్యాభివృద్ధి

15 పీరియడ్లు

స్క్రిప్ట్ రచన, కెమెరా రచన, డ్రాఫ్ట్ రచన, వార్తా రచనా విధానాలు

వాణిజ్య ప్రకటనలు, ఇంటర్వ్యూలు, ప్రత్యక్షప్రసారాలు, డాక్యుమెంటరీలు-రచనా విధానాలు

రేడియో రచన, టెలివిజన్ రచన, డిజిటల్ వేదికలు -రచనా విధానం


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అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5

7-C అనువాదం

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ **అభ్యసన ఫలితాలు**

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. భాషాతత్వాన్ని, ప్రాధాన్యాన్ని గుర్తిస్తూ, అనువాద అవసరాన్ని తెలుసుకోవడం
2. అనువాదకుని లక్షణాలను గూర్చి అవగాహన
3. అనువాదరంగంలో నైపుణ్యాన్ని సంపాదించగలగడం
4. భాషాసామర్థ్యాన్ని పెంపొందించుకునే మార్గాలను తెలుసుకోగలగడం
5. అనువాదవృత్తిలో స్థిరపడడానికి అవసరమయ్యే నైపుణ్యాలను, సృజన-ప్రసారమాధ్యమరంగాల్లో ఉపాధి అవకాశాలను గురించి తెలుసుకోగలగడం.

◆ **పాఠ్యప్రణాళిక**

(మొత్తం పీరియడ్లు 75 ; బోధన: 60; శిక్షణ/ ఇతరాలు:15)

యూనిట్-I అనువాదం

10 పీరియడ్లు

అనువాదం-నిర్వచనం, స్వరూప స్వభావాలు; అనువాదం-అవశ్యకత

అనువాద ప్రమాణాలు; అనువాదం శాస్త్రమా? కళా?

వివిధ రకాల అనువాదాలు (మూలవిధేయానువాదం, స్వేచ్ఛానువాదం, సుడికారపు అనువాదం, యాంత్రిక అనువాదం)

యూనిట్-II అనువాదకుడు

10 పీరియడ్లు

అనువాదకుడు-లక్షణాలు, రకాలు; అనువాద సమస్యలు, వాటి పరిష్కార మార్గాలు

తెలుగులో ప్రసిద్ధ అనువాద గ్రంథాలు, వాటి అనువాదకులు-సమీక్ష

యూనిట్-III వ్యావహారిక భాషలో అనువాద ప్రాధాన్యం

15 పీరియడ్లు

గ్రాంథిక, వ్యావహారిక భాషోద్యమాలు-నేపథ్యం

వ్యావహారిక భాషోద్యమానికి గిడుగు, గురజాడల కృషి

అనువాదంలో వ్యావహారిక భాష-వ్యక్తీకరణ విధానాలు

యూనిట్-IV అధికారభాషగా తెలుగు-అనువాద ప్రాధాన్యం

15 పీరియడ్లు

మాతృభాష పాలనాభాష, అధికారభాషగా తెలుగు-రాష్ట్ర పాలనా యంత్రాంగంలో జరిగిన, జరుగుతున్న కృషి

తెలుగు అనువాదం-"అధికారపత్రాలు, ఉత్తర్వులు, మార్గదర్శకాలు, ఉత్తరాలు"

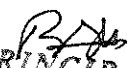
యూనిట్-V అనువాద రచన-అవశ్యకత

10 పీరియడ్లు

ప్రపంచీకరణ నేపథ్యంలో అనువాదాల ప్రాధాన్యం

విద్యార్థులను వివిధ రంగాల్లో అనువాదకులుగా రాజించడానికి అవసరమయ్యే సూచనలు

భాషాసామర్థ్యాన్ని పెంపొందించుకునే మార్గాలు.


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బి.ఏ., తదితర ప్రోగ్రాములు

అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5

6-D తెలుగు-బోధన పద్ధతులు

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ **అభ్యసన ఫలితాలు:-**

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. భాషానైపుణ్యాలను గూర్చి తెలుసుకోవడం ద్వారా భాషాభివృద్ధి
2. మాతృభాషాబోధన ప్రాధాన్యాన్ని తెలుసుకోవడం
3. తెలుగు సాహిత్య బోధనాపద్ధతులైన పద్య-గద్య-వ్యాకరణాది బోధనల ద్వారా భాషాపాఠ్యాయులుగా రాణించగలగడం.
4. పాఠశాల, కళాశాల స్థాయిల్లో ప్రథమభాషగా, ద్వితీయభాషగా తెలుగు బోధనాప్రాధాన్యాన్ని తెలుసుకోగలగడం.
5. సాహిత్య ప్రక్రియల బోధనాపద్ధతులను తెలుసుకోవడం ద్వారా భాషాసాహిత్యాల పట్ల అభిరుచిని పెంచుకోగలగడం.

◆ **పాఠ్య ప్రణాళిక**

(మొత్తం పీరియడ్లు - 75; బోధన: 60; శిక్షణ/ఇతరాలు:15)

యూనిట్-I భాషానైపుణ్యాలు

10 పీరియడ్లు

భాష-నిర్వచనం, స్వరూప స్వభావాలు; భాషానైపుణ్యాలు-శ్రవణం, భాషణం, పఠనం, లేఖనం;
 భాష నైపుణ్యాల అచరణలు లక్షణాలు - ప్రాథమిక, మాధ్యమికస్థాయి

యూనిట్-II మాతృభాషా బోధన

10 పీరియడ్లు

మాతృభాష భావన, నిర్వచనాలు; మాతృభాషగా తెలుగు బోధన-ఉద్దేశాలు

మాతృభాష బోధన-విలువలు; విషయ ప్రణాళికలు-మాతృభాషగా 'తెలుగు'స్థానం

యూనిట్-III మాతృభాషగా తెలుగు-బోధన పద్ధతులు

10 పీరియడ్లు

పద్య బోధనా పద్ధతులు; గద్య బోధనాపద్ధతులు; వ్యాకరణ బోధనాపద్ధతులు; నాటక బోధనా పద్ధతులు

యూనిట్-IV మాతృభాషా బోధన-అధునిక ధోరణులు

15 పీరియడ్లు

మాతృభాషాబోధన-అధునిక ధోరణులు

ద్వితీయభాషాబోధన-ద్వితీయభాష భావనలు, అధ్యయనసామగ్రి, బోధనా లక్ష్యాలు, బోధనా పద్ధతులు

యూనిట్-V తెలుగులోని వివిధ సాహిత్యప్రక్రియలు-బోధనా లక్ష్యాలు

15 పీరియడ్లు

సాహిత్యం: నిర్వచనం, ప్రయోజనం

సృజనాత్మక సాహిత్యభాష-బోధనా లక్ష్యాలు:

ప్రాచీన కవిత్వ ప్రక్రియలు: పురాణం; ఇతిహాసం, ప్రబంధం, ద్విపద, ఉదాహరణ

అధునిక కవిత్వ ప్రక్రియలు: ఖండకావ్యం, వచనకవిత, దీర్ఘకవిత, గజల్, హైకూ-బోధనా లక్ష్యాలు.


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బి.ఏ., తదితర ప్రోగ్రాములు

అంశం: స్పెషల్ తెలుగు సెమిస్టర్-5

7-D వాచికాభివృద్ధి

పీరియడ్లు : 75

క్రెడిట్లు : 4

మొత్తం మార్కులు : 75

◆ **అభ్యసన ఫలితాలు:-**

ఈ నైపుణ్యాభివృద్ధి కోర్సును ముగించాక, విద్యార్థులు క్రింది సామర్థ్యాలను పొందగలరు.

1. భాషానైపుణ్యంలో భాషజానికి (వాచికానికి) ఉండే ప్రాధాన్యాన్ని తెలుసుకోవడం
2. భాషా వినియోగ నైపుణ్యరంగాలను గుర్తించడం ద్వారా వాచిక ప్రాధాన్యాన్ని తెలుసుకోగలగడం
3. వాచికాభివృద్ధి ప్రక్రియలను గుర్తించడం ద్వారా వాచికాభివృద్ధి నైపుణ్యాలు పొందడం
4. మాధ్యమాల్లో వాచికాభివృద్ధి నైపుణ్యాన్ని మెరుగుపరచుకోగలగడం
5. ప్రాచీన, ఆధునిక కావ్యపఠనం ద్వారా సాహిత్యాభిరుచిని పొందుతూ, వాచికాభివృద్ధి నైపుణ్యాలను అందుకోగలగడం.

◆ **పాఠ్యప్రణాళిక**

(మొత్తం పీరియడ్లు: 75 ; బోధన: 60; శిక్షణ/ ఇతరాలు:15)

యూనిట్ I భాషానైపుణ్యాలు-‘వాచిక’ ప్రాధాన్యత

15 పీరియడ్లు

వాచికం (భాషజం)-లక్షణాలు, స్వరూపం, ప్రయోజనాలు

భాషావినియోగ నైపుణ్యాలు: వాచికరంగం-దైనందిన వ్యవహారాలు; రేడియో, టీవీ, సినిమా, పరిపాలన-ఇతరరంగాలు

యూనిట్ II వాచికాభివృద్ధి ప్రక్రియలు

10 పీరియడ్లు

శిశుగేయాలు/అభినయగేయాలు, పద్య పఠనం, కథాకథనం, నాటకీకరణ, ఉత్తరచన (వక్రత్వశిక్షణ), భాషాక్రీడలు, సారస్వత సమావేశాలు, భాషా విహారయాత్రలు

యూనిట్ III వాచికాభివృద్ధి చర్యలు

10 పీరియడ్లు

వాచికాభివృద్ధి: జాతీయాలు, సామెతలు, లోకోక్తుల వినియోగం

వాచికదోషాలు : భావదోషాలు, భాషాదోషాలు, ఉచ్చారణాదోషాలు-నివారణోపాయాలు

యూనిట్ IV మాధ్యమాలు-వాచికాభివృద్ధి చర్యలు

15 పీరియడ్లు

ప్రసారమాధ్యమరంగం : రేడియో, టెలివిజన్ సినిమా ‘మాధ్యమాల్లో ‘వాచికం’-ప్రయోగాలు

సామాజిక మాధ్యమరంగం: ప్రసంగాలు, వీడియోనేపథ్య కథనాలు, వ్యాఖ్యానం(యాంకరింగ్) లలో ‘వాచికం’-ప్రయోగాలు

యూనిట్ V వాచికం-నైపుణ్యాభివృద్ధి

10 పీరియడ్లు

ఆధునిక కావ్యపఠనం: గుర్రం జాషువా కావ్యకైలి-పాపాయి పద్యాలు (4 పద్యాలు)

(నవమాసములు....., బొటావ్రేల ముల్లోకములు....., గానమాలింపక...., ఊయేల తొట్టి.....)

ఆధునిక గేయ పఠనం: శ్రీశ్రీ రచనాకైలి-ప్రతిజ్ఞ (మహాప్రస్థానం)

సరళ గ్రాంథిక పఠనం: పానుగంటి ‘సాక్షి సంఘనిర్మాణము’

ఆధునికవచన పఠనం: అనువాదమంటే? (64వ పుట) రారా ‘అనువాద సమస్యలు’- గ్రంథం నుండి

(అనువాదమంటే... సూపును వాళ్ళూ అంటే.)

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(w.e.f:2022-2023)

B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 6A	Numerical Methods	Hrs/Wk:

Learning Outcomes:

- Students after successful completion of the course will be able to
1. understand the subject of various numerical methods that are used to obtain approximate solutions
 2. Understand various finite difference concepts and interpolation methods.
 3. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
 4. Find numerical solutions of ordinary differential equations by using various numerical methods.
 5. Analyze and evaluate the accuracy of numerical methods.

Syllabus : (Hours: Teaching: 75 (incl. unit tests etc. 05), Training: 15)

Unit – 1: Finite Differences and Interpolation with Equal intervals (15h)

1. Introduction, Forward differences, Backward differences, Central Differences, Symbolic relations, nth Differences of Some functions,
2. Advancing Difference formula, Differences of Factorial Polynomial.
3. Newton's formulae for interpolation. Central Difference Interpolation Formulae.

Unit – 2: Interpolation with Equal and Unequal intervals (15h)

1. Central Difference Interpolation Formulae.
Gauss's Forward interpolation formula, Gauss's backward interpolation formula, Stirling's formula, Bessel's formula.
2. Interpolation with unevenly spaced points, divided differences and properties, Newton's divided differences formula.
3. Lagrange's interpolation formula, Lagrange's Inverse interpolation formula.

Unit – 3: Numerical Differentiation (15h)

1. Derivatives using Newton's forward difference formula, Newton's back ward difference formula,
2. Derivatives using central difference formula, Stirling's interpolation formula,
3. Newton's divided difference formula, Maximum and minimum values of a tabulated function.

Unit – 4: Numerical Integration (15h)

1. General quadrature formula one errors, Trapezoidal rule,
2. Simpson's 1/3- rule, Simpson's 3/8 – rule, and Weddle's rules,
3. Euler – McLaurin Formula of summation and quadrature, The Euler transformation.

Unit – 5: Numerical solution of ordinary differential equations (15h)

1. Introduction, Solution by Taylor's Series,
2. Picard's method of successive approximations,
3. Euler's method, Modified Euler's method, Runge – Kutta methods.


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DEPARTMENT OF MATHEMATICS
(w.e.f:2022-2023)

B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 7A	Mathematical Special Functions	Hrs/Wk:

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations.
2. Find power series solutions of ordinary differential equations.
3. solve Hermite equation and write the Hermite Polynomial of order (degree) n , also find the generating function for Hermite Polynomials, study the orthogonal properties of Hermite Polynomials and recurrence relations.
4. Solve Legendre equation and write the Legendre equation of first kind, also find the generating function for Legendre Polynomials, understand the orthogonal properties of Legendre Polynomials.
5. Solve Bessel equation and write the Bessel equation of first kind of order n , also find the generating function for Bessel function understand the orthogonal properties of Bessel function.

Syllabus: (Hours: Teaching: 75 (incl. unit tests etc. 05), Training: 15)

Unit – 1: Beta and Gamma functions.

(15h)

1. Euler's Integrals-Beta and Gamma Functions, Elementary properties of Gamma Functions.
2. Transformation of Gamma Functions. Another form of Beta Function,
3. Relation between Beta and Gamma Functions.

CHAPTER: 2.9 to 2.15 of Prescribed text book 1

Unit – 2: Power series and Power series solutions of ordinary differential equations (15h)

1. Introduction, summary of useful results, power series, radius of convergence, theorems on Power series
2. Introduction of power series solutions of ordinary differential equation
3. Ordinary and singular points, regular and irregular singular points, power series solution.

CHAPTER: 7.1 to 7.8 and 8.1 to 8.6 of Part-II of Prescribed text book 2

Unit – 3: Hermite polynomials

(15h)

1. Hermite Differential Equations, Solution of Hermite Equation, Hermite polynomials, generating function for Hermite polynomials.
2. Other forms for Hermite Polynomials, Rodrigues formula for Hermite Polynomials, to find first few Hermite Polynomials.
3. Orthogonal properties of Hermite Polynomials, Recurrence formulae for Hermite Polynomials.

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Unit – 4: Legendre polynomials

(15h)

1. Definition, Solution of Legendre's equation, Legendre polynomial of degree n , generating function of Legendre polynomials.
2. Definition of $P_n(x)$ and $Q_n(x)$, General solution of Legendre's Equation (derivations not required) to show that $P_n(x)$ is the coefficient of h^n , in the expansion of $(1 - 2xh + h^2)^{\frac{-1}{2}}$
3. Orthogonal properties of Legendre's polynomials, Recurrence formulas for Legendre's Polynomials.

CHAPTER: 2.1 to 2.8 and 2.12 of Prescribed text book 1

Unit – 5: Bessel's equation

(15h)

1. Definition, Solution of Bessel's equation, Bessel's function of the first kind of order n , Bessel's function of the second kind of order n .
2. Integration of Bessel's equation in series form=0, Definition of $J_n(x)$, recurrence formulae for $J_n(x)$.
3. Generating function for $J_n(x)$.

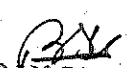
CHAPTER: 5.1 to 5.7 of Prescribed text book 1

Prescribed Books:

1. Dr.M.D.Raisinghania, Ordinary and Partial Differential Equations, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. J.N.Sharma and Dr.R.K.Gupta, Differential equations with special functions, Krishna Prakashan Mandir.

Reference Books:

1. Shanti Narayan and Dr.P.K.Mittal, Integral Calculus, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. George F.Simmons, Differential Equations with Applications and Historical Notes, Tata McGRAW-Hill Edition, 1994.
3. Shepley L.Ross, Differential equations, Second Edition, John Willy & sons, New York, 1974.
4. Web resources suggested by the teacher and college librarian including reading material.


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DEPARTMENT OF MATHEMATICS
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B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 6B	Multiple Integrals And Applications Of Vector Calculus	Hrs/Wk:

Learning Outcomes:

Students after successful completion of the course will be able to

1. Learn multiple integrals as a natural extension of definite integral to a function of two variables in the case of double integral / three variables in the case of triple integral.
2. Learn applications in terms of finding surface area by double integral and volume by triple integral.
3. Determine the gradient, divergence and curl of a vector and vector identities.
4. Evaluate line, surface and volume integrals.
5. understand relation between surface and volume integrals (Gauss divergence theorem), relation between line integral and volume integral (Green's theorem), relation between line and surface integral (Stokes theorem)

Syllabus: (Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Multiple integrals-I

(15h)

1. Introduction, Double integrals, Evaluation of double integrals, Properties of double integrals.
2. Region of integration, double integration in Polar Co-ordinates,
3. Change of variables in double integrals, change of order of integration.

Unit – 2: Multiple integrals-II

(15h)

1. Triple integral, region of integration, change of variables.
2. Plane areas by double integrals, surface area by double integral.
3. Volume as a double integral, volume as a triple integral.

Unit – 3: Vector differentiation

(15h)

1. Vector differentiation, ordinary derivatives of vectors.
2. Differentiability, Gradient, Divergence, Curl operators,
3. Formulae involving the separators.

Unit – 4: Vector integration

(15h)

1. Line Integrals with examples.
2. Surface Integral with examples.
3. Volume integral with examples.

Unit – 5: Vector integration applications

(15h)

1. Gauss theorem and applications of Gauss theorem.
2. Green's theorem in plane and applications of Green's theorem.
3. Stokes's theorem and applications of Stokes theorem.


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DEPARTMENT OF MATHEMATICS
(w.e.f:2022-2023)

B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 7B	Integral Transforms With Applications	Hrs/Wk:

Learning Outcomes:

- Students after successful completion of the course will be able to
1. Evaluate Laplace transforms of certain functions, find Laplace transforms of derivatives and of integrals.
 2. Determine properties of Laplace transform which may be solved by application of special functions namely Dirac delta function, error function, Bessel function and periodic function.
 3. Understand properties of inverse Laplace transforms, find inverse Laplace transforms of derivatives and of integrals.
 4. Solve ordinary differential equations with constant/ variable coefficients by using Laplace transform method.
 5. Comprehend the properties of Fourier transforms and solve problems related to finite Fourier transforms.

Syllabus : (Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Laplace transforms- I

(15h)

1. Definition of Laplace transform, linearity property-piecewise continuous function.
2. Existence of Laplace transform, functions of exponential order and of class A.
3. First shifting theorem, second shifting theorem and change of scale property.

Unit – 2: Laplace transforms- II

(15h)

1. Laplace Transform of the derivatives, initial value theorem and final value theorem. Laplace transforms of integrals.
2. Laplace transform of $t^n \cdot f(t)$, division by t , evolution of integrals by Laplace transforms.
3. Laplace transform of some special functions-namely Dirac delta function, error function, Bessel function and Laplace transform of periodic function.

Unit – 3: Inverse Laplace transforms

(15h)

1. Definition of Inverse Laplace transform, linear property, first shifting theorem, second shifting theorem, change of scale property, use of partial fractions.
2. Inverse Laplace transforms of derivatives, inverse, Laplace transforms of integrals, multiplication by powers of 'p', division by 'p'.
3. Convolution, convolution theorem proof and applications.

Unit – 4: Applications of Laplace transforms

(15h)

1. Solutions of differential equations with constants coefficients, solutions of differential equations with variable coefficients.
2. Applications of Laplace transforms to integral equations- Abel's integral equation.
3. Converting the differential equations into integral equations, converting the integral equations into differential equations.

Unit – 5: Fourier transforms

(15h)

1. Integral transforms, Fourier integral theorem (without proof), Fourier sine and cosine integrals.
2. Properties of Fourier transforms, change of scale property, shifting property, modulation theorem. Convolution.
3. Convolution theorem for Fourier transform, Parseval's Identify, finite Fourier transforms.


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DEPARTMENT OF MATHEMATICS
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B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 6C	Partial differential equations & Fourier series	Hrs/Wk:

Learning Outcomes:

- Students after successful completion of the course will be able to
1. Classify partial differential equations, formation of partial differential equations and solve Cauchy's problem for first order equations.
 2. Solve Lagrange's equations by various methods, find integral Surface passing through a given curve and Surfaces orthogonal to a given system of Surfaces.
 3. Find solutions of nonlinear partial differential equations of order one by using Char pit's method.
 4. Find solutions of nonlinear partial differential equations of order one by using Jacobi's method.
 5. Understand Fourier series expansion of a function $f(x)$ and Parseval's theorem.

Syllabus: (Hours: Teaching: 75 (incl. unit tests etc.05), Training: 15)

Unit – 1: Introduction of partial differential equations

(15h)

1. Partial Differential Equations, classification of first order partial differential equations, Rule I, derivation of a partial differential equations by the elimination of arbitrary constants
2. Rule II, derivation of a partial differential equation by the elimination of arbitrary function ϕ from the equations $\phi(u, v) = 0$ where u and v are functions of x, y and z .
3. Cauchy's problem for first order equations

Unit – 2: Linear partial differential equations of order one

(15h)

1. Lagrange's equations, Lagrange's method of solving $Pp+Qq=R$, where P, Q and R are functions of x, y and z , type 1 based on Rule I for solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$, type 2 based on Rule II for solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.
2. Type 3 based on Rule III for solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$, type 4 based on Rule IV for solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.
3. Integral Surface passing through a given curve, the Cauchy problem, Surfaces orthogonal to a given system of Surfaces.


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Unit – 3: Non-linear partial differential equations of order one-I

(15h)

1. Complete integral, particular integral, singular integral and general integral, geometrical interpretation of integrals of $f(x, y, z, p, q) = 0$, method of getting singular integral from the PDE of first order, compatible system of first order equations.
2. Char pit's method, Standard form I, only p and q present.
3. Standard form II, Clairaut equations.

Unit – 4: Non-linear partial differential equations of order one-II

(15h)

1. Standard Form III, only p, q and z present.
2. Standard Form IV, equation of the form $f_1(x, p) = f_2(y, q)$.
3. Jacobi's method, Jacobi's method for solving partial differential equations with three or more independent variables, Jacobi's method for solving a non-linear first order partial differential equations in two independent variables.

Unit – 5: Fourier series

(15h)

1. Introduction, Euler's formulae for Fourier series expansion of a function $f(x)$, Dirichlet's conditions for Fourier series, convergence of Fourier series.
2. Functions having arbitrary periods. Change of interval, Half range series.
3. Parseval's theorem, illustrative examples based on Parseval's theorem, some particular series.

Reference Books:

1. Dr.M.D.Raisinghania, Ordinary and Partial Differential Equations, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
2. Dr. S.Sreenadh, S.Ranganatham, Dr.M.V.S.S.N.Prasad, Dr. V.Ramesh Babu, Fourier Series and Integral Transforms, S. Chand & Company Pvt. Ltd., Ram Nagar, New Delhi-110055.
3. Prof T.Amaranath, An Elementary Course in Partial Differential Equations Second Edition, Narosa Publishing House, New Delhi.
4. Fritz John, Partial Differential Equations, Narosa Publishing House, New Delhi, 1979.
5. I.N.Sneddon, Elements of Partial Differential Equations by McGraw Hill, International Edition, Mathematics series.
6. Web resources suggested by the teacher and college librarian including reading material.

Co-Curricular Activities:

A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. On classification of first order partial differential equations, formation of partial differential equations.
2. Various methods of finding solutions of partial differential equations.
3. Integral Surface passing through a given curve and Surfaces orthogonal to a give system of Surfaces.

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D.N.R COLLEGE (A): BHIMAVARAM
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DEPARTMENT OF MATHEMATICS
(w.e.f:2022-2023)

B. A/B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:
Course: 7C	Number Theory	Hrs/Wk:

Learning Outcomes:

Students after successful completion of the course will be able to

- Find quotients and remainders from integer division, study divisibility properties of integers and the distribution of primes.
- Understand Dirichlet multiplication which helps to clarify interrelationship between various arithmetical functions.
- Comprehend the behaviour of some arithmetical functions for large n .
- Understand the concepts of congruencies, residue classes and complete residues systems.
- Comprehend the concept of quadratic residues mod p and quadratic non residues mod p .

Syllabus: (Hours: Teaching:75 (incl. unit tests etc.05), Training:15)

Unit – 1: Divisibility

(15h)

- Introduction, Divisibility, Greatest Common Divisor.
- Prime numbers, The fundamental theorem of arithmetic, The series of reciprocals of the primes.
- The Euclidean algorithm, The greatest common divisor of more than two numbers.

Unit – 2: Arithmetical Functions and Dirichlet Multiplication

(15h)

- Introduction, The Mobius function $\mu(n)$, The Euler totient function $\phi(n)$, A relation connecting ϕ and μ , A product formula for $\phi(n)$.
- The Dirichlet product of arithmetical functions, Dirichlet inverses and Mobius inversion formula, The Mangoldt function $\Lambda(n)$.
- Multiplicative functions, Multiplicative functions and Dirichlet multiplication, The inverse of a completely multiplicative function, Liouville's function $\lambda(n)$, The divisor functions $\sigma_a(n)$.

Unit – 3: Averages of Arithmetical Functions

(15h)

- Introduction, The big oh notation. Asymptotic equality of functions, Euler's summation formula, some elementary asymptotic formulas.
- The average order of $d(n)$, The average order of the divisor functions $\sigma_a(n)$, The average order of $\phi(n)$.
- The average order of $\mu(n)$ and $\Lambda(n)$, The partial sum of a Dirichlet product, Applications of $\mu(n)$ and $\Lambda(n)$.

Unit – 4: Congruences

(15h)

- Definition and basic properties of congruences, Residue classes and complete residue systems.
- Linear congruences, reduced residue systems and the Euler-Fermat theorem. Polynomial congruences modulo p . Lagrange's theorem.
- Applications of Lagrange's theorem, Simultaneous linear congruences. The Chinese remainder theorem. Applications of the Chinese remainder theorem.


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Unit – 5: Quadratic Residues and the Quadratic Reciprocity Law

(15h)

1. Quadratic Residues, Legendre's symbol and its properties, Evaluation of $(-1/p)$ and $(2/p)$, Gauss lemma,
2. The Quadratic reciprocity law, Applications of the reciprocity law, The Jacobi Symbol.
3. Gauss sums and the quadratic reciprocity law, the reciprocity law for quadratic Gauss sums. Another proof of the quadratic reciprocity law.

Reference Books:

1. Tom M. Apostol, Introduction to Analytic Number theory, Springer International Student Edition.
2. David, M. Burton, Elementary Number Theory, 2nd Edition UBS Publishers.
3. Hardy & Wright, Number Theory, Oxford Univ. Press.
4. Dence, J. B & Dence T.P, Elements of the Theory of Numbers, Academic Press.
5. Niven, Zuckerman & Montgomery, Introduction to the Theory of Numbers.
6. Web resources suggested by the teacher and college librarian including reading material.

Co-Curricular Activities:

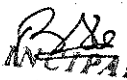
A) Mandatory:

1. For Teacher: Teacher shall train students in the following skills for 15 hours, by taking Relevant outside data (Field/Web).

1. Finding quotient and numbers from integer division and the method of solving congruences. Further problems related to the theory of quadratic residues.
2. Applications of Lagrange's theorem.
3. Applications of the Chinese remainder theorem.
4. Applications of the reciprocity law.

2. For Student: Fieldwork/Project work; Each student individually shall undertake Fieldwork/Project work and submit a report not exceeding 10 pages in the given format on the work-done in the areas like the following, by choosing any one of the aspects.

1. Going through the web sources like Open Educational Resources and list out Applications of Lagrange's theorem, and make conclusions.(or)
2. Going through the web sources like Open Educational Resources and list out Applications of the Chinese remainder theorem and make conclusions.(or)
3. Going through the web sources like Open Educational Resource and list out Applications of the reciprocity law and make conclusions.


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DEPARTMENT OF PHYSICS
(w.e.f:2022-2023)

B Sc	Semester V (Skill Enhancement Course -Elective)	Credits: 1
Course: 6A	Optical Instruments and Optometry Lab	Hrs/Wk: 2

PRACTICAL SYLLABUS (30 Hrs. Max Marks: 50)

Learning Outcomes: On successful completion of this practical course, student shall be able to:

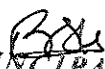
1. List out, identify and handle various equipments like binoculars, telescopes and microscopes.
2. Learn the procedures of operation of various optical instruments.
3. Demonstrate skills on testing the power of lenses, improving the resolution of telescopes and microscopes.
4. Acquire skills in observing and measuring the power, focal length and different refractive errors of eye.
5. Perform some techniques related to testing the blood and other biological samples.
6. Understand the technique of operation of Computer eye testing and evaluation.

Practical (Laboratory) Syllabus: (30 hrs)

1. Evaluation of magnifying power of simple microscope.
2. Measurement of reflection and transmission coefficient of certain materials using a microscope.
3. Resolving power of telescope
4. Determination of radii of different capillary tubes using travelling microscope.
5. Refractive index of a liquid (water) using (i) concave mirror and (ii) convex lens and a plane mirror.
6. Removal of refractive errors of eye using combination of lenses.
7. Determination of power of a convex lens by finding its focal length.

LAB REFERENCES:

1. A Practical Guide to Experimental Geometrical Optics by Yuriy A. Garbovskiy-Cambridge Univ. Press
2. <https://physics.columbia.edu/sites/default/files/content/Lab%20Resources/1292%20Lab%20Manual.pdf>
3. https://www.lnmiit.ac.in/Department/Physics/uploaded_files/lab-manual.pdf
4. Basic Optics Experiments -http://www.phys.unm.edu/Optics_Lab/Basics
5. A Practical Guide to Experimental Geometrical Optics by Yuriy A. Garbovskiy, Anatoliy V. Glushchenko, Cambridge Univ. Press
6. Web sources suggested by the teacher concerned.
http://www.phy.olemiss.edu/~thomas/weblab/Optics_lab_Items/Telescope_Microscope_PROCED_Spring_2018.pdf


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DEPARTMENT OF PHYSICS
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B.Sc	Semester V(Skill Enhancement course –Elective)	Credits:4
Course 7A	Optical imaging and photography	Hrs/Wk:4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify the different types of cameras and camera lenses according to different purposes.
2. Identify and understand the focal length of the different types of lenses
3. Acquire a critical knowledge on natural and artificial sources of light and their application in photography.
4. Demonstrate skills of camera usage especially Digital Cameras.
5. Understand the various Image development and editing techniques.
6. Comprehend the concept of different types of common shooting techniques.

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT I: INTRODUCTION TO PHOTOGRAPHY:

(10 hrs)

Photography-Introduction, Working principle of a camera, Image formation in simple camera and human eye, Types of cameras , Pin-hole camera , Single Lens Reflex (SLR) camera, Twin Lens Reflex (TLR) camera , Digital Single-lens reflex camera (DSLR), Digital camera, Drone flying cameras, Care and maintenance of camera, Factors influencing choice of camera

UNIT II: DIGITAL PHOTOGRAPHY:

(10 hrs)

Different types of Digital cameras and their parts, Working of DSLR camera, Types of lenses- Normal, Wide angle, telephoto, Zoom lenses, Digital Image formation, Digital camera image sensors, Size of the image, Depth of focus, Depth of field, Exposure time, Aperture, Shutter speed, ISO, filters, knowledge on pixels and their uses , resolution, Camera accessories

UNIT III: PHOTOGRAPHIC LIGHT SOURCES:

(10 hrs)

Need for the light in photography, Light sources- Natural light, Sun light, Moon light, Ambient light, Artificial light sources-Flood light, Spot light, Halogen light, Halogen flash light, Digital lights, Exposure, Studio photography

UNIT IV: PHOTOGRAPHIC SHOOTING TECHNIQUES:

(10 hrs)

Significance and role of Camera lens in photo shooting, Arrangement of lenses in a Camera- Positioning, Techniques involved in the use of DSLR cameras, Usage of Filters, Techniques of Photomicrography, High speed Photography with motor driven camera, Basic ideas on Underwater Photography, Medical Photography, Astronomical Photography, Infra-Red (IR) Photography, Ultra Violet (UV) Photography and Forensic Photography.

UNIT V : PHOTO MANIPULATION :

(10 hrs)

Developing and printing the photographs, equipment and materials used in developing and printing, image mixing and printing, Image editing through image editing software's like Adobe Photoshop – Adjustment of Brightness, Contrast, Tonal and Colour Values, Factors influencing quality of digital image, Methods of storing and processing, Image transportation through Pendrive, CD, HDD and CLOUD [Internet]

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DEPARTMENT OF PHYSICS
(w.e.f:2022-2023)

B.Sc	Semester V(Skill Enhancement course –Elective)	Credits:4
Course :6B	Low temperature Physics & Refrigeration	Hrs/Wk:4

Learning Outcomes: Students after successful completion of the course will be able to

1. Identify various methods and techniques used to produce low temperatures in the Laboratory.
2. Acquire a critical knowledge on refrigeration and air conditioning.
3. Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories.
4. Understand the classification, properties of refrigerants and their effects on environment.
5. Comprehend the applications of Low Temperature Physics and refrigeration.

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT I: PRODUCTION OF LOW TEMPERATURE

(10 hrs)

Production of low temperatures-Introduction, Freezing mixtures, Joule-Thomson effect, Regenerative cooling, Different methods of liquefaction of gases, liquefaction of air, Production of liquid hydrogen and nitrogen, Adiabatic demagnetization, Properties of materials at low temperatures, Superconductivity

UNIT II: MEASUREMENT OF LOW TEMPERATURE

(10 hrs)

Gas thermometer and its correction and calibration, Secondary thermometers, resistance thermometers, thermocouples, Vapour pressure thermometers, Magnetic thermometers, Advantages and drawbacks of each type of thermometer.

UNIT III: PRINCIPLES OF REFRIGERATION

(10 hrs)

Introduction to Refrigeration- Natural and artificial refrigeration, Stages of refrigeration, Types of refrigeration - Vapor compression and vapor absorption refrigeration systems, Refrigeration cycle and explanation with a block diagram, Introductory ideas on air- conditioning. Refrigerants-Introduction, Ideal refrigerant, Properties of refrigerant, Classification of refrigerants, commonly used refrigerants, Eco-friendly refrigerants

UNIT IV: COMPONENTS OF REFRIGERATOR

(10 hrs)

Refrigerator and its working, Block diagram, Coefficient of Performance (COP), Tons of refrigeration (TR) and Energy Efficiency Ratio (EER), Refrigerator components: Types of compressors, evaporators and condensers and their functional aspects, defrosting in a refrigerator, Refrigerant leakage and detection

UNIT V: APPLICATIONS OF LOW TEMPERATURE & REFRIGERATION (10 hrs.)

Applications of Low temperatures: Preservation of biological material, Food freezing, liquid nitrogen and liquid hydrogen in medical field, Superconducting magnets in MRI- Tissue ablation (cryosurgery) - Cryogenic rocket propulsion system.

Applications of refrigeration: Domestic refrigerators, Water coolers, Cold storages, Ice plants, Food preservation methods, Chemical and Process industries, Cold treatment of metals, Construction field, Desalination of water, Data centers.


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DEPARTMENT OF PHYSICS
(w.e.f:2022-2023)

B Sc	Semester V (Skill Enhancement Course -Elective)	Credits: 4
Course: 7B	Solar Energy and Applications	Hrs/Wk: 4

Learning Outcomes: After successful completion of the course, the student will be able to:

1. Understand Sun structure, forms of energy coming from the Sun and its measurement.
2. Acquire a critical knowledge on the working of thermal and photovoltaic collectors.
3. Demonstrate skills related to callus culture through hands on experience
4. Understand testing procedures and fault analysis of thermal collectors and PV modules.
5. Comprehend applications of thermal collectors and PV modules.

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT I: BASIC CONCEPTS OF SOLAR ENERGY

(10HRS)

Spectral distribution of solar radiation, Solar constant, zenith angle and Air-Mass, standard time, local apparent time, equation of time, direct, diffuse and total radiations. Pyrheliometer - working principle, direct radiation measurement, Pyrometer-working Principle, diffuse radiation measurement, Distinction between the two meters.

UNIT II: SOLAR THERMAL COLLECTORS

(10hrs)

Solar Thermal Collectors-Introduction, Types of Thermal collectors, Flat plate collector - liquid heating type, Energy balance equation and efficiency, Evacuated tube collector, collector overall heat loss coefficient, Definitions of collector efficiency factor, collector heat-removal factor and collector flow factor, Testing of flat-plate collector, solar water heating system, natural and forced circulation types. Concentrating collectors, Solar cookers, Solar dryers, Solar desalinators.

UNIT III: FUNDAMENTALS OF SOLAR CELLS

(10Hrs)

Semiconductor interface, Types, homo junction, hetero junction and Schottky barrier, advantages and drawbacks, Photovoltaic cell, equivalent circuit, output parameters, conversion efficiency, quantum efficiency, Measurement of I-V characteristics, series and shunt resistance, their effect on efficiency, Effect of light intensity, inclination and temperature on efficiency

UNIT IV: TYPES OF SOLAR CELLS AND MODULES

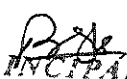
(10 hrs)

Types of solar cells, Crystalline silicon solar cells, I-V characteristics, poly-Si cells, Amorphous silicon cells, Thin film solar cells-CdTe/CdS and CuInGaSe₂/CdS cell configurations, structures, advantages and limitations, Multi junction cells - Double and triple junction cells. Module fabrication steps, Modules in series and parallel, Bypass and blocking diodes

UNIT V: SOLAR PHOTOVOLTAIC SYSTEMS

(10hrs)

Energy storage in PV systems, Energy storage modes, electrochemical storage, Batteries, Primary and secondary, Solid-state battery, Molten solvent battery, lead acid battery and dry batteries, Mechanical storage - Flywheel, Electrical storage - Super capacitor


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D.N.R COLLEGE (A): BHIMAVARAM
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DEPARTMENT OF PHYSICS
(w.e.f:2022-2023)

B Sc	Semester V (Skill Enhancement Course -Elective)	Credits: 4
Course: 6C	Applications of Electricity & Electronics	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify various components present in Electricity & Electronics Laboratory.
2. Acquire a critical knowledge of each component and its utility (like resistors, capacitors, inductors, power sources etc.).
3. Demonstrate skills of constructing simple electronic circuits consisting of basic circuit elements.
4. Understand the need & Functionality of various DC & AC Power sources.
5. Comprehend the design, applications and practices of various electrical & Electronic devices and also their trouble shooting.

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training, Unit tests etc.)

UNIT I: INTRODUCTION TO PASSIVE ELEMENTS

(10 hrs.)

Passive and Active elements-Examples, Resistor-Types of Resistors, Color coding - Applications of a Resistor as a heating element in heaters and as a fuse element. Capacitor-Types of Capacitors, Color coding, Energy stored in a capacitor, Applications of Capacitor in power supplies, motors(Fans) etc., Inductor-Types of Inductors, EMF induced in an Inductor, Applications of Inductor, Application of choke in a fan and in a radio tuning circuit, Series resonance circuit as a Radio tuning circuit.

UNIT II: Power Sources (Batteries)

(10 hrs.)

Types of power sources-DC & AC sources, Different types of batteries, Rechargeable batteries -Lead acid batteries, Ni-MH batteries, Li-ion batteries- Li-PO batteries, Series, Parallel & Series-Parallel configuration of batteries, Constant Voltage source-Constant Current Source-Applications of Current sources & Voltage sources, SMPS used in computers.

UNIT III: Alternating Currents

(10 hrs)

A.C Power source-Generator, Construction and its working principle, Transformers-Construction and its working principle, Types of Transformers-Step-down and Step-up Transformers, Relation between primary turns and secondary turns of the transformer with emf., Use of a Transformer in a regulated Power supplies, Single phase motor -working principle, Applications of motors(like water pump, fan etc.).

UNIT IV: Power Supplies (Skill Based)

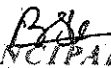
(10 hrs.)

Working of a DC regulated power supply, Construction of a 5 volts regulated power supply, Design of a step-down (ex: 220-12V) and step-up (ex: 120-240V) transformers- Simple Design of FM Radio circuit using LCR series resonance (tuning) circuit, Checking the output voltage of a battery eliminator using a MultiMate.(Trouble shooting), Design of a simple 5 volts DC charger, Power supply for computers(SMPS)

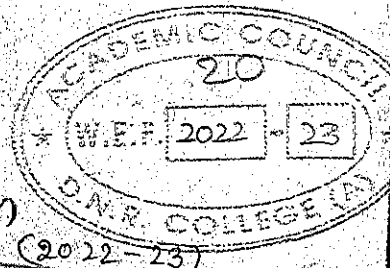
UNIT V: Applications of Electromagnetic Induction

(10 hrs.)

DC motor -Construction and operating principle, Calculation of power, voltage and current in a DC motor, Design of a simple Motor (for example Fan) with suitable turns of coil-DC generator-Construction, operating principle and EMF equation, Construction of a simple DC generator, Difference between DC and AC generators


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B. Sc.	PHYSICS	
Course: 7C	Semester V (Skill Enhancement Course -Elective)	(2022-23)
Electronic Instrumentation		Credits: 4
Syllabus (Total Hours: 50)		Hrs/Wk: 4

UNIT I: INTRODUCTION TO INSTRUMENTS (10 hrs)

Types of electronic Instruments- Analog instruments & Digital Instruments, DC Voltmeter and AC Voltmeter, Construction and working of an Analog Multimeter and Digital Multimeter (Block diagram approach), Sensitivity, $3\frac{1}{2}$ display and $4\frac{1}{2}$ display Digital multimeters, Basic ideas on Function generator

UNIT II: OSCILLOSCOPE (10 hrs)

Cathode Ray Oscilloscope-Introduction, Block diagram of basic CRO, Cathode ray tube, Electron gun assembly, Screen for CRT, Time base operation, Vertical deflection system, Horizontal deflection system, Use of CRO for the measurement of voltage (DC and AC), frequency, phase difference, Different types of oscilloscopes and their uses, Digital storage Oscilloscope

UNIT III: TRANSDUCERS (10 hrs)

Classification of transducers, Selection of transducers, Resistive, capacitive & inductive transducers, Resistive and capacitive touch screen transducer used in mobiles, Displacement transducer-LVDT, Piezoelectric transducer, Photo transducer, Digital transducer, Fibre optic sensors

UNIT IV: DISPLAY INSTRUMENTS (10 hrs)

Introduction to Display devices, LED Displays, Seven Segment Displays, Construction and operation (Display of numbers), Types of SSDs (Common Anode & Common Cathode type), Limitations of SSDs, Liquid Crystal Displays, Principle and working of 2×16 display and 4×16 LCD modules, Applications of LCD modules.

UNIT V: BIOMEDICAL INSTRUMENTS (10 hrs)

Basic operating principles and uses of (i) Clinical thermometer (ii) Stethoscope (iii) Sphygmomanometer (iv) ECG machine (v) Radiography (vi) Ophthalmoscope (vii) Ultrasound scanning (viii) Ventilator (ix) Pulse oxymeter (x) Glucometer, Basic ideas of CT scan and MRI scan

REFERENCE BOOKS:

1. Electronic Instrumentation by H.S.Kalsi, TMH Publishers
2. Electronic Instrument Hand Book by Clyde F. Coombs, McGraw Hill
3. Introduction to Biomedical Instrumentation by Mandeep Singh, PHI Learning.
4. Biomedical Instrumentation and Measurements by Leslie Cromwell, PrenticeHall India.
5. Electronic Measurements and Instrumentation by Kishor, K Lal, Pearson, New Delhi
6. Electrical and Electronic Measurements by Sahani, A.K., Dhanpat Rai, New Delhi
7. Electronic Instruments and Measurement Techniques by Cooper, W.D. Halfbrick, A.B., PHI Learning, New Delhi
8. Web sources suggested by the teacher concerned and the college librarian including reading material.

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m. Satyawani
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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 6A	Operations Research - I	Hrs/Wk: 4

Objective: The Objective of the paper is to introduce the basic concepts of Operational Research and linear programming to the students.

Learning Outcomes:

After learning this course, the student will be able

1. To know the scope of Operations Research
2. To link the OR techniques with business environment and life sciences
3. To convert real life problems into mathematical models
4. To find a solution to the problem in different cases
5. To inculcate logical thinking to find a solution to the problem

Syllabus

UNIT I:

Introduction of OR – Origin and development of OR – Nature and features of OR –Scientific Method in OR – Modeling in OR – Advantages and limitations of Models-General Solution methods of OR models – Applications of Operation Research. Linear programming problem (LPP) - Mathematical formulation of the problem - illustrations on Mathematical formulation of Linear programming of problem. Graphical solution of linear programming problems. Some exceptional cases - Alternative solutions, Unbounded solutions, non-existing feasible solutions by Graphical method.

UNIT II:

General linear programming Problem (GLP) – Definition and Matrix form of GLP problem, Slack variable, Surplus variable, unrestricted Variable, Standard form of LPP and Canonical form of LPP. Definitions of Solution, Basic Solution, Degenerate Solution, Basic feasible Solution and Optimum Basic Feasible Solution. Introduction to Simplex method and Computational procedure of simplex algorithm. Solving LPP by Simplex method (Maximization case and Minimization case)

UNIT III:

Artificial variable technique - Big-M method and Two-phase simplex method, Degeneracy in LPP and method to resolve degeneracy. Alternative solution, Unbounded solution, Non existing feasible solution and Solution of simultaneous equations by Simplex method.

UNIT IV:

Duality in Linear Programming –Concept of duality - Definition of Primal and Dual Problems, General rules for converting any primal into its Dual, Economic interpretation of duality, Relation between the solution of Primal and Dual problem (statements only). Using duality to solve primal problem. Dual Simplex Method.

UNIT V:

Post Optimal Analysis - Changes in cost Vector C , Changes in the Requirement Vector b and changes in the Coefficient Matrix A. Structural Changes in a LPP.


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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 7A	Operations Research - II	Hrs/Wk: 4

Objective: To enrich the knowledge of students with advanced techniques of linear programming problem along with real life applications.

Learning Outcomes:

After learning this course, the student will be able

1. To solve the problems in logistics
2. To find a solution for the problems having space constraints
3. To minimize the total elapsed time in an industry by efficient allocation of jobs to the suitable persons.
4. To find a solution for an adequate usage of human resources
5. To find the most plausible solutions in industries and agriculture when a random environment exists.

Syllabus

UNIT I:

Transportation Problem - Introduction, Mathematical formulation of Transportation problem. Initial Basic feasible solution of Transportation problem - North-West corner rule, Lowest cost entry method, Vogel's approximation method. Method of finding optimal solution-MODI method(U-V method). Degeneracy in transportation problem, Resolution of degeneracy, Unbalanced transportation problem. Maximization TP.Transshipment Problem.

UNIT II:

Assignment Problem - Introduction, Mathematical formulation of Assignment problem, Reduction theorem (statement only), Hungarian Method for solving Assignment problem, Unbalanced Assignment problem. The Traveling salesman problem, Formulation of Traveling salesman problem as an Assignment problem and Solution procedure.

UNIT III:

Sequencing problem: Introduction and assumptions of sequencing problem, Sequencing of n jobs and one machine problem. Johnson's algorithm for n jobs and two machines problem- problems with n-jobs on two machines, algorithm for n jobs on three machines problem- problems with n-jobs on three machines, algorithm for n jobs on m machines problem, problems with n-jobs on m-machines.

UNIT IV:

Network Scheduling: Basic Components of a network, nodes and arcs, events and activities- Rules of Network construction - Time calculations in networks - Critical Path Method (CPM) and PERT.

UNIT V:

Game Theory: Two- person zero-sum games. Pure and Mixed strategies. Maxmin and Minimax Principles - Saddle point and its existence. Games without Saddle point-Mixed strategies.Solution of 2 x 2 rectangular games. Graphical method of solving 2 x n and m x 2 games. Dominance Property.


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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 6B	Statistical Process and Quality Control	Hrs/Wk: 4

Course Objectives: To understand the concept of quality, process control and product control using control chart techniques and sampling inspection plan. To have an idea about quality management, quality circles, quality movement and standardizations for quality.

Learning Outcomes:

After learning this course, the student will be able

1. To define 'quality' in a scientific way
2. To differentiate between process control and product control
3. To speak about quality awareness in industry
4. To pave a path to an industry to meet the standards
5. To effectively implement various plans to control the quality standards at various stages of an industry.

Syllabus

UNIT I:

Meaning of quality, concept of total quality management (TQM) and six-sigma, ISO, comparison between TQM and Six Sigma, Meaning and purpose of Statistical Quality Control (SQC), Seven Process Control Tools of Statistical Quality Control (SQC) (i) Histogram (ii) Check Sheet, (iii) Pareto Diagram (iv) Cause and effect diagram(CED), (v) Defect concentration diagram (vi) Scatter Diagram (vii) Control chart. (Only introduction of 7 tools is expected).

UNIT II:

Statistical basis of She whart control charts, use of control charts. Interpretation of control charts, Control limits, Natural tolerance limits and specification limits. Chance causes and assignable causes of variation, justification for the use of 3-sigma limits for normal distribution, Criteria for detecting lack of control situations:

- (i) At least one point outside the control limits
- (ii) A run of seven or more points above or below central line.

UNIT III:

Control charts for Variables: Introduction and Construction of $\bar{X}$ and R chart and Standard Deviation Chart when standards are specified and unspecified, corrective action if the process is out of statistical control.

Control charts for Attributes: Introduction and Construction of p chart, np chart, C Chart and U charts when standards are specified and unspecified, corrective action if the process is out of statistical control.

UNIT IV:

Acceptance Sampling for Attributes: Introduction, Concept of sampling inspection plan, Comparison between 100% inspection and sampling inspection. Procedures of acceptance sampling with rectification, Single sampling plan and double sampling plan. Producer's risk and Consumer's risk, Operating characteristic (OC) curve, Acceptable Quality Level (AQL), Lot Tolerance Fraction Defective (LTFD) and Lot Tolerance Percent Defective (LTPD), Average Outgoing Quality (AOQ) and Average Outgoing Quality Limit (AOQL), AOQ curve, Average Sample Number (ASN), Average Total Inspection (ATI).

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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 7B	Computational Techniques and R Programming	Hrs/Wk: 4

Course Objectives: To learn the statistical analysis with the help of the statistical software R

Learning Outcomes:

- After learning this course the student will be able
1. Know about basics of computer
 2. Know about Organization of digital computers
 3. Know about Computer Programming and flow charts
 4. Know and study about R Programming
 5. Know about the usage of R in Descriptive Statistics

Syllabus

UNIT I:

Computer basics: Introduction and brief history of evolution of computers, Classification of computers: special purpose and general purpose; analog, digital and hybrid; Super, main-frame etc.

UNIT II:

Organization of general purpose digital computers: CPU, main memory and peripherals. Mass storage devices and other I/O devices. Computer languages: Machine code language (machine language), assembly language and high level languages. Software: Operating systems, linker, loader, compiler, interpreter and assembler.

UNIT III:

Computer programming: Algorithm and flow-chart. Storage of information: concepts of records and files. File organization: sequential, relative and indexed.

UNIT IV:

Programming with R: Introduction to R, Data types in R (numeric, logical, character, complex etc.), R objects: vector, matrix, array, list, data frame, factor, and time series. Arithmetic, logical and relational operators, explicit and implicit looping, functions and functional programming in R, Lexical scoping rules in R, benefits of Lexical scoping, other scoping rules, debugging facility in R. Few important mathematical, statistical and graphical functions in R.

UNIT V:

Descriptive Statistics with R software: : Calculations with R software such as descriptive statistics, frequency distribution, Graphics and plots, statistical functions of central tendency, variation, skewness and kurtosis and illustration with examples.

REFERENCE BOOKS:

1. Chambers, J. (2008). Software for Data Analysis: Programming with R, Springer.
2. Crawley, M.J. (2017). The R Book, John Wiley & Sons.
3. Eckhouse, R.H. and Morris, L.R. (1975). Minicomputer Systems Organization, Programming and Applications, Prentice-Hall.
4. Matloff, N. (2011). The Art of R Programming, No Starch Press, Inc.
5. Peter N. (1986). Inside the IBM PC, Prentice-Hall Press.

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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 6C	Econometrics	Hrs/Wk: 4

Learning Outcomes:

The course on econometrics will primarily focus on the use of statistical modelling and the relevant analyses to economic data problems. After learning this course the student will be able

1. Various important econometric models and relevant model building concepts in econometrics
2. General linear models and estimation of inherent model parameters
3. Multicollinearity, its detection and consequences and related inferential aspects
4. some advanced concepts of generalised least squares estimation, autocorrelation, its consequences, detection and strategy for reducing autocorrelation,
5. Heteroscedasticity and its inherent concepts including its consequences, some inferential aspects on heteroscedasticity, practical aspects and real data illustration of the related problems.

Syllabus:

UNIT I:

Basic Econometrics: Nature of econometrics and economic data, concept of econometrics, steps in empirical economic analysis, econometric model, importance of measurement in economics, the structure of econometric data, cross section, pooled cross section, time series and paired data, simple regression models, two variable linear regression model, assumptions estimations of parameters.

UNIT II:

Models and Estimations: Gauss marcoff theorem, OLS estimations, partial and multiple correlations coefficients. The general linear model assumptions, estimation and properties of estimators, BLUEs, and tests of significance of estimators, R square and ANOVA.

UNIT III:

Problems in OLS Estimators: Multicollinearity: Introduction and concepts, detection of multicollinearity, consequences, tests and solutions of multicollinearity.

UNIT IV:

Autocorrelation: concept, consequences of auto correlated disturbances, detection and solution of autocorrelation.

UNIT V:

Heteroscedastic disturbances: Concepts, Consequences of heteroscedasticity. Tests and solutions of heteroscedasticity, specification error, Errors of measurement.

REFERENCES:

1. Gujarati, D. and Sangeetha, S. (2007). Basic Econometrics, 4th Edition, McGraw Hill Companies.
2. Johnston, J. (1972). Econometric Methods, 2nd Edition, McGraw Hill International.
3. Koutsoyiannis, A. (2004). Theory of Econometrics, 2nd Edition, Palgrave Macmillan Limited.
4. Maddala, G.S. and Lahiri, K. (2009): Introduction to Econometrics, 4th Edition, John Wiley & Sons.


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DEPARTMENT OF STATISTICS
(w.e.f:2022-2023)

B. Sc	Semester: V (Skill Enhancement Course- Elective)	Credits: 4
Course: 7C	Regression Analysis	Hrs/Wk: 4

Learning Outcomes:

After learning this course the student will be able

1. To know about correlation and regression techniques, the two very powerful tools in statistics,
2. To get an idea of Linear and Multiple Linear regression,
3. To learn about regression diagnostics, multicollinearity, residual plots and estimation and tests for regression coefficients.
4. To study concept of coefficient of determination and inference on partial and multiple correlation coefficients.
5. To learn the regression with qualitative independent and dependent variables by dummy variable technique.
6. To learn the selection of the best regression model.

Syllabus

UNIT I:

Correlation: Bivariate data, Scatter diagram and interpretation. Karl Pearson's correlation coefficient, Properties. Spearman's rank correlation coefficient, with ties and without ties, limits. Regression, difference between correlation and regression.

UNIT II:

Steps in Regression Analysis: Assumptions of regression models. Simple linear regression model, Estimation of regression parameters by least squares method (fitting of regression model), Interpretation of parameters. Concept of residual, Residual plots. Multiple linear regression: Estimation of regression parameters by least square method, Interpretation of parameters. Concept of coefficient of determination.

UNIT III:

Regressions with Qualitative Independent Variables: Dummy variable technique — Testing structural stability of regression models comparing two regressions, interaction effects, seasonal analysis.

UNIT IV:

Regressions with Qualitative Dependent Variables: Piecewise linear regression, use of dummy variables, regression with dummy dependent variables; The LPM, Logit, Probit and Tobit models — Applications.

UNIT V:

Best Model: Selecting 'Best' regression model. All possible regressions — R^2 , Adjusted R^2 , MS_{Res} , Mallows's statistic. Sequential selection — forward selection, backward elimination.


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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6A	Synthetic Organic Chemistry	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of reagents used in the synthesis of organic compounds.
2. Acquire knowledge on basic concepts indifferent types of pericyclic reactions.
4. Understand the importance of retro synthesis in organic chemistry.
5. Comprehend the applications of different reactions in synthetic organic chemistry.

Syllabus :/ Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Pericyclic reactions

12 hours

3. A brief introduction to synthetic organic chemistry
4. Features and classification of pericyclic reactions: Phases, nodes and symmetry properties of molecular orbitals in ethylene, 1, 3-butadiene, 1, 3, 5-hexatriene, alkylation and ally radical. Thermal and photochemical reactions.
5. Electro cyclic reactions: Definition and examples, definitions of con and dis rotation, Woodward- Hoffmann selection rules.(Correlation diagrams are not required)
6. Cyclo addition reactions: Definition and examples, definitions of supra facial and antar facial addition, Woodward- Hoffmann selection rules. (Correlation diagrams are not required)

Unit-2: Organic photochemistry

8hours

1. Jablonski diagram-singlet and triplet states
2. Photochemistry of Carbonyl compounds- $\pi-\pi^*$ and $n-\pi^*$ transitions, Norrish type-1 and type-2 reactions
3. Paterno – Buchi reaction.

Unit-3: Retro synthesis

12 hours

1. Important terms in Retro synthesis with examples-Disconnection, Target molecule, FGI, Synthon, Retro synthetic analysis, chemo selectivity, region selectivity
2. Importance of Order of events in organic synthesis
3. Retro synthetic analysis of the compounds: a. cyclohexene, b. 4-Nitro toluene, c. Paracetamol.

Unit-4: Synthetic Reactions

8hours

Shapiro reaction, Stork - enamine reaction (only alkylation), Wittig reaction, Robinson annulation, Bailys-Hillman reaction, Heck reaction, Suzuki coupling. Synthesis of aldehydes and ketones using 1, 3-Dithiane.

Unit-5: Reagents in Organic Chemistry

10 hours

Oxidizing agents: PCC, PDC, SeO_2 (Riley oxidation), NBS.
 Reducing agents: LiAlH_4 (with mechanism), LTBA, Metal-solvent reduction (Birch reduction), Catalytic reduction.

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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7A	Analysis of Organic Compounds	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of mass spectrometry in the structural elucidation of organic compounds.
2. Acquire the knowledge on structural elucidation of organic compounds.
3. Understand various chromatography methods in the separation and identification of organic compounds.
4. Demonstrate the knowledge gained in solvent extraction for the separate the organic compounds.

Syllabus : (Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Mass Spectrometry

10 hours

A brief introduction to analysis of organic compounds

Basic principles, Instrumentation - Mass spectrometer, electron Ionization (Electron Impact ionization, EI), Molecular ions, metastable ions, Isotope abundance. Basic fragmentation types. Fragmentation patterns in Toluene, 2-Butanol, Butaldehyde, Propionic acid.

Unit-2: Structural elucidation of organic compounds using IR, NMR, mass spectral data-

8hours

2, 2, 3, 3-Tetra methyl butane, Butane-2, 3-dione, Prop ionic acid and methyl propionate.

Unit-3: Structural elucidation of organic compounds using IR, NMR, Mass spectral data-

8 hours

Phenyl acetylene, ace to phenomenon amici acid and p-nitro aniline.

Unit-4: Separation techniques-1

12 hours

1. Solvent extraction-Principle and theory, Batch extraction technique, application of batch extraction in the separation of organic compounds from mixture- acid & neutral, base & neutral.
2. Chromatography- Principle and theory, classification, types of adsorbents, eluents, R_f values and factors affecting R_f values.
3. Thin layer chromatography-principle, experimental procedure, advantages and applications.

Unit-5: Separation techniques-2

12 hours

1. Paper chromatography- Principle, experimental procedure, ascending, descending, radial and two dimensional, applications.
2. Column chromatography-Principle, classification, experimental procedure, applications.
3. HPLC-Principle, Instrumentation-block diagram and applications.

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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6B	Analytical Methods in Chemistry-1	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of solvent extraction and ion exchange method.
2. Acquire knowledge on the basic principles of volumetric analysis and gravimetric analysis.
3. Demonstrate the usage of common laboratory apparatus used in quantitative analysis.
4. Understand the theories of different types of titrations.
5. Gain knowledge on different types of errors and their minimization methods.

Syllabus:

(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Quantitative analysis-1

8 hours

1. A brief introduction to analytical methods in chemistry
2. Principles of volumetric analysis, concentration terms- Molarity, Molality, Normality, w/v, w/w, ppm and ppb, preparing solutions- Standard solution, primary standards and secondary standards.
3. Description and use of common laboratory apparatus- volumetric flask, burette, pipette, beakers, measuring cylinders.

Unit-2: Quantitative analysis-2

12hours

1. Principles of volumetric analysis: Theories of acid-base (including study of acid-base titration curves), redox, complex metric, iodometric and precipitation titrations-choice of indicators for the saturations.
2. Principles of gravimetric analysis: precipitation, coagulation, peptization, co precipitation, post precipitation, digestion, filtration, and washing of precipitate, drying and ignition.

Unit-3: Treatment of analytical data

8hours

Types of errors- Relative and absolute, significant figures and its importance, accuracy - methods of expressing accuracy, errors- Determinate and indeterminate and minimization of errors, precision-methods of expressing precision, standard deviation and confidence interval.

Unit-4: separation techniques

12 hours

1. Solvent Extraction: Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism. Application-Determination of Iron (III).
2. Ion Exchange method: Introduction, action of ion exchange resins, applications.

UNIT-5: Analysis of water

10hours

Determination of dissolved solids, total hardness of water, turbidity, alkalinity, Dissolved oxygen, COD, determination of chloride using Mohr's method.

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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7B	Analytical Methods in Chemistry-2	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of chromatography in the separation and identification of compounds in a mixture
2. Acquire a critical knowledge on various chromatographic techniques.
3. Demonstrate skills related to analysis of water using different techniques.
4. Understand the principles of spectro chemistry in the determination of metal ions.
5. Comprehend the applications of atomic spectroscopy.

Syllabus : (Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Chromatography-Introduction and classification **10 hours**

Principle, Classification of chromatographic methods, Nature of adsorbents, eluents, R_f values, factors affecting R_f values.

Unit-2: TLC and paper chromatography **12 hours**

1. Thin layer chromatography: Principle, Experimental procedure, preparation of plates, adsorbents and solvents, development of chromatogram, detection of spots, applications and advantages.
2. Paper Chromatography: Principle, Experimental procedure, choice of paper and solvents, various modes of development- ascending, descending, radial and two dimensional, applications.

Unit -3: Column chromatography **12 hours**

1. Column chromatography: Principle, classification, Experimental procedure, stationary and mobile phases, development of the Chromatogram, applications.
2. HPLC: Basic principles, instrumentation –block diagram and applications.

Unit -4: Spectrophotometry **8hours**

Principle, Instrumentation: Single beam and double beam spectrometer, Beer-Lambert's law- Derivation and deviations from Beer-Lambert's law, applications of Beer-Lambert's law-Quantitative determination of Fe⁺², Mn⁺² and Pb⁺².

Unit -5: Atomic spectroscopy **8hours**

Types, atomizer, atomic absorption and emission and applications.

References

1. Fundamental so Analytical Chemistry by F.James Holler, Stanley R. Crouch, Donald M. West and Douglas A. Skoog, Ninth edition, Cengage.
2. Analytical Chemistry by Gary D. Christian, Purnendu K. Dasgupta and Kevin A. Schug, Seventh edition, Wiley.
3. Quantitative analysis by R.A. Day Jr. and A.L. Underwood, Sixth edition, Pearson.
4. Text book of Vogel's Quantitative Chemical Analysis, Sixth edition/ Pearson.

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DEPARTMENT OF CHEMISTRY
 (w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6C	Industrial Chemistry-I	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of different surface coatings.
2. Acquire a critical knowledge on manufacture of ceramics and cement.
3. Understand various steps in the manufacture of cane sugar.
4. Explain the manufacture of pulp and paper.

Syllabus : (Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Fertilizers

10 hours

A brief introduction to industrial chemistry

Different types of fertilizers. Manufacture of the following fertilizers: Urea, Ammonium nitrate, Calcium ammonium nitrate, Ammonium phosphates; Polyphosphate, Superphosphate, Compound and mixed fertilizers.

Unit-2: Silicates

10hours

1. **Ceramics:** Important clays and Felds par. Ceramics-types, uses and manufacture. High technology ceramics and their applications.

2. **Cements:** Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cements.

Unit-3: Surface Coatings

12 hours

Objectives of coatings surfaces, preliminary treatment of surface, classification of surface coatings. Paints and pigments-formulation, composition and related properties. Oil paint, modified oils, Pigments, toners and lake pigments, fillers, thinners, enamels, emulsifying agents. Special paints (Heat retardant, Fire retardant, Eco-friendly paint, Plastic paint), Water and Oil paints.

Unit-4: Sugar Chemistry

08hours

Introduction-Manufacture and recovery of cane sugar from molasses, manufacture of sucrose from beat root, testing and estimation of sucrose.

Unit-5: Paper Industry

10hours

Pulp and Paper-Introduction, Manufacture of pulp, sulphate or Kraft pulp, soda pulp, sulphite pulp, rag pulp, beating, refining, filling, sizing and colouring of pulp, manufacture of paper.

References:

1. E.Stocchi: *Industrial Chemistry*, Vol-I, Ellis HorwoodLtd.UK
2. J.A.Kent: *Riegel's Hand book of Industrial Chemistry*, CBS Publishers, New Delhi.
3. P.C.Jain, M.Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
4. R. Gopalan, D. Venkappayya, S. Nagarajan: *Engineering Chemistry*, Vikas Publications, NewDelhi.
5. B.K.Sharma: *Engineering Chemistry*, Goel Publishing House, Meerut
6. O. P. Vermani, A. K. Narula: *Industrial Chemistry*, Galgotia Publications Pvt. Ltd., New Delhi.


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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits: 4
Course: 7C	Industrial Chemistry-2	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify the importance of industrial waste management.
2. Acquire a critical knowledge on the preparation and applications of organic polymers.
3. Demonstrate the analysis of water quality parameters.
4. Explain the sources of air pollution.

II. Syllabus : *(Total Hours: 90 including Teaching, Lab, Field Skills Training, Unit tests etc.)*

Unit-1: Organic Polymers-1

10 hours

Basic definitions, degree of polymerization, classification of polymers- Natural and Synthetic polymers, Organic and In organic polymers, Thermoplastic and Thermo setting polymers, Plastics, Elastomers, Fibers and Resins, Linear, Branched and Cross-Linked polymers.

Unit-2: Organic Polymers-2

10 hours

Addition polymers and Condensation polymers, mechanism of polymerization- Free radical, ionic and Zeigler-Natta polymerization. Industrial manufacturing and applications of following polymers, Polystyrene, Poly acrylonitrile, Poly methacrylate, Poly methyl-methacrylate.

Unit-3: Air Pollution

8 hours

Sources of air pollution, acid rain, photochemical smog, Greenhouse effect, Formation and depletion of ozone, sources and effects of various gaseous pollutants: NO_x, SO_x, SPM, CO, hydrocarbons, controlling methods of air pollution.

Unit-4: Analysis of water

10hours

Determination of total hardness of water, Dissolved oxygen, BOD, COD, total dissolved solids, turbidity, alkalinity, determination of chloride using Mohr's method.

Unit-5: Industrial Waste Management

12hours

Waste water treatment - primary, secondary & tertiary treatment. (All treatment methods in detail). Characteristics of solid wastes, methods of solid waste treatment and disposal, microbiology involved in solid waste disposal, methods of solid waste disposal- composting, sanitary landfilling- economic, aesthetic and environmental problems.


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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits: 4
Course: 6D	Environmental Chemistry	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the environment functions and how it is affected by human activities.
2. Acquire chemical knowledge to ensure sustainable use of the world's resources and ecosystems services.
4. Engage in simple and advanced analytical tools used to measure the different types of pollution.
5. Explain the energy crisis and different aspects of sustainability.
6. Analyze key ethical challenges concerning biodiversity and understand the moral principles, goals and virtues important for guiding decisions that affect Earth's plant and animal life.

Syllabus : (Total Hours: 90, including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-I Introduction

10h

Environment Definition – Concept of Environmental chemistry- Scope and importance of environment in nowadays – Nomenclature of environmental chemistry – Segments of environment– Effects of human activities on environment – Natural resources–Renewable Resources–Solar and biomass energy and Nonrenewable resources – Thermal power and atomic energy – Reactions of atmospheric oxygen and Hydro logical cycle.

Unit -II

Air Pollution

10h

Definition – Sources of air pollution – Classification of air pollution – Ambient air quality standards- Climate change – Global warming – Pollution from combustion systems- Acid rain – Photochemical smog – Greenhouse effect – Formation and depletion of ozone – Bhopal gas disaster–Instrumental techniques to monitor pollution – Controlling methods of air pollution.

Unit -III

Water pollution

10h

Unique physical and chemical properties of water – Water quality standards and parameters – Turbidity- pH Dissolved oxygen – BOD, COD, Suspended solids, total dissolved solids, alkalinity– Hardness of water–Methods to convert temporary hard water in to soft water – Methods to convert permanent hard water into soft water – eutrophication and its effects –Industrial waste water treatment.

Unit -IV

Chemical Toxicology

10h

Toxic chemicals in the environment – effects of toxic chemicals – cyanide and its toxic effects – pesticides and its biochemical effects – toxicity of lead, mercury, arsenic and cadmium- Solid waste management.

Unit -V

Ecosystem and biodiversity

10h

Ecosystem

Concepts–structure–Functions and types of ecosystem–Abiotic and biotic components – Energy flow and Energy dynamics of ecosystem– Food chains – Food web– Tropic levels–Biogeochemical cycles (carbon, nitrogen and phosphorus)

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DEPARTMENT OF CHEMISTRY
(w.e.f:2022-2023)

B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits: 4
Course: 7D	Green Chemistry and Nanotechnology	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the importance of Green chemistry and Green synthesis.
2. Engage in Microwave assisted organic synthesis.
3. Demonstrate skills using the alternative green solvents in synthesis.
4. Demonstrate and explain enzymatic catalysis.
5. Analyse alternative sources of energy and carry out green synthesis.
6. Carry out the chemical method of nanomaterial synthesis.

Syllabus: Total Hours: 90, including Teaching, Lab, Field Training, Unit tests etc.)

Unit-I Green Chemistry: Part- I

10 hrs

Introduction-Definition of green Chemistry, Need for green chemistry, Goals of Green chemistry
Basic principles of green chemistry. Green synthesis- Evaluation of the type of the reaction

i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required and examples of sonochemical reactions (Heck, Hunsdiecker and Wittig reactions).

Unit- II Green Chemistry: Part- II

10 hrs

A) Selection of solvent:

- i) Aqueous phase reactions
- ii) Reactions in ionic liquids, Heck reaction, Suzuki reactions, epoxidation.
- iii) Solid supported synthesis

B) Supercritical CO₂: Preparation, properties and applications, (decaffeination, drycleaning)

C) Green energy and sustainability.

Unit-III Microwave and Ultrasound assisted green synthesis:

10 hrs

Apparatus required, examples of MAOS (synthesis of fused anthroquinones, Leukart reductive amination of ketones) - Advantages and disadvantages of MAOS. Aldol condensation - Cannizzaro reaction- Diels-Alder reactions-Strecker's synthesis

Unit-IV Green catalysis and Green synthesis

10 hrs.

Heterogeneous catalysis, use of zeolites, silica, alumina, supported catalysis - bio catalysis:

Enzymes, microbes Phase transfer catalysis (micellar /surfactant)

1. Green synthesis of the following compounds: adipic acid, catechol, disodium menudo acetate (alternative Strecker's synthesis)

2. Microwave assisted reaction in water -Hoffmann elimination - methyl benzoate to benzoic acid - oxidation of toluene and alcohols-microwave assisted reactions in organic solvents. Diels-Alder reactions and decarboxylation reaction.

3. Ultrasound assisted reactions-sonochemical Simmons-Smith reaction (ultrasonic alternative to iodine)

Unit - V Nanotechnology in Green chemistry

10 hrs

Basic concepts of Nano science and Nanotechnology - Bottom-up approach and Top-down approaches with examples - Synthesis of Nano materials - Classification of Nanomaterial - Properties and Application of Nanomaterial. Chemical and Physical properties of Nanoparticles - Physical synthesis of nanoparticles - Inert gas condensation - aerosol method - Chemical Synthesis of nanoparticles - precipitation and co-precipitation method, sol-gel method.

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B. Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6E	Analytical Methods in Chemistry	Hrs/Wk:4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the various methods involved in Quantitative analysis.
2. Acquire a critical knowledge on separation techniques.
3. Demonstrate skills related to Chromatographic techniques through hands on experience.
4. Able to engage in safe and accurate laboratory practices by handling laboratory glassware, Equipment and chemical reagents appropriately.
5. Comprehend the applications of Chromatographic techniques in different fields.

Syllabus: Total Hours: 90, including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit-1: Quantitative analysis

(10hrs)

Importance in various fields of science, steps involved in chemical analysis. Principles of volumetric analysis: Theories of acid-base, redox, complex metric, iodometric and precipitation titrations. Detection of end point in redox titration, choice of indicators for the saturations. Principles of gravimetric analysis: precipitation, coagulation, peptization, co-precipitation, post-precipitation, digestion, filtration and washing of precipitate, drying and ignition.

Unit-2: Treatment of analytical data:

(10hrs)

Types of errors, significant figures and its importance, accuracy-methods of expressing accuracy, absolute and relative errors, error analysis and minimization of errors.

Precision - methods of expressing precision, standard deviation and confidence limit. The correlation coefficient.

Unit-3: Separation techniques in Chemical analysis:

(10hrs)

Solvent Extraction: Introduction, principle, techniques, factors affecting solvent extraction, Batch extraction, continuous extraction and counter current extraction. Synergism. Application- Determination of Iron (III).

Ion Exchange: Introduction, action of ionex change resins, separation of inorganic mixtures, applications.

Unit- 4: Chromatography: Part - I

(10hrs)

Classification of chromatography methods, principles of differential migration adsorption phenomenon, Nature of adsorbents, solvent systems, R_f values, factors effecting R_f values.

Paper Chromatography: Principles, R_f values, experimental procedures, choice of paper and solvent systems, developments of chromatogram-ascending, descending and radial. Two dimensional chromatography, applications.

Unit- 5: Chromatography: Part - II

(10hrs)

Thin layer Chromatography (TLC): Advantages. Principles, factors effecting R_f values. Experimental procedures. Adsorbents and solvents. Preparation of plates. Development of the chromatogram. Detection of the spots. Applications.

Column Chromatography: Principles, experimental procedures, Stationary and mobile Phases, Separation techniques, Applications. HPLC: Basic principles and applications.

Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. List out, identify and handle various equipment in Analytical Chemistry lab.
2. Learn the procedures of preparation of primary and secondary standard solutions.
3. Demonstrate skills in the preparation of Paper, Thin layer and column Chromatography.
4. Acquire skills in observing the Chromatogram.


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7E: Cosmetics and Pharmaceutical Chemistry

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Explain the principles of formulation and application of Cosmetics & perfumes.
2. Acquire a critical knowledge on synthetic techniques of drugs.
3. Demonstrate the skills in various aspects of the fermentation technology and apply for production.
4. Comprehend the applications offer mentation.

Syllabus: Total Hours: 90, including Teaching, Lab, Field Skills Training, Unit tests etc.)

Unit- I Chemistry of Cosmetics

(8hrs)

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours.

Unit- II Chemistry of Perfumes

(8hrs)

Essential oils and their importance in cosmetic industries with reference to Eugenol, Geranial, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmine, Civet one, Mascon.

Unit-III Drugs & Pharmaceuticals - I

(10hrs)

Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, anti- inflammatory agents (Aspirin, paracetamol, ibuprofen)

Unit-IV Drugs & Pharmaceuticals - II

(12hrs)

Synthesis of the representative drugs of the following classes: Antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular (Glycerol tritrate), antilaprosy (Daps one), HIV-AIDS related drugs (AZT-Zidovudine).

Unit - V Fermentation

(12hrs)

Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B₂, Vitamin B₁₂ and Vitamin C.

Lab work-Skills Outcomes:

On successful completion of this practical course, student shall be able to:

1. The ability to develop comprehensive product development programs to meet new product criteria and timing.
2. Acquire skills in the preparation of Cosmeceuticals.
3. Demonstrate proficiency in the experimental techniques for fermentation and microbial production of enzymes.
4. Carry out perfume testing with the knowledge of perfumes.
5. Learn the procedure of synthesis of drugs.
6. Critically develop, apply, report, interpret and reflect on strategies for collecting data in the lab and field.


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Revised choice based credit system (W.e.f. 2022 -23)
(Skill Enhancement Course (Elective))

Max Marks:100

B.Sc.	Semester - V	Credits: 5
Course: 6B	Vegetable Crops – Cultivation Practices	Hrs/Wk: 4

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Identify different vegetable plants and realize their value in human nutrition.
2. Analyse the types of soils to cultivate vegetable crops.
3. Demonstrate skills on agronomic practices for cultivation of vegetable crops.
4. Acquire knowledge on water, weed and disease managements in vegetable farming.
5. Comprehend aspects related to harvesting and storage of produce.

II. Syllabus:

Unit – 1: Introduction to Olericulture

1. Vegetables and Olericulture: Definitions, nutritive value of vegetables and economic significance of vegetable farming.
2. Classification of vegetable crops (Botanical, based on climatic zones and economic parts used).
3. Types of vegetable gardens (kitchen gardening, terrace gardening, market gardening and truck gardening); implements used in vegetable gardening; vegetable forcing – a brief concept.

Unit – 2: Cultivation of leafy vegetables

1. Leafy vegetables: Definition and a brief account of locally cultivated crops.
2. Study of the following leafy vegetable crops: (a) *Amaranthus* (b) Palak (c) *Hibiscus cannabinus* (d) Fenugreek: systematic position, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield and storage, disease and pest control and seed production.

Unit – 3: Cultivation of fruity vegetables

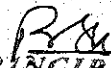
1. Fruity vegetables: Definition and a brief account of locally cultivated crops.
2. Study of the fruity vegetable crops: (a) Okra (b) Tomato (c) Chillies (d) Brinjal: systematic position, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield- storage, disease and pest control and seed production

Unit – 4: Cultivation of peas and beans

1. A brief account of locally cultivated peas and beans.
2. Study of the following crops: (a) *Dolichos* (b) Cluster bean (c) French bean: Systematic position, nutritive value, origin, area, production, improved Varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield, storage, disease and pest control and seed production.

Unit – 5: Cultivation of root and tuber crops

1. A brief account of locally cultivated root and tuber crops.
2. Study of the following crops: (a) Carrot (b) Radish (c) Sweet potato (d) Potato: Systematic position, family, nutritive value, origin, area, production, improved varieties.
3. General cultivation practices such as sowing, planting distance, fertilizer requirements, irrigation, weed management, harvesting.
4. Crop specific yield, and storage, disease and pest control and seed production.


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Revised choice based credit system (W.e.f. 2022 -23)
(Skill Enhancement Course (Elective))

B.Sc.	Semester - V	Credits: 5
Course: 7B	Vegetable Crops – Post Harvest Practices	Hrs/Wk: 4

MaxMarks:100

I. Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand various practices for vegetable produce from harvesting to marketing.
2. Demonstrate skills on storage, processing and preservation of vegetables.
3. Summarize causes for spoilage of vegetables before and during storage and methods to prevent and control them.
4. Make use of preservation methods to reduce the loss of vegetable produce.
5. Explain about value added products, packaging and marketing of vegetables.

II. Syllabus: Unit – 1: Introduction to Post Harvest Practices

1. Post-harvest technology: Definition; importance, scope and future status of post-harvest management of vegetables.
2. Study of maturity standards of vegetables; harvest techniques of vegetables, methods stages, signs of harvesting; harvesting and its relationship with quality, sorting and grading.
3. Careful handling of harvested vegetables; pre-harvest and post-harvest factors responsible for ripening.

Unit – 2: Methods of storage

1. Climacteric and non-climacteric types of vegetables.
2. Methods of storage to prolong shelf life of harvested vegetables; on-farm storage, evaporatively cooled stores, ventilated storage, pit storage etc.
3. Refrigerated storage, refrigeration cycle, controlled and modified atmosphere, hypobaric storage.

Unit – 3: Processing of vegetables

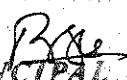
1. Causes for spoilage of vegetables and control measures during storage; post-harvest disease and pest management.
2. Techniques to prevent deterioration; vegetable processing equipment; minimal processing of vegetables.
3. Safe chemicals and microbial limits; application of growth regulators for quality assurance; grading.

Unit -4: Preservation and value-addition

1. Importance and scope of vegetable preservation in India; principles underlying general methods of preservation.
2. Methods of preservation; food additives and food colours.
3. Fried products, process of frying; dried vegetables; sauces and chutneys, pickles and salted vegetables; by-product and waste utilization.

Unit – 5: Marketing

1. Packing line operations, packaging of vegetables and their products; transportation; codex norms for export of perishables.
2. Demand supply analysis of important vegetables; market potential of various vegetables products.
3. Important marketing agencies and institutions; importance of cooperative marketing.


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Revised choice based credit system (w.e.f., 2022-2023)

B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 6A	Plant Propagation	Hrs/Wk: 4

UNIT I: Basic concepts of propagation

(10h)

1. Propagation: Definition, need and potentialities for plant multiplication; asexual and sexual methods of propagation - advantages and disadvantages.
2. Propagation facilities: Mist chamber, humidifiers, greenhouses, glasshouses, cold frames, hot beds, poly-houses, phytotrons nursery - tools and implements.
3. Identification and propagation by division and separation: Bulbs, pseudobulbs, corms, tubers and rhizomes; runners, stolons, suckers and offsets.

UNIT II: Apomictics in plant propagation

(10h)

1. Apomixis: Definition, facultative and obligate; types - recurrent, non-recurrent, adventitious and vegetative; advantages and disadvantages.
2. Polyembryony: Definition, classification, horticultural significance; chimera and bud sport.
3. Propagation of mango, *Citrus* and *Allium* using apomictic embryos.

UNIT III: Propagation by cuttings

(10h)

1. Cuttings: Definition, different methods of cuttings; root and leaf cuttings.
2. Stem cuttings: Definition of stem tip and section cuttings; plant propagation by herbaceous, soft wood, semi hard wood, hard wood and coniferous stem cuttings.
3. Physiological and biochemical basis of rooting; factors influencing rooting of cuttings; Use of plant growth regulators in rooting of cuttings.

UNIT IV: Propagation by layering

(10h)

1. Layering: Definition, principle and factors influencing layering.
2. Plant propagation by layering: Ground layering - tip layering, simple layering, trench layering, mound (stool) layering and compound (serpentine layering).
3. Air layering technique - application in woody trees.

UNIT V: Propagation by grafting and budding

(10h)

1. Grafting: Definition, principle, types, graft incompatibility, collection of scion wood stick, scion-stock relationship, and their influences, bud wood certification; micrografting.
2. Propagation by veneer, whip, cleft, side and bark grafting techniques.
3. Budding: Definition; techniques of 'T', inverted 'T', patch and chip budding.


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Revised choice based credit system (w.e.f., 2022-2023)

B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 7A	Seed Technology	Hrs/Wk: 4

Learning outcomes:

Students at the successful completion of the course will be able to:

1. Explain the causes for seed dormancy and methods to break dormancy.
2. Understand critical concepts of seed processing and seed storage procedures.
3. Acquire skills related to various seed testing methods.
4. Identify seed borne pathogens and prescribe methods to control them.
5. Understand the legislations on seed production and procedure of seed certification.

UNIT I: Seed dormancy

(10h)

1. Seed and grain: Definitions, importance of seed; structure of Dicot and Monocot seed.
2. Role and goals of seed technology; characteristics of quality seed material.
3. Dormancy: Definition, causes for seed dormancy; methods to break seed dormancy.

UNIT II: Seed processing and storage

(10h)

1. Principles of seed processing: seed pre-cleaning, precuring, drying, seed extraction; cleaning, grading, pre-storage treatments; bagging and labelling, safety precautions during processing.
2. Seed storage; orthodox and recalcitrant seeds, natural longevity of seeds.
3. Factors affecting longevity in storage; storage conditions, methods and containers.

UNIT III: Seed testing

(10h)

1. Definition of seed vigour, viability and longevity; seed sampling and equipment; physical purity analysis.
2. Seed moisture – importance – methods of moisture determination.
3. Seed germination tests using paper, sand or soil – standard germination test; TZ test to determine seed viability; seed health testing.

UNIT IV: Seed borne diseases

(10h)

1. A brief account of different seed borne diseases and their transmission.
2. Different seed health testing methods for detecting microorganisms.
3. Management of seed borne diseases; seed treatment methods: spraying and dusting.

UNIT V: Seed certification

(10h)

1. Objectives - Indian seed Act; seed rules and seed order; new seed policy (1988).
2. Seed Inspector: Duties and responsibilities; classes of seeds, phases of certification standards (i.e., Land requirement, isolation distance) etc.
3. Issue of certificates, tags and sealing; pre and post control check: Genetic purity verification, certification, records and reporting.


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Revised choice based credit system (w.e.f., 2022-2023)

B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 6C	Plant Tissue Culture	Hrs/Wk: 4

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Comprehend the basic knowledge and applications of plant tissue culture.
2. Identify various facilities required to set up a plant tissue culture laboratory.
3. Acquire a critical knowledge on sterilization techniques related to plant tissue culture.
4. Demonstrate skills of callus culture through hands on experience.
5. Understand the biotransformation technique for production of secondary metabolites.

UNIT I: Basic concepts of plant tissue culture

(10h)

1. Plant tissue culture: Definition, history, scope and significance.
2. Totipotency, differentiation, dedifferentiation, and redifferentiation; types of cultures.
3. Infrastructure and equipment required to establish a tissue culture laboratory.

UNIT II: Sterilization techniques and culture media

(10h)

1. Aseptic conditions – Fumigation, wet and dry sterilization, UV sterilization, ultrafiltration.
2. Nutrient media: Composition of commonly used nutrient culture media with respect to their contents like inorganic chemicals, organic constituents, vitamins, amino acids etc.
3. Composition and preparation of Murashige and Skoog culture medium.

UNIT III: Callus culture technique

(10h)

1. Explant: Definition, different explants for tissue culture: shoot tip, axillary buds, leaf discs, cotyledons, inflorescence and floral organs, their isolation and surface sterilization; inoculation methods.
2. Callus culture: Definition, various steps in callus culture.
3. Initiation and maintenance of callus – Growth measurements and subculture; somatic clonal variations.
- 4.

UNIT IV: Micropropagation

(10h)

1. Direct and indirect morphogenesis, organogenesis, role of PGRs; somatic embryogenesis and synthetic seeds.
2. Greenhouse hardening unit operation and management; acclimatization and hardening of plantlets - need, process, packaging, exports.
3. Pathogen (Virus) indexing- significance, methods, advantages, applications.
- 4.

UNIT V: Applications of plant tissue culture

(10h)

1. Germplasm conservation: cryopreservation methods, slow growth, applications and limitations; cryoprotectants.
2. Plant transformation techniques and bioreactors; production of secondary metabolites-optimization of yield, commercial aspects, applications, limitations.
3. Transgenic plants- gene transfer methods; BT cotton.


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B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 7C	Mushroom Cultivation	Hrs/Wk: 4

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the structure and life of a mushroom and discriminate edible and poisonous mushrooms.
2. Identify the basic infrastructure to establish a mushroom culture unit.
3. Demonstrate skills preparation of compost and spawn.
4. Acquire a critical knowledge on cultivation of some edible mushrooms.
5. Explain the methods of storage, preparation of value-added products and marketing.

UNIT I: Introduction and value of mushrooms

(10h)

Mushrooms: Definition, structure of a mushroom and a brief account of life cycle; historical account and scope of mushroom cultivation; difference between edible and poisonous mushrooms.

Morphological features of any four edible mushrooms, Button mushroom (*Agaricus Bosporus*), Milky mushroom (*Calocybe indica*), Oyster mushroom (*Pleurotus sajor-caju*) and Paddy straw mushroom (*Volvariella volvacea*).

Nutraceutical value of mushrooms; medicinal mushrooms in South India - *Ganoderma lucidum*, *Phellinus rimosus*, *Pleurotus florida* and *Pleurotus pulmonaris* - their therapeutic value; Poisonous mushrooms - harmful effects.

UNIT II: Basic requirements of cultivation system

(10h)

Small village unit and larger commercial unit; layout of a mushroom farm - location of building plot; design of farm, bulk chamber, composting, equipment and facilities, pasteurization room and growing rooms.

Compost and composting: Definition, machinery required for compost making, materials for compost preparation.

Methods of composting- long method of composting and short method of composting.

UNIT III: Spawning and casing

(10h)

Spawn and spawning: Definition, facilities required for spawn preparation; preparation of spawn substrate.

Preparation of pure culture, media used in raising pure culture; culture maintenance, storage of spawn

Casing: Definition, Importance of casing mixture, Quality parameters of casing soil, different types of casing mixtures, commonly used materials.

UNIT IV: Mushroom cultivation

(10h)

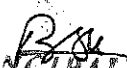
Raw material, compost, spawning, casing, cropping, and problems in cultivation (diseases, pests and nematodes, weed molds and their management strategies), picking and packing for any Four of the following mushrooms: (a) Button mushroom (b) Oyster mushroom (c) Milky mushroom and (d) Paddy straw mushroom

UNIT V: Post harvest technology

(10h)

Shelf life of mushrooms; preservation of mushrooms - freezing, dry freezing, drying and canning.

Quality assurance and entrepreneurship - economics of different types of mushrooms; value added products of mushrooms.


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B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 6D	Gardening and Landscaping	Hrs/Wk: 4

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquire a critical knowledge about the aesthetic value, types and styles of gardens.
2. Perform field operations in a garden by understanding the role of a gardener.
3. Identify various ornamental plants and explain the growth habits.
4. Propagate garden plants through various propagation techniques.
5. Demonstrate skills of designing and developing a garden.

UNIT I: Basics of Gardening

(10h)

1. Garden and gardening: Definitions, objectives and scope; types of gardens (domestic garden, flower garden, woodland garden, rock garden, water garden and herb and vegetable garden).
2. Speciality gardens (vertical garden, roof garden and scented garden); principles of gardening; garden components and adornments;
3. Styles of garden: formal, informal, free style and wild; some famous gardens of India.

UNIT II: Garden operations

(10h)

1. Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening.
2. Gardening operations: soil laying, manuring, watering, management of pests and diseases and harvesting.
3. Lawn making, methods of designing rockery and water garden.

UNIT III: Ornamental plants

(10h)

1. Ornamental plants: flowering annuals and perennials; climbers and creepers; shade and ornamental trees.
2. Bulbous and foliage ornamental plants; cacti and succulents; palms, ferns.
3. Bonsai: definition, types and styles, art of making bonsai.

UNIT IV: Propagation techniques

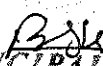
(10h)

1. Propagation of ornamental plants by rhizomes, corms tubers, bulbs and bulbils.
2. Vegetative propagation techniques – a brief account of cuttings, layering and grafting.
3. Types of seed beds; sowing of seeds and raising seedlings, transplanting of seedlings; growing plants in pots, potting and repotting.

UNIT V: Landscaping

(10h)

1. Landscaping: definition, landscaping of parks and public gardens.
2. Urban planning and planting avenues; Landscaping highways and educational institutions; beautifying villages and colonies.
3. Computer Aided Designing (CAD) for outdoor and indoor-scaping.


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B. Sc	Semester-V (Skill Enhancement Course - Elective)	Credits: 4
Course: 7D	Agroforestry	Hrs/Wk: 4

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the concepts and economic value of agroforestry.
2. Acquire a critical knowledge on systems and design of agroforestry.
3. Explain silviculture practices in relation to agroforestry.
4. Understand the role of agroforestry to reclaim the waste lands.
5. Perform skills in relation to tree measurement techniques.

UNIT I: Basic concepts of Agroforestry (10h)

1. Forest and Agroforestry. Definition, objectives, scope and advantages of agroforestry; classification of agroforestry; differences between social forestry and agroforestry.
2. Agroforestry practices as existing in India and Andhra Pradesh.
3. Criteria for selection and screening of tree species; design and diagnosis methodology in relation to agroforestry.

UNIT II: Systems of Agroforestry (10h)

1. Global agroforestry system: shifting cultivation, taungya cultivation, shelter belt and wind breaks, and energy plantation and homestead gardens.
2. Multipurpose tree species and their characteristics; criteria for selection of agroforestry design, role tree architecture and management in agroforestry.
3. Alley cropping, high density short rotation plantation systems, silvicultural woodlots, energy plantations.

UNIT III: Silviculture of Agroforestry trees (10h)

1. Silviculture: Definition, objectives and scope and its place in agroforestry.
2. Choice of species, site selection, and pure versus mixed crop, planting techniques and methods, protection of seedlings/ plantations from environmental and biological adversaries, tending operations, concept of coppice etc.
3. Silviculture of agroforestry trees with special reference to: (a) *Azadirachta indica*, (b) *Tectona grandis* (c) *Embllica officinalis* and (d) *Tamarindus indica*.

UNIT IV: Waste land reclamation (10h)

1. Wasteland definition, types: ecological characteristics, landslides, soil erosion, floods, drought, salinity, water logging and fire.
Biological causes of deforestation, grazing, shifting cultivation and faulty agricultural practices.
2. Reclamation of wastelands, scientific land use practices, afforestation, soil conservation practices, improvement of water catchment areas and development of recreational and amenity areas.

UNIT V: Measurements in Agroforestry (10h)

1. Tree measurement techniques: Instruments and methods for measurement of tree diameter, height, bark thickness, crown volume crown surface area.
2. Tree stem form, yield tables, volume tables, concept of sustained yield, and kind of tree rotation, increment and yield; estimation of biomass.
3. Determination of tree age and introduction of working plan.

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III B.Sc - V SEMESTER Subject-Zoology

PAPER -VIA - SUSTAINABLE AQUACULTURE MANAGEMENT

Total Hours-60

Hours per week-04

Total credits-04

Unit: 1

- 1.1 Present status of Aquaculture – Global and National scenario
- 1.2 Major cultivable species for aquaculture: freshwater, brackish water and marine.
- 1.3 Traditional, extensive, modified extensive, semi-intensive and intensive cultures of fish and shrimp.
- 1.4 Design and construction of fish and shrimp farms
- 1.5 Monoculture, Polyculture, Integrated culture-**Additional Input**

Unit: 2

- 2.1 Functional classification of ponds – head pond, hatchery, nursery ponds
- 2.2 Functional classification of ponds -rearing, production, stocking and quarantine ponds
- 2.3 Need of fertilizer and manure application in culture ponds
- 2.4 Physio-chemical conditions of soil and water optimum for culture (Temperature, depth, turbidity, light, water, PH, BOD, CO2 and nutrients)

Unit: 3

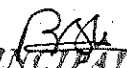
- 3.1. Induced breeding in fishes
- 3.2. Culture of Indian major carps: Pre-stocking management (Dewatering, drying, ploughing/desilting, Predators, weeds and algal blooms and their control, Liming and fertilization)
- 3.3. Culture of Indian major carps - Stocking management
- 3.4. Culture of Indian major carps - post-stocking management

Unit: 4

- 4.1 Commercial importance of shrimp & prawn (Few commercially important prawns and shrimps-**Additioanl Input**)
- 4.2 *Macrobrachium rosenbergii*- biology, seed production.
- 4.3 Culture of *L. vannamei* – hatchery technology and culture practices
- 4.4 Mixed culture of fish and prawns

Unit: 5

- 5.1 Viral diseases of Fin Fish & shell fish
- 5.2 Fungal diseases of Fin & Shell fish
- 5.3 Bacterial diseases of Finfish & Shell fish
- 5.4 Prophylaxis in aquaculture


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III B.Sc - V SEMESTER Subject-Zoology

PAPER -VIIA - POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES

Total Hours-60

Hours per week-04

Total credits-04

Unit – I Handling and Principles of fish Preservation

- 1.1 Handling of fresh fish, storage and transport of fresh fish, post mortem changes (rigor mortis and spoilage), spoilage in marine fish and freshwater fish.
- 1.2 Principles of preservation – cleaning, lowering of temperature, rising of temperature, denudation, use of salt, use of fish preservatives, exposure to low radiation of gamma rays.

Unit – II Methods of fish Preservation

- 2.1 Traditional methods - sun drying, salt curing, pickling and smoking.
- 2.2. Advanced methods – chilling or icing, refrigerated sea water, freezing, canning, irradiation and Accelerated Freeze drying (AFD).

Unit – III Processing and preservation of fish and fish by-products

- 3.1 Fish products – fish minced meat, fish meal, fish oil, fish liquid (ensilage), fish protein concentrate, fish chowder, fish cake, fish sauce, fish salads, fish powder, pet food from trash fish, fish manure.
- 3.2 Fish by-products – fish glue, Using glass, chitosan, pearl essence, shark fins, fish Leather and fish maws.

Unit – IV Sanitation and Quality control

- 4.1 Sanitation in processing plants - Environmental hygiene and Personal hygiene in processing plants.
- 4.2 Quality Control of fish and fishery products – pre-processing control, control during processing and control after processing.

Unit – V Quality Assurance, Management and Certification

- 5.1. Seafood Quality Assurance and Systems: Good Manufacturing Practices (GMPs); Good Laboratory Practices (GLPs); Standard Operating Procedures (SOPs); Concept of Hazard Analysis and Critical Control Points (HACCP) in seafood safety.
- 5.2 National and International standards – ISO 9000: 2000 Series of Quality Assurance System, *Codex Alimentarius*.


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III B.Sc - V SEMESTER Subject-Zoology
PAPER -VI B - LIVE STOCK MANAGEMENT-I
(BIOLOGY OF DAIRY ANIMALS)

Total Hours-60

Hours per week-04

Total credits-04

Unit 1

- 1.1 Livestock census; Breeds of Dairy cattle, Buffaloes and Goats. Indigenous, Exotic and Crossbreed Cattle breeds
- 1.2 **Additional Input-** Dairy development in India – Dairy Cooperatives (NDRI, NDDB, TCMPF)

Unit 2

- 1.1 Anatomy of Udder; Development of udder,
- 1.2 Lacto genesis and Galactopoises; Letdown of milk.

Unit 3

- 1.1 Artificial insemination; Oestrous cycle, Symptoms of heat in cows and buffaloes. Conception, Pregnancy diagnosis in cattle.
- 1.2. Multi ovulation and embryo transfer technique. Cloning.

Unit 4

- 1.1 Economic traits of Dairy cattle. Methods of selection of dairy animals.
- 1.2 **Additional Input-** Constraints of Present Dairy Farming and Future Scope of Dairy Farmer

Unit 5

- 1.1 Systems of Dairy cattle breeding. Inbreeding, out breeding, Cross breeding, Grading up.
- 1.2. Breeding systems (Cross breeding of cattle and Grading up of buffaloes).


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III B.Sc - V SEMESTER Subject-Zoology

PAPER -VII B LIVE STOCK MANAGEMENT -II
(DAIRY PRODUCTION AND MANAGEMENT)

Total Hours-60

Hours per week-04

Total credits-04

Unit1

1.1 Systems of Housing of Dairy cattle- Loose Housing and Conventional Dairy Barns.

Drawing of layouts for dairy cattle dwellings;

1.2 Criteria for selecting site for establishing Dairy farm buildings; Water requirement of dairy animals.

Additional Input- Feed Management, Basic Principles of Feed, Important Feed Ingredients, Feed formulation and Feed Mixing

Unit2

1.1 Management of different classes of Dairy animals- Milk producing animals, pregnant animals dry animals, heifers and calves.

1.2. Management practices for Dairy farm; Identification, Dehorning, Castration, Deworming, Vaccination, Disinfection, and Milking.

Unit 3

1.1 Pasteurization of milk: Definition, objects of pasteurization, objections to pasteurization, Principles of heat exchange. Methods of pasteurization: LTLT, HTST and Uperization.

1.2 Sterilization of milk. Homogenization: Factors influencing homogenization

Unit 4:

1.1 Market Milk, Toned milk, double toned milk, Reconstituted milk, Standardized milk and full cream milk- Standards and methods of manufacture.

b. Additional Input- Milk Intolerance and Hypersensitivity

Unit 5:

1.1 Cream- Types of cream, composition, methods of cream separation, gravity and centrifugal methods,

1.2. Types of cream separators, factors affecting fat losses in skim milk and fat percentage in cream.

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 III B.Sc - V SEMESTER Subject-Zoology
PAPER – VI C POULTRY MANAGEMENT- I (POULTRY FARMING)

Total Hours-60

Hours per week-04

Total credits-04

Unit 1(Indian poultry Industry)

- 1.1 Importance of poultry farming and poultry development in India.
- 1.2 Present status and future prospectus of poultry Industry
- 1.3 Classification of poultry based on genetics Utility

Unit -2 (Scientific Poultry Keeping)

- 2.1 Modern breeds of Chicken
- 2.2 Present day egg production lines- meat production lines
- 2.3 Mini breeds- dwarfism in mini-Leghorns

Unit-3 (Diversified Poultry)

- 3.1 Ducks and Geese-classification- rearing system-classification-advantages
- 3.2 Guinea fowls - guinea fowl farming in India-Production-varieties
- 3.3 Emu-rearing- Economical aspects-commercial products

Unit-4 (Desi Chickens)

- 4.1 Indigenous breeds and economical aspects of desi chicken
- 4.2 Indigenous breeds-Aseel-Chittagong-Kadaknath-Bursa
- 4.3 Improved varieties in India – Giriraja-Vanaraja-Girirani-Kalinga brown, Gramapriya, Swarnandhra

Unit -5 (Breeds from Central Avian Research Institute – Izatnagar)

- 5.1 CARI Nirbheek - CARI- Shyama-HITCARI (Naked Neck Cross)
- 5.2 CARI- Priya Layer, CARI- Sonali Layer,
- 5.3 CARIBRO-VISHAL, CARI-RAINBRO,
- 5.4 Nandanam chicken-I, Nandanam Chicken-II, Nandanm-Quail


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 III B.Sc - V SEMESTER Subject-Zoology
PAPER -VIIC - -POULTRY MANAGEMENT -II
(POULTRY PRODUCTION AND MANGEMENT)

Total Hours-60

Hours per week-04

Total credits-04

Unit-1 HEALTH CARE

- 1.1 Common poultry diseases: bacterial, viral, fungal, parasitic and nutritional deficiencies.
- 1.2 Vaccination schedule for commercial layers and broilers: factors that govern vaccination schedule; vaccination principles type, methods, pre and post vaccination care.
- 1.3 Disinfection: Types of disinfectants; mode of action; recommended procedure; precaution and handling.

Unit-2 ECONOMICS

- 2.1 Economics of layer and broiler production
- 2.2 Projects reports in different systems of rearing for layer & broilers.
- 2.3 Feasibility studies on poultry rearing- in context of small units and their profitability.
- 2.4 Export/import of poultry and poultry products.

Unit-3 BREEDER FLOCK MANAGEMENT

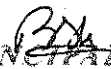
- 3.1 Layer and broiler breeder flock management housing & space requirements.
- 3.2 Different stage of management during life cycle; Light management during growing and laying period, Artificial insemination.
- 3.3 Feeding: Feed restriction, separate male feeding. Nutrient requirement of layer and broiler breeders of different age groups.

Unit-4 BREEDER HEALTHCARE

- 4.1 Vaccination of breeder flock; difference between vaccination schedule of broilers and commercial birds.
- 4.2 Common diseases of breeders (Infectious and metabolic disorders)-prevention.
- 4.3 Fertility disorder- etiology, diagnosis and corrective measures. Selection and culling of breeder flocks

Unit-5 HATCHERY PRACTICES

- 5.1 Management principles of incubation.
- 5.2 Factors affecting fertility and hatchability. Selection, care and incubation of hatching eggs. Fumigation, sanitation and hatchery hygiene.
- 5.3 Importance of hatchery records, break even analysis of unhatched eggs.


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III B.Sc - V SEMESTER Subject-Zoology

PAPER -VID SERI CULTURE -I**(BIOLOGY AND CULTIVATION OF MULBERRY)****Total Hours-60****Hours per week-04****Total credits-04****Unit-1A general introduction to Sericulture**

1.1 Sericulture map of India: Components of Sericulture.

1.2 Textile fibers: Types- natural and synthetic fibers- types of silk produced in India; Importance of mulberry silk:

1.3 Sericulture organization in India; role of state departments of Sericulture, Central Silk Board and NGOs in Sericulture development

Unit-2Sericultural Botany.

2.1 Taxonomy of mulberry and food plants of silkworms: Study of salient features of the families-Marceau.

2.2 Morphology of mulberry: different varieties of mulberry.

2.3 Anatomy of mulberry: internal structure of stem, root and leaf; secondary growth in root and stem.

Unit 3Floral biology of mulberry

3.1 Floral biology of mulberry: Sexual behavior, different types of anthers and ovule in mulberry; micro- and megaspore genesis.

3.2 Development of male and female gametophytes; pollination, fertilization

3.3 Development of endosperm, embryo and seed; polyembryony and parthenocarpy in mulberry.

Unit-4 Silkworm Biology.

4.1 Characteristic features of the order Lepidoptera; detailed study of the families- Saturnidae and Bombycid. Classification of sericigenous insects.

4.2 Classification of silkworms based on moultnism, voltinism and geographical distribution; popular silkworm breeds and hybrids of Karnataka; their economic traits

Unit-5 Silk worm Reproductive system

5.1 Morphology and anatomy of reproductive systems of silk moth.

5.2 Life cycle of *Bombyx Mori*; morphology of egg, larva, pupa and adult.

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III B.Sc - V SEMESTER Subject-Zoology
PAPER -VIII SERICULTURE -II
(BIOLOGY AND REARING OF SILKWORM)

Total Hours-60

Hours per week-04

Total credits-04

Unit-1

- 1.1 Rearing house: Location, orientation, plan and utilities; model rearing house; low-cost rearing house.
- 1.2 Rearing appliances-shelf and shoot rearing; requirements of rearing appliances (per unit rearing of 100dfls).

Unit-2

- 2.1 Disinfection of rearing house and rearing appliances; (disinfectants formalin, bleaching powder, chlorine dioxide, slaked lime and iodine compounds);
- 2.2 Rearing and personal hygiene.

Unit-3

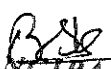
- 3.1 Incubation- definition, requirement of environmental conditions, incubation devices; identification of stages of development; black boxing and its importance.
- 3.2 Chawki rearing: Preparation; brushing and its methods; types of chawki rearing - traditional and improved method; optimum environmental conditions; methods and frequency of feeding; methods of bed cleaning; spacing; moulting and care during moult.

Unit -4

- 4.1 Late age silkworm rearing: Methods; optimum environmental conditions; feeding quantity and frequency; methods of bed cleaning; spacing; moulting and care during moult.
- 4.2. Identification of spinning larva; spinning; mounting and mounting density; types of mountages, their advantages and disadvantages; environmental requirements during spinning.

Unit -5

- 5.1 Harvesting: Time of harvesting; sorting, storage/ preservation
- 5.2 Packaging and transport of cocoons; leaf-cocoon ratio; Maintenance of rearing records.


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B.Voc (Commercial Aquaculture)

w.e.f :2022-2023

SEMESTER – III

PAPER-III- Inland and Marine Fish

Hrs- 2/Week

Credits-2

Marks- 50

Unit 1: Riverine and Estuarine Fisheries

Riverine fisheries – Major river systems in India, important characteristic features of Rivers

Estuarine fisheries- definition, Ecological significance of estuary, Biota of estuary, classification and categories of estuaries- capture fisheries- resident and migrant species.

Unit 2: Reservoir, Lakesterine Fisheries & Coastal fisheries

2.1. Reservoir fisheries- Major reservoirs in India- important characteristic features of reservoirs.

2.2. Lakesterine fisheries- definition, Types of lakes based on circulation, nutrients and surface temperature.

2.3. Coastal fisheries – Elasmobranch fishery; Teleost fishery- Sardines, Anchovies, Mackerel, Mumbai duck, Catfishes, Eels, Ribbon fish, Perches, Mulletts, Polnemids, Pomfrets, Scianids, Seer fishes, Flying fishes

Unit 3: Marine Pelagic, Demersal and Deep Sea Resources

4.1. Pelagic resources and Major demersal resource groups- elasmobranchs, cephalopods, silver bellies, flat fishes, crabs, sciaenids, pomfrets, bombay duck, prawns, lobsters, molluscan resources.

4.3. Introduction-Fisheries potential, Major Deep sea resources and scope of their exploitation, Present fishing pattern and deep sea fishing in India

4.4. Regulations-Conservation and regulation of fishing pressure - closed

season, mesh size regulations, sanctuaries., Deep Sea Fishing Policy


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DNR COLLEGE (AUTONOMOUS) BHIMAVARAM**B.VOC Commercial Aquaculture****w.e.f :2022-2023****Semester-IV****Paper-VII Aquaculture Nutrition Syllabus****Hrs 4/Week****Credits 4****Marks- 100M****Unit 1: Nutritional Requirements of Fish**

- 1.1. Principles of fish nutrition (Proteins, Carbohydrates and lipids)
- 1.2. Vitamin and mineral requirements, vitamin C for fish and shell fishes.
- 1.3. Feeds and feed additives

Unit 2: Feed ingredients & quality

- 2.1. Different feed ingredients
- 2.2. Types of feeds, Compounded feeds, pellets, crumbles and microencapsulated feed. Storage, quality standards, proximate composition.
- 2.3. Digestibility studies and methods.

Unit 3: Feed & Feed Manufacturing

- 2.1. Feed formulation - methods, square method.
- 2.2. Feed manufacturing processes, Extrusion, Pelletization.

Unit 4: Feed Management

- 3.1. Feed schedule in finfish and shellfish, calculations and daily ration.
- 3.2. Artificial feed formulations of different cultural species.
- 3.4. Feed Check tray observations and management.

Unit 5: Feed Quality

- 5.1. Feed energetic, Feed Conversion Efficiency(FCE), Protein Efficiency Ratio(PER),
- 5.2. Feed Conversion Ratio (FCR), Net Protein Utilization NPU, leaching,
- 5.3. Water stability. Quality standards


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DNR COLLEGE(AUTONOMOUS) BHIMAVARAM
B.VOC (COMMERCIAL Aquaculture)
Semester-IV w.e.f :2022-2023
Pathology in Aquaculture Syllabus

Unit 1: Introduction to fish diseases

Introduction, Symptoms of sick/diseased fish, causes of fish diseases.

Stress as a factor in the occurrence of diseases.

Types of parasites-Ectoparasites, Endoparasites, Commensalism; Mutual

Unit 2: Fungal and Bacterial Diseases

2.1. Fungal diseases in fish: Saprolegniasis, Branchiomycosis and Ichthyophthiriosis; Fungal diseases in prawns/shrimps: Fusarium, Lagenidium and Prevention and therapy. Bacterial diseases of fish caused by Aeromonas, pseudomonas, columnaris, ibro sps., Epizootic Ulcerative Syndrome Identification, epidemiology,

preventive and therapeutic methods.

Bacterial diseases in prawns/shrimps: caused by Vibrio sps, luminous bacterial disease, Aeromonas, pseudomonas, filamentous bacterial disease.

2.3. Viral Diseases in shrimp: Monodon Baculo Virus (MBV), White Spot

Syndrome (WSSV), Yellow Head Virus (YHV), Infectious Hypodermal and

Haematopoietic Necrosis Virus (IHHNV). Prevention and therapeutic methods.

Unit 3: Protozoan and Metazoan Diseases.

3.2. Protozoan diseases-Ichthyophthiriasis, Costiasis,whirling diseases, trypanosomiasis.

3.3. Metazoan Diseases- diseases caused by annelids, helminthes, crustaceans and molluscs.

Unit 4: Fish Microbiology and Nutritional diseases

4.1. Spoilage microflora of fish and shell fish

4.2. Intrinsic and extrinsic factors affecting spoilage of fish and shell fish.

4.3. Nutritional deficiency diseases in fish and shell fishes.

Unit 5: Immunology and Fish Health Management

5.1. Application and development of vaccines.

5.2. Diagnostic tools – immune detection- DNA/RNA techniques (PCR). Evaluation criteria of healthy seeds.

5.3. Best Management Practices in Aquaculture. Quarantine management.

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(Affiliated to Adikavi Nannaya University, Rajamahendravaram)

V SEMESTER- III B.VOC Subject: (Commercial aquaculture)**PAPER- 9: AQUARIUM MANAGEMENT AND ORNAMENTAL FISH CULTURE****w.e.f 2022-2023****Theory Syllabus****Total hours- 50****Hours per week-04****Total credits-04****UNIT-I: Aquarium design and Construction**

- 1.1 Introduction to aquarium. World aquarium trade and present status.
- 1.2 Design and construction of home and public aquaria (freshwater and marine), oceanarium.
- 1.3 Aquarium accessories - Aerators, filters (different types) and lighting. Water quality requirements.

UNIT-II: Aquarium Management

- 2.1 Setting up of aquarium – under gravel filter, pebbles, plants, drift wood, ornamental objects and selection of fishes, Quarantine measures.
- 2.2 Aquarium maintenance and water quality management for fresh water and marine aquariums
- 2.3 Handling, care, packing and transportation of fishes - Use of anaesthetics. Temperature acclimation.

UNIT-III: Freshwater Ornamental Fishes

- 3.1 Species of ornamental fishes - their taxonomy and biology- Live bearers, Gold fish and Koi, Gourami, Barbs and Tetras, angel fish, cichlids.
- 3.2 Maturation, secondary sexual characters, breeding habits, spawning, parental care, fertilization and development of eggs.
- 3.3 Hatching, larval rearing and their health.

UNIT-IV: Commercial Production

- 4.1 Commercial production of goldfish, live bearers, gouramies, barbs and tetras, angel fish.
- 4.2 Natural ponds for the mass production of ornamental fishes.
- 4.3 Multiplication of aquarium plants – different methods.

UNIT-V Marine Ornamental Fishes

- 5.1 Marine ornamental fishes – varieties and their habitat.
- 5.2 Major marine ornamental fish resources of India. Method of collection of live fish.
- 5.3 Breeding of marine ornamental fishes (clown fishes and Damsel fishes).

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V SEMESTER- III B.VOC Subject: (Commercial aquaculture)

PAPER -10 POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES

W-e-f 2022-2023

Total Hours-60

Hours per week-04

Total credits-04

Unit – I Handling and Principles of fish Preservation

- 1.1 Handling of fresh fish, storage and transport of fresh fish, post mortem changes
(rigor mortis and spoilage), spoilage in marine fish and freshwater fish.
- 1.2 Principles of preservation – cleaning, lowering of temperature, rising of temperature, denudation, use of salt, use of fish preservatives, exposure to low radiation of gamma rays.

Unit – II Methods of fish Preservation

- 2.1 Traditional methods - sun drying, salt curing, pickling and smoking.
- 2.2. Advanced methods – chilling or icing, refrigerated sea water, freezing, canning, irradiation and Accelerated Freeze drying (AFD).

Unit – III Processing and preservation of fish and fish by-products

- 3.1 Fish products – fish minced meat, fish meal, fish oil, fish liquid (ensilage), fish protein concentrate, fish chowder, fish cake, fish sauce, fish salads, fish powder, pet food from trash fish, fish manure.
- 3.2 Fish by-products – fish glue, Using glass, chitosan, pearl essence, shark fins, fish Leather and fish maws.

Unit – IV Sanitation and Quality control

- 4.1 Sanitation in processing plants - Environmental hygiene and Personal hygiene in processing plants.
- 4.2 Quality Control of fish and fishery products – pre-processing control, control during processing and control after processing.

Unit – V Quality Assurance, Management and Certification

- 5.1. Seafood Quality Assurance and Systems: Good Manufacturing Practices (GMPs); Good Laboratory Practices (GLPs); Standard Operating Procedures (SOPs); Concept of Hazard Analysis and Critical Control Points (HACCP) in seafood safety.
- 5.2 National and International standards – ISO 9000: 2000 Series

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V SEMESTER- III B.VOC Subject: (Commercial aquaculture)

PAPER- 11: SOIL AND WATER QUALITY MANAGEMENT

w.e.f 2022-2023

Total hours- 50

Hours per week-04

Total credits-04

Unit-1: Soil quality

- 1.1. Soil types and their distribution. Physical and chemical properties of soil, Soil colour, texture, structure, pore space, bulk density, and water holding capacity; Conductivity, pH, redox potential, soil salinity, calcium carbonate, organic carbon, available nitrogen, available phosphorus, Carbon-Nitrogen ratio, organic matter and soil fertility
- 1.2. Properties of water logged soils, methane and hydrogen sulphide formation.
- 1.3 Problem soils: Saline soils, Alkali soils, Acid sulphate soils (ASS), and their reclamation
- 1.4. Pond Seepage and its control. Soil quality criteria/requirements for aquaculture.

Unit-2: Water quality

- 2.1. Water quality parameters: Temperature, transparency, salinity, dissolved oxygen, carbondioxide, pH, alkalinity, hardness, conductivity, ammonia, nitrites, nitrates, orthophosphates and hydrogen sulphide; phytoplankton, zooplankton and benthos.
- 2.2. Role of aquatic microorganisms in carbon, nitrogen, phosphorus and sulphur cycles.
- 2.3. Water quality criteria for freshwater and brackish water aquaculture

Unit-3: Soil and Water amendments

- 3.1. Liming: Liming materials, effects of liming on pond ecosystem, liming rates for ponds, calculation of lime requirements and application of liming materials to ponds.
- 3.2 Manures and Fertilizers: Types of manures and fertilizers, primary nutrients, micronutrients, fertilizer grades, quantity and method of application; Bio fertilizers.

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V SEMESTER- III B.VOC Subject: (Commercial aquaculture)

PAPER:12- FISHERIES EXTENSION, ECONOMICS AND MARKETING

Theory Syllabus

W-e-#2022-2023

Total hours: 60

Hours/week: 4

Total credits: 4

Unit 1: Introduction

- 1.1 Meaning and scope of economics with reference to fisheries.
- 1.2 Basic concepts of economics- goods ,services, wants and utility, demand and supply, value price, market demand and individual demand, elasticity of demand, law of diminishing marginal utility.
- 1.3 Production- Definition, factors influencing production, factors of production.
- 1.4 Various factors influencing the price of fishers in market.

Unit 2: Fisheries marketing

- 2.1. Marketing—Definition, different steps of marketing, significance of marketing , scope of marketing.
- 2.2. Fish marketing—price and price determination of fishes.
- 2.3. Marketing institution – primary (producer fishermen, fishermen cooperative, Fisheries co-operations) and secondary (Merchant/Agent)speculative middlemen)
- 2.4 Methods of economic analysis of business organization
- 2.5 Preparation of project and appraisal.

Unit 3: Fisheries Economics

- 3.1. Aquaculture Economic – Scope of Economics, Basic assumption in Economics, application theories in fisheries.
- 3.2. Various inputs and production function, Assumptions of perfection in aquaculture analysis, least cost combination of inputs, laws of variable proportions.
- 3.3. Finance and investment in fisheries – Need for financial assistance, objectives of financial assistance, Sources of financial assistance, financing organizations.(Additional input)
- 3.4. Socio—economic conditions of fishermen in Andhra Pradesh, role of matyafed and NABARD in uplifting fishermen's Sources of financial , financing organizations.
- 3.5. Contribution of fisheries to the National Economy.

SYLLABUS**D.N.R. COLLEGE (AUTONOMOUS), BHIMAVARAM***(Affiliated to Adikavi Nannaya University)***III B.Sc. Degree, Fifth Semester (w.e.From 2022-2023)****SUBJECT: GEOLOGY****PAPER : 6 (Basics of Ground Water Geology, Mineral Exploration & Engineering Geology)****Unit-1**

Scope and applications of hydrogeology, Concept of Hydrologic Cycle, Origin and classification of groundwater, Occurrence and vertical distribution of groundwater, Aquifers: types and properties.

Unit-2

Salt water intrusion. Water bearing properties of rocks, Favorable Geological conditions for Groundwater - Hydraulic conductivity. Darcy's law, Quality of groundwater, Groundwater potential and Provinces in India with special reference to Andhra Pradesh, Methods of locating groundwater, surface and subsurface evidence with special reference to electrical resistivity prospecting methods.

Unit-3

Definitions of Prospecting and Exploration. Reconnaissance, Preliminary and Detailed survey. Geological prospecting:

Guides and Criteria - Structural, Lithological and Stratigraphic Guides.

Sampling Methods - Channel, Chip, Grab, Car, groove, Wagon, Pitting and trenching and drill hole sampling. Coning and quartering. Average Assay

Unit-4

Types of ore reserves and their calculations, Ore estimation - Included and Extended area Methods. Fundamentals of Mineral Beneficiation OR Ore Dressing.

Mining: Alluvial, Quarrying (Open cast mining) and Underground mining.

Drilling Methods - Rotary drilling and Percussion drilling. Remote sensing techniques in mineral exploration.

Unit-5

Role of Geological studies in engineering projects. Rock as a constructing material.

Engineering properties of rocks.

Role of geologist in the construction of Bridges and Roads. Role of geologist in the construction of Dams and Reservoirs. Role of geologist in the construction of Tunnels.

SYLLABUS**D.N.R. COLLEGE (AUTONOMOUS), BHIMAVARAM***(Affiliated to Adikavi Nannaya University)***III B.Sc. Degree, Fifth Semester (w.e.From 2022-2023)****SUBJECT: GEOLOGY****PAPER : 7 (Basics of Remote Sensing, GIS, & Environmental Geology)****Syllabus****Unit -1**

Aerial Photography- Introduction, Normal Aerial Photography, Map, Aerial Photo, Imagery, Types of Aerial Photographs, Mosaics, Types of Stereoscopes, Photo Geological Studies – Interpretation.

Unit -2

Remote Sensing definition. Space, Sensor and Ground segments. Electromagnetic spectrum. Remote Sensing platforms. Sensors used in Remote Sensing. Indian Remote Sensing Satellites. Remote Sensing applications.

Unit -3

GIS and its applications, Remote Sensing for GIS. Data models, Main Segments of GIS, Components of GIS, GIS – Integration, Study of the coastal area of West Godavari district through satellite imagery.

Unit-4

Types of soils, Classification of soils - Site selections -Constructionsand urbanization. Waste disposal - environmental effects Waste recycling - recycling of resources. Mass Wasting - land scarification.

Unit-5

Mining impact on the environment, Health Hazards, Geological Hazards, Man - made Hazards.

Beach erosion sedimentation - coastal zone protection & Management – coastal engineering constructions

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Department of Geology
REMOTE SENSING AND GIS

Unit 1: Photogeology

Types and acquisition of aerial photographs; Scale and resolution; Principles of stereoscopy, relief displacement, vertical exaggeration and distortion
Elements of air photo interpretation
Identification of sedimentary, igneous and metamorphic rocks and various aeolian, glacial, fluvial and marine landforms

Unit 2: Remote Sensing, Concepts in Remote Sensing

Sensors and scanners
Satellites and their characteristics
Data formats- Raster and Vector

Unit 3: Digital Image Processing, Image Errors, Rectification and Restoration, FCC, Image Enhancement, Filtering, Image Rationing, Image classification and accuracy assessment.
GIS integration and Case studies-Indian Examples

Unit 4: GIS, Datum, Coordinate systems and Projection systems
Spatial data models and data editing
Introduction to DEM analysis

Unit 5: GPS, Concepts of GPS
Integrating GPS data with GIS
Applications in earth system sciences

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Department of Geology
Mining

Unit I

Sampling – Principles – types – collection of sample – core samples and their preservation. Drilling – brief account of different types of drilling – Geological logging of borehole samples.

Unit II

Methods of breaking rocks – A short note on explosives. Surface mining open cast. Alluvial mining: Panning – Sluicing – Hydraulicking – Dredging – mine support and stoping – shaft sinking.

Unit III

Subsurface mining: Criteria to choose subsurface mining, Definition of mining terms: Shaft, Level, Adit, Hanging wall, Footwall, Drive, Cross cut, Tunnel, Raise, Winze and Chute. Stopping – Open stopes – Supported stopes – pillar – Square set filled – Shrinkage stopes, Glory hole mining. Caving methods: Top slicing, Sub level caving, Block caving, Coal mining, Prospecting and Planning – Strip mining – Augering – Room and Pillar method – Long wall method.

Unit IV

Introduction to Mineral Economics; Essential critical and strategic minerals Demand and Supply National Mineral Policy – Problems and Prospects – Industrial policy Resolutions, 1956 – Schedule – A, Schedule – B, Energy policy, Forest policy. Evolution of National Mineral policy – Ideal Scope of a mineral policy – Categories of minerals for grant of concessions – Minor minerals – Major minerals. Procedure for obtaining mineral concession – Termination, surrender and Determination of mining lease – The oil fields (Regulation & Development) Act, 1948 – The mines & minerals (Regulation & Development) Act, 1957 – Mineral concession Rules, 1960 – The mining leases (Modification of terms) Rules, 1956 – Minerals conservation and development Rules, 1958.

Unit V

The Coal mines Act, 1974 – The Atomic energy Act, 1957 – The Atomic energy Act, 1962 – The mines Act, 1952 – Mines Rules, 1955 – Coal mines Regulation , 1957 –Metaliferous mines regulation, 1961 – Mineral Taxation and Incentive measures –Incidence of Taxes – Incentive measures – Depletion Allowance – Simplification of Taxation laws.

TEXT BOOKS AND REFERENCE BOOKS

1. R.N.P. Arogyasamy, Courses in mining Geology, Oxford & IBH Publishing Co.
2. Mckinstry- Mining Geology.
3. K.K. Chatterjee -An Introduction to Mineral Economics.
4. R.K. Sinha & N.L. Sharma- Mineral Economics.
5. Thomas R.T. (1979) – An Introduction to Mining – Methun.

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III B.Sc. Degree Examination
(w.e.f: 2022-2023)

Department of Geology

Geological Field work

It is an integral part of the course, students should be taken to a field training during the academic year.

First Unit

Students should be taken in the local area for studying geomorphological, structural aspect of geology. The duration of the trip may be a week and submit a report to the department.

Second Unit

Students should be taken to nearby area and familiarize Paleontological and Stratigraphical aspect, collect samples from the field and display at the time of their practical examination for internal evaluation. The duration may be a week.

Third Unit

A visit to geologically interested and mineralized zones within Tamilnadu it include mine visit, geological mapping, minerals, rocks collection and display at the time of their practical examination for internal evaluation. The duration may be a wee


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III B.A. Degree Examination Semester – V
Department of Geography
(w.e.f:2022-2023)
6- Economic Geography

Unit I

Meaning and approaches to Economic Geography, new Economic Geography. Goods and services, production, exchange and consumption. Concept of economic man, theories of choices. Economic distance and transport costs

Unit II

Concept and classification of economic activity, Factors Affecting location of Economic Activity with special reference to Agriculture, Location of Economic Activity: Von Thunen Theory and Weber's theory.

Unit III

Primary Activities: Types and problems and agriculture, agricultural regions of the world, forestry and fishing.

Unit IV

Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Regions of the world: Special Economic Zones and its significance.

Unit V

Tertiary Activities: Transport, Roads and Railways, Air and Water, Trade Suggested readings

1. Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Wheeler J. O., 1998: Economic Geography, Wiley.
3. Durand L., 1961: Economic Geography, Crowell.
4. Willington D. E., 2008: Economic Geography, Husband Press.
5. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford.

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III B.A. Degree Examination Semester – V
(w.e.f:2022-2023)

7- Industrial Geography

Unit I

Basic Concepts: Meaning and scope of industrial geography; Recent trends in industrial geography; Classification of industries.

Unit II

Concepts of industrialization, industrial complex and industrial estate; Role of industries in regional development.

Unit III

Location Factors and Theories: Factors of industrial location; Linkage in Industries; Theories of industrial location: Weber, Hoover, Lösch and Smith.

Unit IV

Spatial Arrangement of Industries: Localization and distribution of iron & steel, cotton textile and sugar industries; Bases of identification of industrial regions; Industrial regions of U.S.A. and West Europe.

Unit IV

Industrial development and policies; Industrial regions and complexes; Impact of globalization on industries; Problems of industrialization; Environmental impact of industrialization; Tourism as an industry; Tourism in Uttar Pradesh. Suggested Readings

1. Alexanderson, C. (1967): Geography of Manufacturing. Prentice-Hall of India, New Delhi.
2. Hoover, E. M. (1948): Location and Space Economy. McGraw Hill, New York.
3. Lodha, R.M.(2005): Audyogika Bhoogol, Rajasthan Hindi Granth Academy, Jaipur
4. Miller, E. (1962): Geography of Manufacturing. Prentice-Hall, Englewood Cliffs, New Jersey.
5. Riley, R. C. (1973): Industrial Geography, Chatto and Windus Ltd. London.
6. Sharma, V.N. (2001): Industrial Development and Planning in India, Radha Publications, New Delhi,
7. Singh, M. B. (1990): New Perspectives in Industrial Geography. Lotus Publication, Varanasi.
8. Singh, M. B. (1988): Industrial Geography. Lotus Publication, Varanasi.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.A. Degree Examination Semester – V****(w.e.f:2022-2023)****6B Environmental Geography****Unit I**

Concept and Scope of Environmental Geography. Environmental contrast - Biotic Abiotic, Global, Continental, Local. Environmental control of light, Temperature, Water, topography and edaphic factors.

Unit II

Ecosystem – Concept, Structure and Functions, Tropic level, Food Chain, Biogeo-chemical Cycle (Nitrogen and Carbon), Energy flow in Ecosystem.

Unit III

Environmental Problems in Tropical, Temperate and Polar Ecosystems. Environmental pollution (water and air). Concept of holistic environment and systems approach. Ecosystems and their relation with habitats

Unit IV

Human-Environment Relationships – Historical Progression, Adaptation in different Biomes. Wetland ecosystem with special reference to East Kolkata Wetlands. Rural environmental issues: Special reference to sanitation and public health. Urban environmental issues with special reference to waste management.

Unit V

Environmental Programmes and Policies – Major Global & National programme and policies, concept of spaceship earth, earth summit 1992, wildlife act of India 1972, water pollution control act of India 1974, National Environmental tribunal – 1995 of India.

1. Basu, R. and Bhaduri, S. (Eds) 2007. Contemporary Issues and Techniques in Geography, Progressive Publishers.
2. Chandna, R.C. 2002. Environmental Geography, Kalyani Press.
3. Chapman, J.L., Reiz, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press. Cunningham, W.P., Cunningham, M.A. 2004. Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill.
4. Goudie, A. 2001. 2013. The Human Impact on the Natural Environment: Past, Present, and Future, 7th ed, Wiley-Blackwell.
5. Gilpin, A., 1994. Environmental Impact Assessment: Cutting Edge for the 21st Century, Cambridge University Press.
6. Miller, G.T. 2004. Environmental Science: Working with the Earth, Thomson Brooks

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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

7B Disaster Management

Unit I

Introduction on Disaster Different Types of Disaster: A) Natural Disaster: such as Flood, Cyclone, Earthquakes, Landslides etc B) Man-made Disaster: such as Fire, Industrial Pollution, Nuclear Disaster, Biological Disasters, Accidents (Air, Sea, Rail & Road), Structural failures (Building and Bridge), War & Terrorism etc. Causes, effects and practical examples for all disasters.

Unit II

Risk and Vulnerability Analysis 1. Risk: Its concept and analysis 2. Risk Reduction 3. Vulnerability: Its concept and analysis 4. Strategic Development for Vulnerability Reduction.

Unit III

Disaster Preparedness and Response Preparedness - Disaster Preparedness: Concept and Nature. Disaster Preparedness Plan - Prediction, Early Warnings and Safety Measures of Disaster. Role of Information, Education, Communication, and Training. Role of Government, International and NGO Bodies. Role of IT in Disaster Preparedness - Role of Engineers on Disaster Management.

Unit IV

Response 1. Disaster Response: Introduction. Disaster Response Plan - Communication, Participation, and Activation of Emergency Preparedness Plan - Search, Rescue, Evacuation and Logistic Management. Role of Government, International and NGO Bodies. Psychological Response and Management (Trauma, Stress, Rumor and Panic). Relief and Recovery, Medical Health Response to Different Disasters.

Unit V

Rehabilitation, Reconstruction and Recovery - Reconstruction and Rehabilitation as a Means of Development. Damage Assessment, Post Disaster effects and Remedial Measures. Creation of Long-term Job Opportunities and Livelihood Options, Disaster Resistant House Construction, Sanitation and Hygiene, Education and Awareness, Dealing with Victims' Psychology, Long-term Counter Disaster

Planning - Role of Educational Institute.

Suggested References

1. Dr. Mrinalini Pandey Disaster Management Wiley India Pvt. Ltd.
2. Tushar Bhattacharya Disaster Science and Management McGraw Hill Education (India) Pvt. Ltd.
3. Jagbir Singh Disaster Management : Future Challenges and Opportunities K W Publishers Pvt. Ltd.
4. J. P. Singhal Disaster Management Laxmi Publications.
5. Shailesh Shukla, Shamna Hussain Biodiversity, Environment and Disaster Management Unique Publications
6. C. K. Rajan, Navale Pandharinath Earth and Atmospheric Disaster Management: Nature and Manmade B S Publication

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.A. Degree Examination Semester – V****(w.e.f: 2022-2023)****6C Tourism Geography****Unit I**

Meaning and Definition of tourism. Nature, Scope, Importance of tourism, Tourism as an interdisciplinary Subject. Recent Trends in Tourism Geography

Unit II

Factors affecting tourism development - Physical Factors – Relief, Climate, Vegetation, Wildlife, Water Bodies. Socio-Cultural Factors, Religious Factors, Historical and Cultural Factors, Economic Factors. Transportation, Accommodation.

Unit III

Classification and Recent Concepts of Tourism. Classification on the basis of – Nationality, Time of travel Number of tourist, Purpose. Mode of transportation. Season, Nature of tourism.

Unit IV

Recent Concepts of Tourism. Agro-tourism. Eco-tourism. Heritage tourism. Adventure tourism.

Unit V

Impact of Tourism On- Economy, Socio-cultural aspects , Environment. Sustainable Development of Tourism.

Suggested Readings

1. Bhatia A.K.: International Tourism
2. Bhatia A.K.: Tourism Development
3. Dev Manoj : India – A Tourist Paradise
4. Dhar Pramath: Development of Tourism and Travel Industry
5. Gupta V.N.: Tourism in India Negi Jagmohan: Tourism Development and Resource Conservation.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.A. Degree Examination Semester – V****(w.e.f:2022-2023)****7C Resource Geography****Unit I**

Natural Resources: Concept and classification. Approaches to Resource Utilization: Utilitarian, Conservational, Community based adaptive. Significance of Resources: Backbone of Economic growth and development.

Unit II

Pressure on resources. Appraisal and Conservation of Natural Resources. Problems of resource depletion—global scenario (forest, water, fossil fuels). Sustainable Resource Development.

Unit III

Distribution, Utilisation, Problems and Management of Metallic Mineral Resources: Iron ore, Bauxite, copper, Lead and Zinc.

Unit IV

Distribution, Utilisation, Problems and Management of Non-Metallic Mineral Resources: Limestone, Mica, Gypsum, Barite, Asbestos.

Unit V

Distribution, Utilization, Problems and Management of Energy Resources: Conventional and Non-Conventional [6] 10. Contemporary Energy Crisis and Future Scenario. Politics of Power resources. Limits to Growth and Sustainable Use of Resources; Concept of Resource sharing.

Suggested Readings

1. Chiras, D.D., Reganold, J.P. 2009. Natural Resource Conservation: Management for a Sustainable Future, 10th ed, Pearson.
2. Cutter, S.N., Renwick, H.L., Renwick, W. 1991. Exploitation, Conservation, and Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons.
3. Gadgil, M., Guha, R. 2005. The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press.
4. Gregory, D., Johnston, R., Pratt, G., Watts., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, 5th ed, Wiley.
5. Holechek, J.L.C., Richard, A., Fisher, J.T., Valdez, R. 2003. Natural Resources: Ecology, Economics and Policy, Prentice-Hall.
6. Jones, G., Hollier, G. 1997. Resources, Society and Environmental Management, Paul Chapman.

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III B.A. Degree Examination Semester – V

(w.e.f:2022-2023)

Department of Geography

6D Agriculture Geography

Unit I

Basic Concepts: Meaning and scope; Approaches to study of agricultural geography; Origin and dispersal of agriculture; Role of agriculture on human society; Physical, cultural and institutional factors affecting agriculture.

Unit II

Agricultural Patterns: Agricultural type and typology; Subsistence, plantation, commercial and mixed farming; Crop concentration and crop diversification; Delineation of crop combination regions; Agricultural regions of the world.

Unit III

Agricultural Measures: Land use pattern; concept of carrying capacity of land; Measures of agricultural efficiency and agricultural productivity.

Unit IV

Agricultural Development in India: Agro-climatic regions; Green revolution; Second generation reforms in Indian agriculture: land and institutional reforms; Organic and contract farming; Agricultural planning and policies.

Unit V

Concept of cropping pattern, crop combination, gross and net cropped area, crop rotation. A critical review and contemporary perspective of Von Thünen model; Definition and factors affecting yield. Measures of agricultural productivity. Role of irrigation in Indian agriculture. Problems of agriculture with special reference to South Asian countries.

Suggested Readings

1. Basu, D.N., Guha, G.S. 1996. Agro-Climatic Regional Planning in India, Concept Publication.
2. De, N.K., Jana, N.C. 1997. The Land: Multifaceted Appraisal and Management, Sribhumi Publishing.
3. Grigg, D. 1995. An Introduction to Agricultural Geography, 2nd ed, Routledge.
3. Hussain, M. 1978. Agricultural Geography, Rawat Publication.
- Ilbery, B.W. 1985. Agricultural Geography: A Social and Economic Analysis, Oxford University Press.
4. Mohammad, N. 1992. New Dimension in Agriculture Geography, Concept Pub.
5. Roling, N.G., Wagerutgers, M.A.E. (Eds.) 1998. Facilitating Sustainable Agriculture, Cambridge University Press.
6. Shafi, M. 2005. Agricultural Geography, Pearson

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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

7D Remote Sensing and GIS

Department of Geography

Unit I

Definition -Historical Components of Remote Sensing Principles & methods of remote sensing - Active and Passive remote sensing - Remote Sensing platforms -Electromagnetic radiation- Spectrum- satellites classification – based on orbit- sun synchronous and Geosynchronous based on purpose Earth Resources satellites, communication satellite Weather satellites Spy satellites Sensors.

Unit II

Characteristics of Digital satellite image enhancement Filtering Applications of Aerial photographs and satellite imageries – merits – Limitations – Water resources – watershed management – Urban Studies – Flood Management- Fishing Forestry.

Unit III

Visual Interpretation of Satellite Images – Elements of Interpretation - Interpretation Keys Characteristics of Digital Satellite Image – Image enhancement – Filtering – Classification - Integration of GIS and Remote Sensing.

Unit IV

GIS – Components of GIS – Hardware, Software and Organisational Context – Data – Spatial and NonSpatial – Maps – Types of Maps – Projection – Types of Projection - Data Input – Digitizer, Scanner – Editing – Raster and Vector data structures – Comparison of Raster and Vector data structure – Analysis using Raster and Vector data – Retrieval, Reclassification, Overlaying, Buffering – Data Output – Printers and Plotters.

Unit V

Application of Remote Sensing and GIS – Urban Applications- Integration of GIS and Remote Sensing – Application of Remote Sensing and GIS – Water resources – Urban Analysis – Watershed Management – Resources Information Systems.

Suggested References

1. Anji Reddy, "Remote Sensing and Geographical Information Systems", BS Publications 2001
2. Anand P.H, "Principles of remote Sensing and Geographical Information Systems", Sri Venkateswara Publishers, 2003.
3. Lillesand T.M and Kiefer R.W. Remote sensing and Image, Interpretation, John Wiley and Sons, INC, New York, 1987.
4. Burrough P A, "Principle of GIS for land resource assessment", Oxford University, 1990.


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)

Department of History

B.A	Semester: III	Credits: 4
Course: 3	Modern Indian History & Culture (1764-1947 A. D)	Hrs/Wk: 5

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Unearth the true nature of the British rule and its disastrous impact on Indian economy and society
- Gauge the disillusionment of people against the Company's rule even during the early 19th century
- Assess the causes and effects of Reformation movements and also inspire the public to overthrow inequalities of the present day society
- Rise above petty parochial issues after understanding the sacrificial saga of freedom struggle
- Evaluate the undercurrent of communal politics that led to India's partition and identify the enemies of India's integrity and sovereignty
- Visualize where places are in relation to one another through map pointing

UNIT I:

Policies of Expansion –Warren Hastings, Cornwallis - Subsidiary Alliance & Doctrine of Lapse – Causes & Results of 1857 Revolt – Lytton, Rippon, Curzon

UNIT II:

Social, Religious & Self-Respect Movements – Raja Rammohan Roy, DayanandaSaraswathi, Swami Vivekananda, JyotibaPhule, Narayana Guru, Periyar, Dr. B. R. Ambedkar

UNIT III:

Causes for the growth of Nationalism - Freedom Struggle from 1885 to 1920 , Moderate Phase — Militant Phase: Vandemataram Movement - Home Rule Movement

UNIT IV:

Freedom Struggle from 1920 to 1947: Gandhiji's Role in the National Movement – Revolutionary Movement – Subhas Chandra Bose

UNIT V:

Muslim League & the Growth of Communalism – Partition of India – Advent of Freedom - Integration of Princely States into Indian Union – Sardar Vallabhai Patel

REFERENCES BOOKS:

1. Anil Seal, Emergence of Indian Nationalism
2. Banerjee, Sekhar, From Plassey to Partition
3. Bipan Chandra, Rise and Growth of Economic Nationalism in India
4. Chandra, Bipan, et. al., India's Struggle for Independence
5. Bipan Chandra, Modern India
6. Joshi, P.C., Rammohun and the Forces of Modernisation in India
7. R.P.Dutt, India Today

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II B.A., semester-IV

Subject: History, Paper-4,

2022-2023

Title: History & Culture of Andhra (from 1512 to 1956 AD)

Syllabus:

B.A.	Semester:III	Credits:4
Course:4	History & Culture of Andhra (from 1512 to 1956 AD)	Hrs/Wk:5

Learning Outcomes:

After successful completion of this course, the student will be able to:

- ❖ Interpret social and culture transformation from medieval to modern Andhra
- ❖ Relate key historical development during medieval period occurring in costal Andhra and Telangana regions and analyze socio-political and economic changes under Qutbshahi rules
- ❖ Understand gradual change, or change in certain aspects of society in Andhra, rather than rapid or fundamental changes.
- ❖ Explain how the English East India company became the most dominant power and outline the impact of colonial on different aspects in Andhra.
- ❖ Outline the issues related to caste, women, widow remarriage, child marriage, social reforms and the laws and policies of colonial administration towards these issues.
- ❖ Take pride in the non-violence struggle for Indian Independence and relate the important of peace in every life.
- ❖ Apply the knowledge of the regional history to understand the regional, linguistic and other cultural aspirations of the present day society
- ❖ Visualize where places are in relation to one another through map pointing

UNIT I:

Andhra through 16th & 19th Centuries AD: Evolution of Composite culture- the Quatbshahi of Golkonda- Administration, Society & Economy - Literature & architecture: Advent of European and settlements in Andhra - Occupation of Northren Cricars and Ceeded Districts - Early revolts against the British.

UNIT II:

Andhra Under British ruel: Administration - Land revenue settlements - Society - Education - Religion - Impact of Industrial revolution on economy- peasantry & famines - contribution of sir thomas munroe & C.P. Brown - impact of 1857 revolts in Andhra.

UNIT III:

Social Reforms, Adi Andhra, Dalit & New literary Movements : Kandukuri Vereeshalingam, Ragupathi Venkatarathnam Naidu, Guruzada Appa Rao, Kommaraju Venkata Laxman Rao ; New literacy movements : Rayaprolu Subba Rao, Viswanath Satyanarayana, Gurram Jashua, Boyi Bhimanna, Sri Sri.

UNIT IV:

Freedom Movement in Andhra (1885-1947): Vandemataram Movement- Home Rule Movement in Andhra - Non-Cooperation Movement - Alluri Seetarama Raju & Rampa Revolt (1922-24) - Civil Disobedience Movement - Quit India Movement.

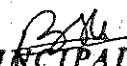
UNIT V:


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Movement for separate Andhra State (1953) and AP (1956): Causes – Andhra Maha Sabha – Conflict between Coastal Andhra & Rayalaseema – Sri Bagh Pact – work of various Committees – Martyrdom of Potti Sriramulu – Formation of separate Andhra State (1953); Movement for formation of Andhra Pradesh (1956): Visalandhra Mahasabha – Role of Communists – States Reorganization Committee – Gentlemen's Agreement – Formation of Andhra Pradesh

REFERENCES BOOKS:

1. H.K. Sherwani, History of the Kutub Shahi Dynasty
2. K. Sathyanarayana, A Study of the History and Culture of Andhras
3. B. Kesava Narayana, Political and Social Factors in Modern Andhra
4. K.V. Narayana Rao, The Emergence of Andhra Pradesh
5. M. Venkata Rangaiah, The Freedom Struggle in Andhra Pradesh
6. P.R. Rao, History of Modern Andhra
7. Sarojini Regani, Highlights of Freedom Movement
8. Sarojini Regani,
9. V. Ramakrishna, Social Reform Movement in Andhra
10. B. Kesava Narayana, Modern Andhra & Hyderabad – 1858 – 1956 A.D., 2016
11. K. Koti Reddy, History of Modern Andhra, Telugu Academy, Hyderabad


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)

Department of History

B.A	Semester: IV	Credits: 4
Course: 5	History Of Modern World (From 15th Cent. AD to 1945 AD)	Hrs/Wk: 5

Learning Outcomes:

After successful completion of this course, the student will be able to:

- Demonstrate advanced factual knowledge of world histories, politics, and cultures
- Assess and appraise the developments in art, literature, and society during the Renaissance and utilize content knowledge of the Reformation and Counter Reformation to make predictions about the evolution of Christianity in Europe and abroad.
- Evaluate the causes for the Glorious Revolution and American Revolution and identify the background for the evolution of human rights movement.
- Understand the main events of the French Revolution and its significance in the shift in European culture from Enlightenment to Romanticism.
- Think how Russia's traditional monarchy was replaced with the world's first Communist state.
- Know how the world wars affected people all over the world and the destruction they caused.
- Develop the intellectual curiosity and habits of thought that will lead to life-long learning and continued engagement with European history, literature, culture, languages, and current affairs and acquire advanced international and intercultural competency through coursework in international studies.
- Visualize where places are in relation to one another through map pointing.

UNIT I:

Transformation from Medieval to Modern Era – Chief Characteristics; Glorious Revolution (1688) Origin of Parliament Bill of Rights – Results

UNIT II:

American Revolution (1776); French Revolution (1789) – Causes, Course and Results

UNIT III:

Unification of Italy; Unification of Germany

UNIT IV:

Communist Revolution in Russia; World War I: Causes – Results of the War – Paris Peace Conference; League of Nations

UNIT V:

World War II: Causes, Fascism & Nazism – Results; The United Nations Organization: Structure, Functions and Challenges.

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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)

Department of History

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6A	Archival Sources and Techniques	Hrs/Wk:5

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the archival sources and techniques as professional tools.
2. Identify the intellectual and physical content in historical sites and records.
3. Develop the ability to preserve and create access for a historic record.
4. Recognize the importance of archives in history writing.
5. Manage, budget and implement projects.

Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total: 75)

Unit:1

Definition of Archives - History of Archives - Types of Archives: College Archives - University Archives - Regional Archives - Corporate Archives - A. P. State Archives and Regional Centers - National Archives.

Unit:2

Archival Sources: Public Records, Oriental Records, Manuscripts, Private Papers, News Papers etc. - Identifying Historical Records from fiction - Differentiating Primary and Secondary Sources.

Unit:3

Physical forms of Archival Materials: Clay tablets, Stone inscription, Metal Plates, Palm leaves and Paper records, Photographs, Cartographic Records, Film, Video tapes and other Electronic Records.

Unit:4

Archival Administration: Authenticity of Documents, Preserving Historical Documents - Office Organization and Record Management.

Unit:5

Archival Ethics: National Security, Privacy, Intellectual Property Rights - Information Technology and Computer Application in Archives.

References:

1. Annstoler, Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense, 2009
2. Bernand Cohn, An Anthropologist among Historians and other Essays, Oxford Press, 2010
3. Saloni Mathur: India by Design: Colonial History and Cultural Display, University of California, 2007
4. Sengupta, S.: Experiencing History Through Archives, Delhi: Munshiram Manoharlal, 2004
5. Guha, Thakurta, Tapati : Monuments, Objects, Histories : Institution of Art in Colonial India, New York, 2004
6. Kathpalia, Y.P.: Conservation and Restoration of Archive Materials, UNESCO, 1973
7. Basu, Purnendu: Records and Archives, What are they, National Archive of India, 1960, Vol III, No. 29
8. The Indian Archives, Journal
9. Web sources suggested by the teacher concerned and college librarian including for reading material.


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)

Department of History

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7A	Techniques of History Writing	Hrs/Wk:5

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand the meaning of history, scope and various concepts in historical writings
2. Identify various historical sources for writing history of a person / event / place / organization / monument / etc.
3. Understand the different ways to organize sources and interpretation
4. Summarize the changing ideas and approaches to a particular topic of history
5. Learn skills related to choosing and writing of a comprehensive history of a small unit

Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total: 75)

Unit:1

What is History-Meanings and Scope of History – Generalizations in History – Judgement in History – Hypothesis?

Unit:2

Understanding Sources of History -Survey of Sources: Archeological and Literary Sources- Foreign Travelers Accounts- Oral History- Sources of Contemporary History-Data mining from Information Science (Internet/Web Sources)

Unit:3

History Writing. Importance and Types of History Writing: Research Papers/Essays/General History/Book Reviews/Biographies/Reports/ Analysis of original works etc.

Unit:4

Writing Biographical History. individual, family, organization history - (Ex: Makers of Modern India/ Freedom Fighters /Politicians/Sports Personalities/ Industrialists/Business Personalities, are reputed family and noted business firm)

Unit:5

General and Local History Writing: Street/Village/Urban/Institute/Incident/Place/Monument History etc.- Structure of a History Document-Bibliography

References:

1. E.H.Carr, What is History, Penguin Classic, Reprint in 2018.
2. E.H.Carr, What is History (T.M), Hyderabad Book Trust, 2016.
3. E.Sreedharan, A Text Book of Historiography, Orient Longman, First Published in 2000, Reprint in 2006.
4. Sumit Sarkar, Writing Social History, Oxford University Press, 1998.
5. B.Sheikh Ali, History-Its Theory and Method, Laxmi Publications, 2019
6. Steven Roger Fischer, History of Writing, Reaktion Books, 2021.
7. Amartya Sen, Argumentative Indian, Writings on Indian History, Culture and identity, Penguin, 2006.


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Semester-Wise Revised Syllabus under CBCS
III B.A., Semester- V
Subject- History, Paper-6B,
(w.e.f : 2022-23 academic year)

Course 6B: Tourism and Hospitality Services
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Understand hospitality as a career
2. Inculcate interpersonal skills
3. Develop the ability for multitasking and crisis management
4. Understands the spirit of teamwork
5. Acknowledge the importance of guest service and satisfaction

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05. Total: 75)

Unit: 1

Tourism – Definition – Nature and Scope – History of Tourism–Types of Tourism – Domestic and International Tourism – Causes of rapid growth of tourism – National Institute of Tourism and Hospitality Management

Unit: 2

Relationship between history and tourism - Major tourist spots in AP – Gandikota, Nagarjunakonda, Salihundam, Konaseema

Unit: 3

Characteristics of Hospitality Industry - Inflexibility, Intangibility, Perish ability- Types of Hospitality jobs – Hotel Manager, Hotel Receptionist, Restaurant Manager, Catering Assistant, Executive Chef etc - Concepts of Atithi Devo Bhavah - Types of hotels in India

Unit: 4

Duties, responsibilities & skills of front office staff – duties, responsibilities and skills of housekeeping staff - guest stay process in a hotel - major processes and stages associated with it

Unit: 5

Different types of services offered in selected Hotels/Motels/Restaurants - Room Service, Catering Services -Different types of managerial issues - Service etiquettes

III. References:

1. Marketing for Tourism and Hospitality, Philip Kotler, Bowens and James Makens, Pearson Pub, New Delhi, 2010
2. Soft Sills for Hospitality, Amitabh Devendra, Oxford Higher Edn, 2015
3. The Indian Hospitality Industry: Dynamics and Future Trends, Ed: Sandeep Munjal, Sudhanshu Bhushan, CRC Press, 2017


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4. Hotel Front Office: Operation and Management, Jatashankar Tewari, Oxford Higher Edn, 2016
5. www.ilo.org
6. <https://riginstitute.com>
7. nitahm.ac.in
8. web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (Training of student in skills by Teacher: Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom and in the field for a total of not less than 10 hours on various practical aspects related to tourism and hospitality industry. The teacher shall also train students with the help of experts in skills such as flower arrangements, cooking and catering supervision, speaking to guests etc. related to hospitality services.

2) For Student: Students shall visit any one of the local tourism offices, tourism sites, hotels, restaurants, catering offices to make personal observations and to gain hands-on experience. These individual observations shall be written as a Fieldwork/Project work Report not exceeding 10 pages and submit to teacher in the given format.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index of Contents: *Objectives, Step-wise process, Findings & References*

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

- 1) Invited Lectures
- 2) Hands on Experience with the help of Field Experts.
- 3) Debates on Interesting Topics
- 4) Seminars, Group Discussions, Quiz, etc.
- 5) Assignments
- 6) Alumni Interactions
- 7) Periodical Interactions with HR Managers

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Semester-Wise Revised Syllabus under CBCS
III B.A., Semester- V
Subject- History, Paper-7B,
(w.e.f : 2022-23 academic year)

Course 7B: Tourism Guidance and Operating Skills
(Skill Enhancement Course (Elective), 4 Credits)

I. Learning Outcomes:

Students after successful completion of the course will be able to:

1. Acquire tour guiding, operating and soft skills
2. Understand different situations under which one has to work
3. Cultivate cultural awareness and flexibility
4. Understand and apply team spirit
5. Plan and organize tour operations efficiently

II. Syllabus: (Hours: Teaching: 60, Skills Training: 10, others including unit tests: 05 Total: 75)

Unit: 1

Meaning of tour guide - types of tour guide: heritage guide, nature guide, adventure guide, business guide, special interest guide etc – duties and responsibilities of guides -various roles of tour guide.

Unit: 2

Guiding techniques: leadership skills, social skills, presentation skills, communication skills - Guide's personality skills: passion, empathy, enthusiasm, punctuality, humour etc - Personal hygiene and grooming – code of conduct.

Unit: 3

Guest Relationship Management- Handling emergency situations- Medical, Personal, Official, VISA/Passport, Death, Handling Guest with special needs/Different Abilities/ Different age groups.

Unit: 4

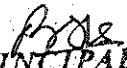
Conducting Tours: Pre-Tour Planning, Route Chart, Modes of Transportation, Security Measures, and Check list etc. - Conducting various types of tours- Relationship with Fellow Guides - Coordination with hospitality institutions.

Unit: 5

Travel Agency and Tour operations – Difference between Travel Agent and Tour operator – Functions of Tour Operator – Types of Tour Operations and of Tour Operators - A brief study of tour operating agencies like APTDC, Southern Travels etc.

III. References:

1. Jagmohan Negi, Travel Agency and Tour Operations, Kanishka Publishers, New Delhi, 2006
2. Mohinder Chand, Travel Agency and Tour Operations: An Introductory Text, Anmol Publications Pvt. Limited, New Delhi, 2009
3. Dennis L Foster – Introduction to Travel Agency Management
4. Pat Yale (1995); Business of Tour Operations, Longman Scientific & Technical, New Delhi
5. Pond K L, The Professional Guide: Dynamics of Tour Guiding, 1993
6. www.tourism.gov.in
7. www.qtic.com


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9. www.cedeop.europe

10. web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (*Training of students in the related skills by the Lecturer, Total 10 Hours*)

1) For Teacher: Training of students by the teacher in the classroom and in the field for a total of not less than 10 hours on various practical skills related to guidance and operating tours in tourism sector, with the help of local experts. The teacher shall lead students to local tourist sites and guide them to work with local tourist guides or local tourist operators.

2) For Student: Students shall individually choose and visit a local tourist place/monument such as a historical site, temple etc., and talk to local guides personally. Observe their functioning to gain experience, including suggestions for the improving the guidance. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

a) Suggested Co-Curricular Activities

1) Invited Lectures

2) Hands on experience with the help of field experts.

3) Debates on interesting topics

4) Seminars, Group Discussions, Quiz, etc.

5) Assignments

6) Alumni Interactions

7) Periodical interactions with Tour Managers

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B.A. History, Semester-V
(w.e.f. Academic Year 2022-23)

Title: Journalism Reporting and Editing Techniques

Learning Outcomes:

Students at the successful completion of the course will be able to;

- Know the Significance of Report Writing
- Understand the Principles and Techniques of Reporting
- Know the types of news sources and qualities of a reporter.
- Identity the Role of Sub Editor and Editor
- Critically analyse the challenges in reporting and editing techniques.

Unit-I

Definitions of Journalism, Reporting and Editing-History of Indian Press and News Papers-Printing Revolution-Importance of Print and Electronic Media in Present Society.

Unit-2

SourcesofNews-TypesofNewsandTypesofNewsWriting-PrinciplesofReporting- Problems in Reporting - Qualities of Reporter.

Unit-3

TypesofReporting-ImportanceofLanguage-InternationalandIndianNewsAgencies- Importance of Photography in Journalism.

Unit-4

Principles ofEditing - RoleofSub Editors and Chief Editors -Techniques of Editorial Page - Headline Techniques- Tips for Captions.

Unit-5

Characteristics of Effective Report - Report writing for all Media: Radio, Television, News Paper, Magazine and Web- Writing of Model Reports of different types like Politics, Crime, Entertainment, Press Conference, Places of Importance etc. - Career opportunities in Journalism.

References:

1. J.Natarajan, History of Indian Journalism, Ministry of Information and Broadcasting, 2010.
2. G.N.S.Raghavan,PressinIndia:NewHistory,GyanPublishingHouse,1995.
3. K.M.Shrivastava,NewsReportingandEditing,SterlingPublishersPvt.Ltd,2003.
4. S.Kundra,ReportingMethods,AnmolPublicationsPvt.Ltd,2005.
5. M.K.Joseph,Outlineof Reporting,AnmolPublications,2007.
6. J.R.Hakemulder,NewsReportingandEditing,AnmolPublications,2002.

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7. Franklin, Key Concepts in Journalism Studies, Vistaar Publications, 2003.
8. M.V. Kamath, Professional Journalism, Vikas Publishing House, 1980.
9. Bruce D. Itule and Douglas A. Anderson, News Writing and Reporting for Today's Media, McGraw Hill, 2003.

Curricular Activities:

1. For Teacher: Training of students by the teacher in the classroom or in the field on Techniques for Report Writing and Editing. The teacher shall help the students to identify sources, compilation, of information/News, conduction of mock interviews, investigations,

judging the authenticity and other related activities. Teachers shall suggest the students to record videos on different news.

2. For Student: The students shall go to the field for collection of news from sources. They shall describe in detail how the sources were identified, challenges faced while collecting

sources, placing the news in order, preparing and editing the report. This Individual Field Work shall be written in the given format not exceeding 10 pages and to be submitted to the teacher, as the Field Work Report.

3. Suggested Field Work Format:

Title Page, Student Details, Acknowledgments, Index of Contents: *Objectives, Step-wise process, Findings, Conclusion & References*

4. Max Marks for Field Work Report: 05

5. Unit Tests/Internal Examinations

Suggested Co-Curricular Activities

- 1) Prepare a Front Page of a News paper with News and Photographs.
- 2) Training of Students on Reporting and Editing Techniques.
- 3) Assignments on Current and Trending News
- 4) Invited Lectures Presentations on Report writing and Editing Techniques by Local Reporters and Editors
- 5) Debates Seminars, Group Discussions, Quiz, etc.
- 6) Preparation of Videos on News Items
- 7) Collection of News and organizing them in a systematic way in a file.
- 8) Visits to Local News Paper offices/Press/Press Conferences etc.


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on Indian History, Culture and Identity, Penguin, 2006.

8. R.G. Collingwood, The Idea of History, Oxford University Press, 1994.
 9. K. Rajayyan, History in Theory and Method: A Study in Historiography, Raj Publishers, 1982.
 10. G.P. Singh, Ancient Indian Historiography Sources and Interpretations, D.K. Print World Ltd, 2003.
 11. N.R. Ray, Sources for the History of India, New Delhi, 1978.
 12. R.C. Majumdar, Historiography in Modern India: 18th and 19th Centuries, Asia Publishing House, 1970.
 13. Ramasundari Mantena, The Origin of Modern Historiography in India: Antiquarianism and Philology, 1780-1880, Palgrave and Macmillan, 2012
- Websources suggested by teacher/librarian

Co-Curricular Activities:

a) Mandatory: (Training of students in the related skills by the Lecturer, Total 10 Hours)

1) For Teacher: Training of students by the teacher in the classroom or in the field for a total of not less than 10 hours on techniques of writing history. The teacher shall train the students to identify the sources, authenticate, compile, arrange and judge in a proper order.

2) For Student: Students shall individually visit a place like a Street/Village/Cultural Centre/Religious place / Monument/Organization/Institution or a Historical place and study its history and make observations. (or) Study the Biography/achievements of an Inspiring Personality and make observations.

These individual observations shall be written not exceeding 10 pages and submitted to the teacher as Fieldwork/Project work Report in the given format.

3) Suggested Fieldwork/Project work Format:
Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References.

4) Max Marks for Field work/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

1. Training of Students on Writing History
2. Assignments
3. Invited Lectures Presentations on Related Topics by Field Experts.
4. Debates on Interesting Topics
5. Seminars, Group Discussions, Quiz, etc.
6. Preparation of Videos on Historical Sites.
7. Collection of Material/Figures/Photos/Books related to
8. History of a Place and History writing and organizing them in a Systematic way in a file.
9. Visits to Historical Sites, Museums, Monuments etc


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8)

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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of History

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7C	Evolution of Telugu Cinema and Script Writing	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Understand the evolution of Telugu cinema and major changes from past to present
2. Assess the role of Telugu cinema makers and their contribution
3. Identify various cinema studios and film institutions
4. Learn skills and techniques of cinema script writing

Syllabus: (Hours: Teaching: 60, Skills Training: 10, others incl unit tests: 05. Total: 75)

Unit: I

What is Cinema- Origin - Definitions- Scope of Cinema- History of Indian cinema- Cinema and its importance- Some prominent Indian filmmakers in other languages: Satyajit Ray, Santa Ram, K. Subramanyam, B. R. Pantulu and A. Door Gopalakrishnan.

Unit: 2

Evolution of Telugu cinema: Cinema under British rule- Mookie to Talkie Films- Classical Age- Black and White to Colour Films - Pioneers of Telugu cinema: Raghupati Venkaiah, B. N. Reddy, Gudavalli Ramabrahmam, L. V. Prasad and K. V. Reddy

Unit: 3

Major Developments in Telugu Film Industry in the first 50 years (1912 to 1962)- Cinema Studios and Film Institutes (Chennai-Hyderabad) - Film Censorship - National & State Awards- Film Festivals- Telugu Cinema at World Market- Cinema and its Impact on Society

Unit: 4

Evolution of Telugu film story/scripts and themes in the first 50 years (1912 to 1962): mythological, historical, folk, social reform and freedom movement, family, hero-cult. Rural and urban background

Unit: 5

Adaptation of historical events for historical films: Comparative study original (reordered) history and the film's story - study of one of the following films: Mahamantri Timmarasu, Bobbili Yuddham, Alluri Sitaramaraju; Prominent Telugu film script writers: Pingali Nagendra Rao, Chakrapani, Modukuri Jhonson, D. V. Narasaraaju.


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Semester-Wise Revised Syllabus under CBCS
B.A. History, Semester-V
(w.e.f. Academic Year 2022-23)

Semester-V

Title: Modern Principles and Techniques of Archaeology

Learning Outcomes:

Students at the successful completion of the course will be able to;

- Identify the relationship between archaeology and other disciplines
- Understand the data retrieval techniques in Archaeology
- Demonstrate post excavation analysis, recording and interpretation of data
- Differentiate the dating methods in Archaeology
- Analyze the conservation and preservation methods in Archaeology

Unit-I

Definition, Nature and Scope of Archaeology - Relationship of Archaeology with Social and Natural Sciences - Application of Digital Technology in Archaeology: GIS and Satellite Imagery - Computers and the Internet.

Unit-2

Retrieval of Archaeological Data: Techniques of Exploration, Excavation, - Study of Maps- Aerial Survey - Photography-Water Exploration - Tools of Archaeology

Unit-3

Chronology-Relative Chronology- Radio Carbon Dating-Principles of Conservation, Preservation and Documentation of Archaeological Antiquities

Unit-4

Nature and Scope of Epigraphy-Decipherment and Dating-Origin of writing in India- Historical Importance of the Inscriptions -Paleographic Formula

Unit-5

Numismatics as Source Material for the Reconstruction of History-Origin of Coinage in India Application of Numismatics and Numismatic Data to Archaeology

References:

1. Agrawal, D.P. and M.D. Yadava, Dating the Human Past. Pune: Indian Society for Prehistoric and Quaternary Studies, 1995
2. Agrawal, O. P., Preservation of Art Objects and Library Materials, New Delhi, National Book Trust India, 1993

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3. Balme, Jane and Alistair Paterson, *Archaeology in Practice (A Student Guide to Archaeological Analyses)*. West Sussex: John Wiley and Sons Inc, 2014
4. Grant, Jim, Sam Gorin and Neil Fleming, *The Archaeology Course book: An Introduction*
5. Walker, Mike. *Quaternary Dating Methods*, West Sussex: John Wiley and Sons Limited, 2005
6. Gupta, P.L., ed., *Numismatics and Archaeology*. Nasik: Indian Institute of Research in Numismatic Studies, 1986
7. Sharer, R. and W. Ashmore, *Archaeology: Discovering our Past*. McGraw-Hill: New York, 2002.
8. Web sources

Co-Curricular Activities:

a) Mandatory: (*Training of students in the related skills by the Lecturer, Total 10 Hours*)

1) For Teacher: Training of students by the teacher in classroom and field for a total of not less than 10 hours on various practical skills and techniques of archaeological practices like the following: Identifying and collecting some common archaeological tools like shovels, trowels, spades, brushes, buckets etc., and how they are specifically used finding the historical dates using various simple methods. Conduct the Exhibitions on Coins/Stamps/Rare Archaeology items.

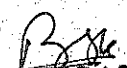
2) For Student: Students shall visit museums/monuments/ancient temples/excavation sites etc to personally make observations (if possible, students can work at excavation sites or in museums) during office-hours to gain hands-on experience). **(or)** Students shall collect/identify artifacts like stone tools, pottery vessels, metal objects such as weapons and items of personal adornment such as buttons, jewellery, clothing etc. and observe their appearance, use and time period. These individual observations shall be written in the given format

4) Max Marks for Fieldwork/Projectwork Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

- 1) Invited Lectures
- 2) Hands on Experience with the help of Field Experts.
- 3) Debates, Seminars, Group Discussions, Quiz, etc.
- 4) Periodical Interactions with Museum/Archaeology Technical Experts


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Semester-Wise Revised Syllabus under CBCS

B.A. History, Semester-V

(w.e.f. Academic Year 2022-23)

Title: Museum Management

Learning out comes:

Students after successful completion of the course will be able to.,

- Gain Awareness about the History, Context and concepts of Museums
- Understand Curatorial Responsibilities and Ethics of Collection
- Document and Classify Museum Objects and Acquire Skills to Manage and Demonstrate them in Museum
- Evaluate the Intricacies of Exhibition Design and Develop Skills related to various aspects of Museum Exhibitions
- Analyze the Changing Dynamics between Museums and Culture and Job opportunities in this Field

Unit:1

Origin, Meaning, Definition and Purposes of Museums – Changing Role and Social Relevance of Museums – History and Development of Museums in India.

Unit:2

Types of Museums – Classification of the Museum – Open Air Museums, Inclusive Museums, Community Centre, Galleries and Virtual Museums.

Unit:3

Techniques of Collection, Conservation, Preservation of Museum Objects – Ethical Procedure. Collection and preservation of old documents and books.

Unit:4

Items exhibited in general - Purpose of Exhibition – Types of Exhibitions – Museum Exhibition Skills – Exhibition Planning – Concept Development, Exhibition Brief, and Exhibition Design – Evaluation of Exhibition.

Unit:5

Museum Management as a Profession – Planning and Organization of Museum – Functions of Museum – Administration – Staff of the Museum and their Duties – Study of selected professional Museums – Regional, National – State/ASI and International Museums.

III. References:

1. Nigam M.L., Fundamentals of Museology. Navhind Prakashan, 1966
2. Timothy, Ambrose and Paine, Museum Basics, ICOM, Routledge, New York, 1993
3. Key Concepts of Museology, ICOM Publication (online).


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4. Seth, Manvi, Communication and Education in Indian Museums, Agam Kala Prakashan, New Delhi, 2012
5. Elizabeth Bogle, Museum Exhibition Planning and Design, Altamira Press, 2013
6. Grace Morely: Museum Today, University of Baroda, 1981
7. Sivaramamurti, C, Directory of Museum in India
8. Parker, A.C., A Manual for History Museum
9. UNESCO, Organisation of Museum
10. Web sources as suggested by teacher/librarian

IV. Co-Curricular Activities:

a) Mandatory: (*Training of students in the related skills by the Lecturer, Total 10 Hours*)

1) For Teacher: Training of students by the teacher in the classroom or in the field for a total of not less than 10 hours on various practical aspects of related to museum management.

Teachers should get into contact with nearby museums or archival cells and conduct a visit and ask students to evaluate the collection of items, preservation, display set-up, and functioning of the organization on any given parameters. The teachers shall also train students on how to set a small museum in the college with locally available materials.

2) For Student: Students shall visit Museums or Archival Cell personally observes and if possible, works (in museums if permitted) during off-hours to gain hands-on experience. Students should write a report on the curatorial practices or collection policies of any one of the museums they visit. These individual observations shall be written in the given format not exceeding 10 pages and submit to the teacher as Fieldwork/Project work Report.

3) Suggested Fieldwork/Project work Format:

Title Page, Student Details, Acknowledgments, Index page, Objectives, Step-wise process, Findings & References.

4) Max Marks for Fieldwork/Project work Report: 05

5) Unit Tests/Internal Examinations

b) Suggested Co-Curricular Activities

- 1) Invited Lectures/Interactions with Museum Experts
- 2) Hands on Experience with the help of Field Experts.
- 3) Debates, Seminars, Group Discussions, Quiz, etc.


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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of Politics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7A	E Governance	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to:

1. Acquaint student with the introduction to good governance and how it can be achieved by information and communication technology.
2. Understand the growing needs of E-Governance, improving transparency in the system of governance
3. Have understanding of various government schemes and E-Governance projects and initiatives.
4. Provide the practical knowledge about the effective delivery of citizen services through online mode.
5. Realize the issues and challenges of E-Governance.

Syllabus:(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Brief Introduction to Governance-E-Governance –Meaning, Definition, Nature, Scope, Objectives and Significance-Domains of E-Governance- E-Governance and Good Governance-Global trends in the growth of E-Governance.

Unit: 2

E-Governance in India- - National E-Governance Plan (NeGP)-National Informatics Centre-Strategies for E-Governance-E-Governance Implementations: Required infrastructure of Network, Computing, Cloud Governance, Data system, Human resources, Legal and Technological infrastructure- Major E-Governance Projects and Initiatives:Gyandoot, E-choupal, E-Bhoomi, E-Seva, CARD, E-Panchayat, Real Time Governance (RTG) etc.

Unit: 3

Role of Information and Communication Technology in Administration, Effective delivery of services for public utilities through E-Governance-Online filing of complaints, application registration, issuance of certificates, issuance of land records, online payments of fees, dues etc, e-tendering, easy access to information and E-Governance in Social security and welfare schemes: Direct transfer of benefits, Biometric authentication through Aadhar, etc.

Unit: 4

E-Governance under Information Technology Act-Legal status for digital transactions-Public Private Partnership and expansion of E-Governance.

Unit: 5

E-Governance-Transparency and Accountability at gross root level-Issues and Challenges: Digital Divide, Capacity Building, Cyber Security in Cyber Crimes, Socio-political implications, Issues of integration, Networking with NGOs.


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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)
Department of Politics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7B	Local Administration	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Understand the existing context of Local Government Institutions in India.
2. Have knowledge on the need of empowerment and autonomy of LGIs.
3. Provide an overview on financial resources and constitutional provisions.
4. Analyse the issues, problems and conflicts in Local Administration.
5. Develop communication skills to interact with the elected members and officials.
6. Enhance skills for observation, organizing, networking, documentation.

Syllabus:(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Local Government: Meaning, Nature and Importance, Thoughts on Local Governments by M.K.Gandhi, Jawaharlal Nehru and Dr.B.R.Ambedkar, Important Committees: Balwant Rai Mehta (1957), Ashok Mehta (1978), L.M.Singhvi(1986).

Unit: 2

Decentralization of powers (Political, Administrative and Economic) from the States to Local Institutions- 73rd and 74thConstitutional Amendment Acts-Empowering Local Governments- Decision making powers during crisis and disasters-Relationship between local government authorities and Central and State Government service providers-Role of District Collector in strengthening LGIs.

Unit: 3

Revenue raising avenues for Local Governments-Grants, Aid and support from Centre and State Governments-Public Private Partnerships-Concept of Local Development-Village as a unit, SWOC analysis of a village, existing conditions, expected developmental opportunities, the gap, natural, government and private resources, year-wise planning, finances required -Role of Local Governments in implementation of welfare and developmental programmes i.e., (MGNREGS), (SGSY), (IAY) and (PURA).

Unit: 4

Challenges for Local Administration, Financial, administrative and Political Constraints-Public relations in Local Administration-Need for training for elected representatives and other stakeholders-Audit training and Participatory training.

Unit: 5

Preparation of Reports-Minutes and Documentation-Types of Reports, Content of Minutes-Methods of Documentation-Best practices of Reporting on functioning of Local Administration-Use of ICT in documentation.


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III B.A. Degree Examination – At the End of V Semester

W.e.f. 2022-23 Admitted Batch – RCBCS Syllabus (Semester wise)

Subject : Politics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7A	Legal Literacy- Rights Awareness	Hrs/Wk:5

Syllabus:

Unit: 1

Brief understanding of Legal Literacy-Rights and Duties of citizens-Indian Constitution - Fundamental Rights and other constitutional rights and enforcement of certain rights under Article 21 with emphasis on Public Interest Litigation.

Unit: 2

Laws relating to criminal jurisdiction-Provisions relates to FIR, Arrest, Bail, Search and Seizure-Important offences under Indian Penal Code-Offences against Women-Dowry, Sexual harassment and violence, Juvenile justice.

Unit: 3

Anti-terrorist laws-Implication of security and protection of Human Rights-Laws relating to Consumer rights and Cybercrimes.

Unit: 4

System of Courts and Tribunals and their jurisdiction in India-Civil and Criminal courts, Writ jurisdiction, specialized courts such as Juvenile courts, Mahila courts etc.

Unit: 5

Legal Services Authority Act, 1987 and Right to Free Legal Aid-Alternate Dispute Resolution Mechanism (ADR), Lok Adalats and Conduct of Legal Literacy camps-Role of NGOs in promoting legal awareness.

References:

1. Basu, D.D, Introduction to Constitution of India, Nagpur, Lexis Nexis Butter worths, 2018.
2. Kashyap, S, Our Constitution: An Introduction to India's Constitution and Constitutional Laws, New Delhi, National Book Trust, 1994.
3. D.Srivastava, Sexual Harassment and Violence against Women in India : Constitutional and Legal Perspectives in C.Kumar and C.Chockalingam (eds) Human Rights, Justice and Constitutional Empowerment, Delhi, Oxford University Press, 2015.
4. B.L.Wadhera, Public Interest Litigation- A Handbook, Universal Publications, New Delhi, 2016.
5. Aggarwal, N., Women and Law in India, New Century Publishing House, New Delhi, 2019.
6. Kamala Sankaran and Ujwal Singh (eds), Creating Legal Awareness, Oxford University Press, New Delhi, 2017.
7. Indian Social Institute, New Delhi, Legal Literacy Booklets.
8. P.C.Rao and William Sheffield, Alternate Dispute Resolution: What it is and How it works, Universal Law Books and Publishers, New Delhi, 2012.
9. Parmanand Singh, Access to Justice and the Indian Supreme Court, 10& 11, Delhi Law Review, 1981-82.
10. J.Kothari, Criminal Law on Domestic Violence, Economic and Political Weekly, 2005, Vol.40 (46), pp., 4843-4849.

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III B.A. Degree Examination – At the End of V Semester

W.R.F. 2022-23 Admitted Batch – RCBCS Syllabus (Semester wise)

Subject : Politics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6C	Office Management	Hrs/Wk:5

Syllabus:(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Introduction to Office, Office structure-Office Management: Meaning, Nature, Importance, Elements and Functions of Office Management-Basic Principles of office management.

Unit: 2

Office organization: Definition, Characteristics-Office Planning, Accommodation, Layout and Office Environment.

Unit: 3

Office Record Management-Objectives and Importance-Filing System: Steps in filing, Essentials for filing, Classification and arrangements of files, Modern filing methods using Information and Communication Technology and devices-Indexing: Essentials of a good indexing and Records retention and Micro filing.

Unit: 4

Office Communication: Meaning and mailing, Barriers to communication -Correspondence and Report Writing-Types- Periodical reports.

Unit: 5

Form Letters: Meaning, Principles, Factors in designing office forms-Supervisory Skills-Importance of Motivation and Leadership-Issues in Office Management-Recent trends: e-office, use of modern appliances and application of IT in office management.

References:

1. R.S.N.Pillai&Bagavathi, Office Management, S.Chand Publishers, New Delhi, 2014.
2. R.K.Chopra, Office Management, Himalaya Publishing House, New Delhi, 2016.
3. B.N.Tandon, Manual of Office Management and Correspondence, S.Chand Publications, New Delhi, 2014.Sudhir Andrews, Front Office Management and Operations, Tata McGraw Hill PublishingCo. Ltd, India, New Delhi, 2008.
4. Balachandran V, Office Management, Tata McGraw Hill Publishing Co. Ltd, India, New Delhi, 2009.
5. Bhatia R.C, Principles of Office Management, Lotus Press, New Delhi, 2005.
6. Sharma, R.K & Others, Office Management, Kalyani Publishers, New Delhi, 1991.
7. Chopra, R.K, Modern Office and Its Management, Himalaya Publishing House, Hyderabad, 2008.
8. Niraj Kumar, Modern Office Management, New Royal Book Co, Lucknow, 2013.
9. Gopal Krishnan and Sundaresan, M, Material Management: An Integrated Approach, Prentice Hall of India, New Delhi, 2014.
10. Satyasnarayana, J, E-Government, Prentice Hall of India, New Delhi, 2015.
11. Kooiman, J (ed), Modern Governance: New Government-Society Interactions, Sage Publications, London, 2014.
12. Bhatnagar, S.C, E-Government: From Vision to Implementation, Sage Publications, New Delhi, 2014.
13. Singhal. A and Evertt, Rogers, India's Information Revolution, Sage Publications, New York, 1990.
14. Srinivas Vallabhan, S.V, Computer Application in Business, Sultan Chand & Sons, NewDelhi, 2014. Web resources suggested by the Teacher concerned and the College Librarian including reading material.

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III B.A. Degree Examination – At the End of V Semester

Wef-2022-23 Admitted Batch – RCBCS Syllabus (Semester wise)

Subject : Politics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7C	Personnel Administration	Hrs/Wk:5

Syllabus:

Unit: 1

Personnel Administration: Concept, Nature, Scope and Significance-Hierarchy in Personnel Administration-Roles and Responsibilities of Personnel Administrative Officers-Bureaucracy: Meaning, Characteristics, Nature, Importance and its role in modern state.

Unit: 2

Recruitment: Meaning and Importance, Types of Recruitment, Methods of recruitment with regard to All India, Central and State Services-Union Public Service Commission and State Public Service Commissions-Constitutional provisions and Composition, Functions and Role.

Unit: 3

Training: Meaning, Objectives, Types and Significance-Training Institutions in India-Promotion- Promotion procedure-Career Planning, Evaluation and Development-Motivation and Morale- Performance Appraisal.

Unit: 4

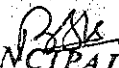
Administrative Ethics-Integrity in administration-Code of Conduct-Common Lapses and Disciplinary Procedure-Employee and Employer Relations-Rights of Civil Servants.

Unit: 5

Problems in Personnel Administration-Employees participation in administration-Grievances-Institutional arrangements for settlement of disputes-Change in work place, Counseling and Time Management..

References:

1. Avasthi Maheswari, Public Administration, Lakshminarayan Agarwal, Agra, 2008.
2. Goel, S.L, Personnel Administration, Deep and Deep Publications, New Delhi, 2009.
3. Sharma, M.P, Public Administration Theory and Practice, Kitab Mahal, Allahabad, 2005.
4. Tripathi P.C, Human Resource Development, S.Chand Publications, New Delhi, 2016.
5. David E.Kalaignar, Public Personnel Management, IPMA, Prentice Hall Inc, Eaglewood Chiffs, New Jersey, 1986.
6. C.M.Jain, Public Personnel Administration, College Book Depot, Jaipur, 2003
7. K.Aswarthappa, Human Resource Management : Text and Cases, Tata McGraw Hill, New Delhi, 2008.
8. V.S.P.Rao, Human Resource Management, Excel Books, New Delhi, 2007
9. O.Glenn Stanl, Public Personnel Administration, Oxford IBH Publication Co, New Delhi, 2008.
10. Chatterjee.Bhaskar, Human Resource Management, Sterling Publications, New Delhi, 2009.
11. Administrative Reforms Commission, 1969, Report on Personnel Administration.
12. Government of India, Second ARC, Tenth Report on Refurbishing of Personnel Administration.
13. Jain, R.B, Aspects of Personnel Administration, IIPA, New Delhi, 2008.
14. Maheswari Sriram, Public Administration in India: The Higher Civil Service, Oxford University Press, New Delhi, 2007.


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Politics

Course 6D: Electoral Politics and Voting Behaviour

Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Acquaint student with the structure and manner of functioning of Election Commission of India.
2. Understand the political issues in Electoral Politics.
3. Provide an overview on voter turnout, voting behavior in India.
4. Aware of the role of new media and technology in election campaign.
5. Develop an understanding of the required skills for data collection, research in election management.

Syllabus:(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Electoral Democracy-Electoral Politics in India-Pre and Post-Independence, Nature, Characteristics-Electoral Process: Nature and Significance.

Unit: 2

Election Commission of India: Composition, Powers and Functions-Merits and Demerits of Electoral system in India-Political Participation-General Elections in India since 1952-Elections to Local Bodies-State Election Commission.

Unit: 3

Issues in Electoral Politics: Corruption, Money power, rigging, booth capturing, undemocratic party system, politics of Political Defections and Reservations-Need of Reforms in present Electoral System-Reports of Tarkunde, Goswamy, Indrajeet Gupta Committees.

Unit: 4

Public Opinion: Meaning and its role in Democratic Politics-Voting Behaviour: Meaning, Nature and determinants of voting behavior: Caste, Religion, Language, Region etc.

Unit: 5

Management of Elections: Moral Code of Conduct, Filing Election Nominations and Affidavits - Use of new techniques and methods in election campaigns: Membership drive, Responsibility Management, Booth Management, New ways of generating funds, Polling research, Opinion Polls, Predictions, Techniques of interpreting collected election data, use of print, electronic and social media in elections.

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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Politics

Course 7D: Legislative Procedures and Practices

Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Make familiar with legislative procedures and practices.
2. Equip the students with the adequate skills of participation in deliberative processes and democratic decision making.
3. Understand complex policy issues, draft new legislation, analyze ongoing bills, make speeches and floor statements.
4. Provide skills to be part of a legislative support team and expose them to real life legislative work.
5. Enhance understanding of procedures, practices, different committees and motions in the House.

Syllabus :(Hours: Teaching: 60, Training: 10, Others incl. unit tests: 05)

Unit: 1

Brief Introduction on Legislative bodies, roles and responsibilities-Constitutional Provisions of Legislative Procedures: Articles 107-122, Kinds of Bills: Ordinary Bills, Money Bills, Finance Bills, Constitution Amendment Bills and Private Member Bills.

Unit: 2

Powers and Functions of People's Representatives in Legislative Process: Members of Parliament, Members of State Legislatures, Political Heads of Rural and Urban Local Governments.

Unit: 3

Drafting of the Bill-First Reading and Departmental Standing Committee-Second and Third Reading-Framing rules and regulations, Passage of the Bill, Consent by the President of India and Gazette Notifications.

Unit: 4

Legislative Committees in India: Role in reviewing government policies, finances, programmes and legislation, Types of Committees: Department Standing Committees, Select Committees, Joint Parliamentary Committees, Public Accounts Committee, Estimates Committee, Business Advisory Committee, Ethics Committee etc.

Unit: 5

Budget process: Reviewing the Union Budget, Examination of Demands for Grants of Ministries, Working of Ministries-Motions and Hours in the House: Question Hour : Rules of putting questions, Types of Questions-Rules relating to Calling Attention Motion, Adjournment Motion, Privilege Motion, Censure Motion, No-Confidence Motion, Cut Motion including Resolutions, Discussion and Short Discussion

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 ACADEMIC YEAR 2022-23 (w.e.f)

Programme: B.A.	Year: III	Semester: V
Domain Subject: ECONOMICS	Title : INSURANCE SERVICES	
Total theory hours: 60.	Total Credits :4	Hrs/Wk: 5

Unit 1: Insurance Concept and Principles

Risk Management: Risk and Uncertainty, Risk Classification – Concept, Importance and Types of Insurance– Principles of Insurance – Insurance Regulations in India - Role of IRDA and Insurance Ombudsman –Scope for Insurance Business in India.

Unit 2: Life Insurance and Products

Life Insurance: Nature and Features - Major Life Insurance Companies in India - Important Life Insurance Products/policies and their Features: Conventional, Unit Linked, Annuities, Group Policies – Medical Examiner.

Unit 3: General and Health Insurances and Products

General Insurance: Nature, Features and Types - Major General Insurance Companies in India - Important General Insurance Products/Policies and their Features - Surveyor – Health Insurance: Nature and Features - Health Insurance Companies in India - Major Health Insurance Products/policies and their Features: Individual, Family, Group.

Unit 4: Practicing as an Insurant Agent

Insurance Contract and Terms of Insurance Policy - Registration of Insurance Agency with the Company — Procedure to issue a Policy: Application and Acceptance – Policy Lapse and Revival –Premium Payment, Assignment, Nomination and Surrender of Policy – Policy Claim - Important Websites and Apps of Insurance in India.

Unit 5: Understanding the Customer and Case Studies

Insurance Customer and Categories – Understanding Customer Mindset and Satisfaction - Addressing the Grievances of the Customer – Ethical Behavior in Insurance – Moral Hazard –Discussion of two different Case Studies related to Life or General or Health Insurance Services.

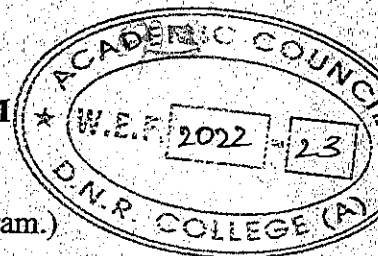
Text Books

1. P. Periyaswamy: *Principles and Practice of Insurance*, Himalaya Publishers, New Delhi (2nd Edition), 2019.
2. G. Dionne and S.E. Harrington (Eds.): *Foundations of Insurance Economics*, Kluwer Academic Publishers, Boston, 1997.
3. K. Jr. Black, and H.D. Skipper Jr.: *Life and Health Insurance*, Prentice Hall, Upper Saddle River, New Jersey, 2000.

Reference books:

1. Insurance Institute of India: *Principles of Insurance (IC-01)*, Mumbai, 2011.
2. Insurance Institute of India: *Practice of Life Insurance (IC-02)*, Mumbai, 2011.
3. Insurance Institute of India: *Practice of General Insurance (IC-11)*, Mumbai, 2011

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 ACADEMIC YEAR 2022-23 (w.e.f.)



SYLLABUS

Programme: B.A.	Year: III	Semester: V
Domain Subject: ECONOMICS	Title : BANKING AND FINANCIAL SERVICES	
Total theory hours: 60.	Total Credits :4	Hrs/Wk: 5

Unit1: Principles of Banking and Indian Banking System

Meaning of Banking – Principles of Banking – Functions of Banking – Structure of Indian Banking System – Regulations of Banking in India – Role of RBI in Banking – Anti-money Laundering - Basics of Financial literacy - Problems and Challenges of Banking in India.

Unit 2: Deposits, Loans and Digital Banking

Bank Deposit Account Types – Account Opening and Closing – Banking Customer types – KYC Norms – Negotiable Instruments: Cheque, Bill of Exchange, Promissory Note, Endorsement - Principles of Lending – Different categories of Loans – Mortgaging -Priority Sector Lending – E-Banking facilities: Debit Card, Credit Card, Net Banking, Mobile Banking, Tele-banking, Micro ATMs, Digital Currency – Core Banking Solutions.

Unit 3: Banking Correspondents and Common Service Centers

Banking Correspondent Model - Activities of Banking Correspondent: Deposit Mobilization, Identification of Borrowers, Collection and Recovery Loan, Other Banking Services – Common Services Centre (CSC) – Provision of Services by CSC – Requirement for Registering CSC and Telecentre - Case Study of Banking Correspondents with any Bank or CSC in Local Area.

Unit 4: Financial Services of NBFIs

Non-Banking Financial Institutions (NBFIs): Types and Major Players of NBFIs in India – Important Financial Services offered by NBFIs and their Features – Concept of EMI - Micro Finance: Concept and Operation - Chit Funds: Concept and Operations– Payment Banks - Regulations of NBFIs in India – Problems and Challenges of NBFIs in India.

Unit 5: Work with Finance Service Company (FSC)

Types of loans by Finance Service Company (FSC) – Customer of FSC: Types and Needs - Marketing of FSC's Loans – Procedures and Requirements in FSC's Loan Sanction - Collection and Recovery of FSC Loans - Case Study of a FSC's services in Local Area.

Text books:

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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6A	Rural Entrepreneurship	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the basic theories and essentials of entrepreneurship;
2. Identify and analyze the entrepreneurship opportunities available in local rural area;
3. Apply the theories of entrepreneurship to the conditions of local rural area and formulate appropriate business ideas;
4. Demonstrate practical skills that will enable them to start rural entrepreneurship.

Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit-1: Entrepreneurship: Concept and Theories

Concept and Importance of Entrepreneurship - Theories of Entrepreneurship: Innovations, X-Efficiency, Risk Bearing - Qualities and Functions of an Entrepreneur - Women Entrepreneurship - Ecopreneurship.

Unit-2: Rural Entrepreneurship, Business Planning and Agribusiness

Rural Entrepreneurial Ecosystem - Factors, Problems and Challenges of Rural Entrepreneurships - Process of Identification of new Entrepreneurship Opportunities in Rural Areas - Formulation of Business Planning for Rural Entrepreneurship - Agribusiness and Value Addition: Procuring, Processing, Storing, and Marketing.

Unit-3: New Rural Entrepreneurship Opportunities

New Entrepreneurship Opportunities in Farm sector: Organic Farm Products, Nutri-Cereals, Horticultural Products, Forest Produce, Medicinal Plant Products - New Entrepreneurship Opportunities in Rural Non-farm sector: Poultry, Aquaculture, Sericulture, Honeybee, Mushrooms Cultivation, Handicrafts.

Unit-4: Financing and Marketing for Rural Entrepreneurship

Financing the Rural Entrepreneurship: Procedures to obtain formal loans from banks and other institutions - Preparation of Detailed Project Report for Loan - New avenues of finance: Crowd Funding and Venture Capital - Marketing of Rural Products: Market Survey, Demand Forecasting, Marketing Strategies, Branding, Planning and Promotion, Digital and Social Media Marketing.

Unit-5: Institutional Support and Case Studies of Rural Entrepreneurship

Institutional Support for Rural Entrepreneurship - Special Role of NABARD in promoting and supporting the Rural Entrepreneurship - Government Schemes for promotion of Rural Entrepreneurship - Rules and Procedures to start a Rural Entrepreneurship Firm - Discussion of two different types of Case Studies related to Rural Entrepreneurship with

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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)

Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7A	Farmer Producer Organizations(FPOs)	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the concept and organization of FPO and its economic activities.
2. Identify and analyse the opportunities related to FPO in local rural area.
3. Apply the concepts to the identified FPO related opportunities available in the local area and formulate business ideas.
4. Demonstrate practical skills that will enable them to start a FPO or earn wage employment in it

Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept of FPO and Importance

Concept and importance of FPO – Types of FPOs – Organizational structure and Functions of FPO – Ecosystem required for FPO – Role of FPOs in present Indian Agricultural Development – Factors, Problems and Challenges of FPOs in India.

Unit 2: Establishing FPO and Collaborations

Situation Analysis and Mobilizing Farmer Producers for FPO – Rules and Regulation related to FPOs – Procedures to start FPO – Infrastructure required for FPO – Collaboration with Other Organizations – Training and Capacity Building to Persons in FPO – Managing Financial Account of FPO.

Unit 3: Economic Activities and Business Planning of FPO

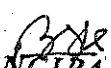
Economic Activities undertaken by FPO: Input Purchase, Custom Hiring Machines – Output Business: Procuring, Processing, Storage, Logistics, Marketing, Exporting etc. – Product Identification and Value Chain Analysis for FPO – Business Planning for FPO – Viable Business Models of FPO: Multi-product and Value Added.

Unit 4: Financing and Marketing of FPO

Financial Planning in FPO – Mobilization of Capital from Members, Promoters, Banks and other Funding Agencies – Marketing of FPO Products: Market Survey, Demand Forecasting, Marketing Strategies, Branding, Planning and Promotion, Digital and Social Media Marketing.

Unit 5: Institutional Support and Case Studies of FPOs

Institutional Support and Resource Supporting Agencies for FPOs – Special Roles of NABARD and SFAC – Government Schemes for promotion of FPOs – Discussion of two important Case Studies related to FPOs with different product or process types of local relevance.


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6B	UrbanEntrepreneurship andMSMEs	Hrs/Wk:5

LearningOutcomes:

Studentsatthesuccessfulcompletion ofthecourseshallbeableto:

- 1.ExplainthebasictheoriesandessentialsofentrepreneurshipIdentifyandanalyzetheentrepreneurshipopportunitiesavailableinlocalurbanarea.
2. Applythetheoriesofentrepreneurshiptotheconditionsoflocalurbanareaandformulateappropriate business ideas.
3. Demonstratepracticalskillsthatwillenablethemtostarturbanentrepreneurship

Syllabus:(Hours:Teaching:60,Training:10,Others IncludingUnitTests:05)

Unit1:Entrepreneurship:ConceptandTheories

Concept and Importance of Entrepreneurship - Theories of Entrepreneurship: Innovations, X-Efficiency,RiskBearing-QualitiesandFunctionsofanEntrepreneur–WomenEntrepreneurship-Ecopreneurship.

Unit2:UrbanEntrepreneurshipandBusinessPlanning

UrbanEntrepreneurialEcosystem–Factors,ProblemsandChallengesofUrbanEntrepreneurships - Process of Identification of new Entrepreneurship Opportunities in UrbanAreas-Formulation ofBusiness PlanningforUrban Entrepreneurship.

Unit3:MSMEsandNew UrbanEntrepreneurshipOpportunities

Features of Micro SmallMedium Enterprises (MSMEs)– Cluster Development ApproachandLeveraging Technology for MSMEs– Problems and Challenges of MSMEs- NewEntrepreneurialOpportunitiesinUrbanArea:FoodandBeverages,Sanitary andHealthProducts, Solid Waste and Scrap Disposal, Tourism and Hospitality Services, ConsultancyServicesand Event Management,Logisticservices.

Unit4:FinancingandMarketingofUrbanEntrepreneurship

Financing the Urban Entrepreneurship and MSMEs: Procedures to obtain formal loans fromBanks and other Institutions, Preparing Detailed Project Report for Loan - New avenues offinance: Crowd Funding and Venture Capital –Marketing of Urban Entrepreneurship andMSMEs products:Market Survey, DemandForecasting, Marketing Strategies,Branding,Planning and Promotion, Digital and Social Media Marketing – Public Procurement Policy topurchaseMSME Products.

Unit5:InstitutionalSupportandCaseStudiesof UrbanEntrepreneurship

Institutional support for Urban Entrepreneurship and MSMEs - Government Schemes forpromotion of Urban Entrepreneurship and MSMEs: Startup, Standup, PMKVY, PLI etc. – Rules and Procedures to start a Urban Entrepreneurship Firm and MSME –Discussion of twodifferenttypesofCaseStudiesrelatedtoUrbanEntrepreneurship withlocalrelevance.

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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7B	Retail and Digital Marketing	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Explain the concepts and principles about the retail and digital marketing;
2. Identify and analyse the opportunities related to retail and digital marketing available in the local area;
3. Apply the concept to formulate the new strategies related to retail and digital marketing;
4. Demonstrate the practical skills required to get employment in retail and digital marketing or to start own digital marketing.

Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept of Marketing

Concept of Marketing – Type of Markets – Marketing Mix – Marketing Strategies – Marketing Segmentation – Marketing Organization – Marketing Research – Pricing Policies and Practices – Major Players in Retail and Digital Market in India.

Unit 2: Understanding Product and Consumer

Marketing Product Types – Product Decision and Strategies – Product Life Cycle – Consumer Behavior Model – Factors of Consumer Behavior – Understanding Indian Consumer – Strategies of persuading the Consumer – Sale Promotion: Advertisement, Branding and Packaging.

Unit 3: Retail Marketing

Concept of Retail Marketing – Types of Retailing – Big and Small Retail Markets – Retail Marketing Mix – Essentials of Successful Retail Marketing – Retail Marketing Strategies – Multichannel Retailing – Store Management – Shopping Market Dynamics.

Unit 4: Digital Marketing

Digital Marketing: Concept and Types – Telemarketing – Online or e-tailing – Essentials of Digital Marketing – Difference between Physical Retail and Digital Marketing – Digital Marketing Channels – Customer Behavior in Digital Marketing – Major players in Digital Marketing and their Marketing Strategies – Tools and Apps of Digital Marketing.

Unit 5: Marketing Models and Case Studies

Marketing Model of Retail and Digital Market Companies/Shops: Global, National and Local levels – Discussion of two different types of Case Studies related to Retail and Digital Marketing.

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III B.A. Degree Examination Semester – V
(w.e.f. 2022-2023)
Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6D	Inferential Statistics and Software Packages	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course shall be able to:

1. Demonstrate the knowledge related to the important concepts and techniques of inferential statistics
2. Calculate correlation, regression coefficients and interpret the results.
3. Use Excel sheets and SPSS package to analyse the data and derive the results.

Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Concept and Theories of Probability

Concept of Probability - Definitions of Probability: Classical or Mathematical and Empirical or Statistical - Axiomatic Approach to Probability - Theorems of Probability: Addition and Multiplication (without proofs).

Unit 2: Theoretical Probability Distributions

Binomial Distribution: Constants (without proof) and Properties - Poisson Distribution: Constants (without proof) and Properties - Normal Distribution: Constants (without proof) and Properties - Standard Normal Distribution and Standard Normal Curve - Economic and Practical Applications of Binomial, Poisson and Normal Distributions.

Unit 3: Test of Significance - Large and Small Sample Tests

Steps involved in Testing of Hypotheses - Large Sample or Z-Test - Testing the difference between Means and Proportions - Small Sample Tests - Difference between Large and Small Sample Tests - Applications of Student's t-test, χ^2 test, F-test - One way and Two way ANOVA.

Unit 4: Linear and Non-linear Multiple Regression Models

Four Variable Linear Multiple Regression Model - Notation - Assumptions - Estimation of Partial Regression Coefficients - Interpretation of Regression coefficients -

Testing the coefficients: t-test, p-value - Coefficient of Determination: R^2 and adjusted R^2 - Estimation of Non-linear Multiple Regression: Cobb-Douglas Production Function and Interpretation of Elasticity Coefficients.

Unit 5: Excel and Software Packages for Data Analysis

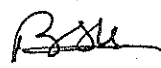
Worksheet - Entering data in Worksheets - Creating Graphs and Charts - Mathematical and Statistical Functions - Data Analysis Pack in Excel -

Descriptive Statistics, Testing of Hypotheses, ANOVA, Correlation and Regression, Random Number Generation - Data Handling Using SPSS - Opening Excel files in SPSS - Analysis Tools -

Descriptive Statistics

- Selection of Variables in Multiple Linear Regression -

Estimation of Regression Coefficients using SPSS and their interpretation.


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III B.A. Degree Examination Semester – V
(w.e.f: 2022-2023)
Department of Economics

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7D	Project Designing and Report Writing	Hrs/Wk:5

Learning Outcomes:

The Student at the successful completion of the course shall be able to:

1. Demonstrate the knowledge relating to research, its role in enhancement of knowledge in social sciences in general and economics in particular;
2. Formulate a good research design to undertake mini research projects with a view to studying the socio-economic problems of the society;
3. Undertake a field survey by himself/herself to collect relevant data and information relating to his/her project work;
4. Develop capacity to write a simple project report with all relevant components on the research project undertaken by him/her.

I. Syllabus: (Hours: Teaching: 60, Training: 10, Others Including Unit Tests: 05)

Unit 1: Foundation of Research

Meaning and Importance of Research - Scientific Research - Social Science Research - Methods of ensuring Objectivity in Social Science Research - Limitations of Research in Social Science - Ethics in Research.

Unit 2: Classification of Research

Pure and Applied Research - Exploratory and Descriptive Research - Diagnostic Research - Action Research - Analytical Research - Evaluation Research - Experimental Research Design - Concepts of Independent and Dependent Variables - Case Study method.

Unit 3: Planning of Research Project

Selection of a Research Problem - Criteria for Selecting a Research Problem - Review of Theoretical and Related Research Studies - Choice of Secondary and Primary Data for the Study - Choice of Census and Sample Data - Preparation of a Research Proposal - Components of a good Research Proposal.

Unit 4: Implementation of a Project Design

Fieldwork/Project work and Collection of Data - Choice of Schedules and Questionnaire - Pilot Study - Role of Observation and Participation - Documentary Evidences - Projective Techniques: Functions and Types - Editing Data - Graphical and Statistical Analysis of Data using Appropriate Statistical Techniques.

Unit 5: Report Writing

Types of Research Report - Target Audience - Nature of Language to be used in Research Report - Outlines of a good Research Report - Prefatory Items - Body of the Report - Terminal Items: Differences between References and Bibliography - Appendices - Ethical values in Research Report - Plagiarism Test - Components of a good Research Paper.


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D.N.R. COLLEGE (Autonomous) BHIMAVARAM*(Affiliated to Adikavi Nannaya University)***III B.A. Degree Examination Semester – V****(w.e.f: 2022-2023)****Department of Social Work**

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6A	Counselling Skills In Social Work	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to ;

1. Understanding the need, scope and concepts of counseling in social work.
2. Various sources of counseling skills in social work to be identified.
3. Comprehend various factors of social work.
4. Learning counseling skills effectively.
5. At deeper level of learning, one can understand the techniques and approaches for counseling and practice.

Syllabus:(Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit: 1**Introduction to counselling skills in social work**

Meaning, definition, principles and goals of counselling. Preventive, crisis, facilitative and developmental concepts of counselling.

Unit: 2**Counselling process in social work**

Problem exploration and classification, dynamic self –understanding, developing a new perspective, values and ethics in counselling.

Unit: 3**Practice of counselling in different settings**

Practice of counselling in family counselling centers, family courts, counselling bureau.

Unit: 4**Counselling techniques in social work**

Initiating contact, intake, establishing structure, behaviour, interaction, observation, responding, rating and interpretation.

Unit: 5**Approaches for counselling in social work**

Psycho-analytical theory, rational-emotive therapy, help and self-help, marital and family therapy.


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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of Social Work

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7A	Social Work Practice With Differently-Abled Persons	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to;

1. Understanding how social work practice is conducted with people with disabilities..
2. Awareness on disability.
3. Develop the ability to observe and analyze social realities among differently-abled.
4. To understand and promote opportunities to differently abled.
5. To provide education and train differently abled in social work.

Syllabus:(Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit:1

Social work with differently abled persons

Introduction, definition of disability, discrimination over differently abled.

Unit:2

Types and causes for disability

Types of disability, causes, magnitude, assessment, impairment and the final impact.

Unit:3

Needs and problems of differently abled

Physical, mental, reproductive and sexual disability dependence and flattering self esteem.

Unit:4

Psychological disability

Self thinking, decision making, unconditional thoughts and unparallelbehaviour.

Unit:5

Cure and treatment

Therapy, animal therapy, drama therapy, dance, music and role of a social worker in curing the differently abled.

References:

1. Peter sim cock and Rhada castle, social work and disability.
2. Graeme axfordjane Bissell, differently abled taking a stand making a difference, 2021.
3. Rich donovan, unleash different, achieving success through disability, 2018.
4. Ai etmanski, the power of disability, 2020.
5. Michael oliver, social work with disabled people.


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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of Social Work

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6B	Rehabilitation Services And Skills In Social Work	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to ;

1. To understand psychosocial influences, beliefs and values..
2. Students will learn managing and administering rehabilitation units.
3. Effectively discuss the various aspects of rehabilitation process.
4. To demonstrate a strong foundation in rehabilitation.
5. These programmes will promote best practice in rehabilitation.

Syllabus :(Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit: 1

Physical rehabilitation in social work

Aim, purpose, psycho social functioning, process, increased confidence, hope and autonomy.

Unit: 2

Rehabilitation services by a social worker

Occupational services, physical services and speech services.

Unit: 3

Principles of a social worker in rehabilitation

Promote adaptation, treat the whole person mentally and physically, time, educate, people centered care.

Unit: 4

Involving rehabilitation schools in social work

Introduction, goals of rehabilitation schools, involving social worker in rehabilitation schools, as a disciplinary team.

Unit: 5

Rehabilitation

Role of social worker in rehabilitation of person with disability, theoretical perspectives regarding PWDs, constitutional provisions. UN convention rights of persons with disability and on human rights, PWD Act.

References:

1. Ajit k dallal, disability rehabilitation and social work the Indian scenario, 2020.
2. Margaret a.Turk, Nancy R.Mudrick, rehabilitation interventions, 2012.
3. Rich hood, complexity in social work, 2018.
4. Lois Metzger, a trick of the light, 2013.
5. Liz murray, breaking night, 2010.

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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of Social Work

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7B	Professional Competence For Social Work Practice	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to ;

1. Describes essential learning that occurred and within the time and opportunity.
2. Contextualization of knowledge, praxis and technique.
3. Enables student retention and allows for success.
4. Describes a wider range of competency, behaviour, knowledge and skill.
5. To improve competitive, intellectual skills and cognitive strategies.

Syllabus : (Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit:1

Elevating competence in social workers

Definition, introduction, including skill knowledge, effective work habits and empowering positive attitude.

Unit:2

Professionalism in social work

Identification, commitment, demonstration, ethical decisional and accountability.

Unit:3

Evaluating and monitoring

Integrated social work values, acquired and applied knowledge, transferred knowledge, skills and values in practice.

Unit:4

Types of competencies in social work

Communicative competence, organizational competence, analytical competence, reflexive competence and social competence.

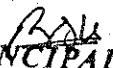
Unit:5

Components of professional competence

Integrative social education, behaviour in the society, development and presence of professional competence.

References:

1. P.D.Misra, Binamisra social work profession in india.
2. Frank cooper professional boundaries in social work and social care.
3. Amanda M. nickson, Margaret anne carter, Abraham p. francis, supervision and professional development in social work practice.
4. Michael E.Sherr, Johnky M. Jones competence based social work.
5. Neil thompson, the professional social worker meeting the challenge.


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(w.e.f: 2022-2023)****Department of Social Work**

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:6C	Skills In Group Work And Community Work	Hrs/Wk:5

Learning Outcomes

Students at the successful completion of the course will be able to ;

1. Break complex tasks into parts and steps.
2. To develop stronger working skills together.
3. With more ability they cantackle more complex problems than they could do on their own.
4. To reinforce skills that are relevant to both group and community work.
5. To help students to develop their skills in collaboration.

Syllabus:(Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit: 1**Group and community work**

Meaning, definition of rural society, ecological, social, economic and political structure.

Unit: 2**Community occupational structure**

Nature of group occupational distribution and the concept of work participation rates in social work.

Unit: 3**Panchayat raj institution on groups**

Origin and development of this system panchayat raj organization and functioning in Andhra Pradesh.

Unit: 4**Development of groups and communities**

Experimental projects with groups, finding and rectifying their problems and issues.

Unit: 5**Indian co-operative movement**

Concept and history of Indian co-operative movement role of co-operative movement in groups development, current community development programmes.

References:

1. H.V.Siddiqui group work theories and properties.
2. HarleighB.Trecker, social group work principle and practice, 1972.
3. Joan benjamin, Judith bessant and rob watts, making group work, 1992.
4. Mark J.Macgowan, group work, 2009.
5. Batten .T.R and Batten.M, the non directive approach in community and group work, 1967.


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III B.A. Degree Examination Semester – V

(w.e.f: 2022-2023)

Department of Social Work

B.A	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course:7C	Social Welfare Administration Skills	Hrs/Wk:5

Learning Outcomes:

Students at the successful completion of the course will be able to ;

1. Students will demonstrate the ability to administrate.
2. Students will learn about the human welfare system.
3. To understand and gain knowledge about social welfare administration.
4. This includes taking responsibility and proactive action.
5. To understand the theories and mechanisms of social welfare administration skills.

Syllabus :(Hours: Teaching:60, Training:10, Others incl. unit tests: 05)

Unit: 1

Administration skills of social work

Planning, organizing, staffing, directing, coordinating reporting, budgeting, evaluation and feedback.

Unit: 2

Principles of social administration

Principle of dual approach, principle of manifold programmes, relational, analytical and research principles.

Unit: 3

Concepts of social administration

Historical evaluation of social administration meaning, definition and characteristics of social administration.

Unit: 4

Social service organization

Societies registration act 1860, registration and management.

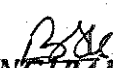
Unit: 5

Fundamental aspects of social administration

Social administration enhancement is to show interest toward field skills, social work field skills embedded in the volunteers, social advocacy as a tool for social change.

References:

1. M.K.Singh, social welfare administration and social policy.
2. Dr.Birenderprasadverma, welfare administration and social development.
3. Ravindradas Singh, social welfare and administration.
4. P.N.Sharma, new horizon in social welfare administration.
5. Dobabratamohanty, Sushantkumarkar, welfare administration and development in urban india.


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D.N.R. COLLEGE (Autonomous) BHIMAVARAM*(Affiliated to Adikavi Nannaya University)***III B.Sc. Degree Examination Semester – V****Department of Computer Science****(w.e.f: 2022-2023)**

B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 6A	Web Interface Designing Technologies	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Understand and appreciate the web architecture and services.
2. Gain knowledge about various components of a website.
3. Demonstrate skills regarding creation of a static website and an interface to dynamic website.
4. Learn how to install word press and gain the knowledge of installing various plugins to use in their websites.

Syllabus: *(Total Hours: 90 including Teaching, Lab, and Field training, Unit tests etc.)*

UNIT I: (10 hours)

HTML: Introduction to web designing, difference between web applications and desktop applications, introduction to HTML, HTML structure, elements, attributes, headings, paragraphs, styles, colours, HTML formatting, Quotations, Comments, images, tables, lists, blocks and classes, HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive.

UNIT II: (10 hours)

HTML forms: HTML form elements, input types, input attributes, HTML5, HTML graphics, HTML media – video, audio, plug INS, you tube.

HTML APPS: Geo location, Drag/drop, local storage, HTML SSE.

CSS: CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/width, text, fonts, icons, tables, lists, position, over flow, float, CSS combinators, pseudo class, pseudo elements, opacity, tool tips, image gallery, CSS forms, CSS counters, CSS responsive.

UNIT III: (10 hours)

Client side Validation: Introduction to JavaScript - What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript - Data and objects in JavaScript, regular expressions, exception handling. DHTML with JavaScript - Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images.

UNIT IV: (10 hours)

Word press: Introduction to word press, servers like wamp, bitnami e.tc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media-Adding, editing, deleting media elements, working with widgets, menus.

UNIT V: (10 hours)

Working with themes-parent and child themes, using featured images, configuring settings, user and user roles and profiles, adding external links, extending word press with plug-ins. Customizing the site, changing the appearance of site using css , protecting word press website from hackers.

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III B.Sc. Degree Examination Semester – V

Department of Computer Science

(w.e.f: 2022-2023)

B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 7A	Web Applications Development using PHP& MYSQL	Hrs/Wk: 4

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Write simple programs in PHP.
2. Understand how to use regular expressions, handle exceptions, and validate data using PHP.
3. Apply In-Built functions and Create User defined functions in PHP programming.
4. Write PHP scripts to handle HTML forms.
5. Write programs to create dynamic and interactive web based applications using PHP and MYSQL.
6. Know how to use PHP with a MySQL database and can write database driven webpages.

Syllabus: (Total Hours: 90 including Teaching, Lab, and Field training, Unit tests etc.)

UNIT I:

(10 hours)

The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output. Working with Functions: What is function?, Calling functions, Defining Functions, Returning the values from User-Defined Functions, Variable Scope, Saving state between Function calls with the static statement, more about arguments.

UNIT II:

(10 hours)

Working with Arrays: What are Arrays? Creating Arrays, Some Array-Related Functions. Working with Objects: Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP.

UNIT III:

(10 hours)

Working with Forms: Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form Submission, and Working with File Uploads. Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users.

UNIT IV:

(10 hours)

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using fopen(), Running Commands with exec(), Running Commands with system() or passthru().

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input.


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III B.Sc. Degree Examination Semester – V

Department of Computer Science

(w.e.f: 2022-2023)

B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 6B	Internet of Things	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Appreciate the technology for IoT
2. Understand various concepts, terminologies and architecture of IoT systems.
3. Understand various applications of IoT
4. Learn how to use various sensors and actuators for design of IoT.
5. Learn how to connect various things to Internet.
6. Learn the skills to develop simple IOT Devices.

Syllabus: (Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)

UNIT I:

(10 hours)

Fundamentals of IoT: Introduction, Definitions & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M.

Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Health and Lifestyle, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection.

UNIT II:

(10 hours)

Sensors Networks : Definition, Types of Sensors, Types of Actuators, Examples and Working, IoT Development Boards: Arduino IDE and Board Types, RaspberryPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, The node, Connecting nodes, Networking Nodes, WSN and IoT.

UNIT III:

(10 hours)

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC, Z-Wave, BLE, Bacnet And Modbus. IP Based Protocols for IoT IPv6, 6LowPAN, LoRA, RPL, REST, AMPQ, CoAP, MQTT.Edge connectivity and protocols.

UNIT IV:

(10 hours)

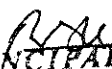
Arduino Simulation Environment: Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino.

UNIT V:

(10 hours)

Developing IOT's: Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based Platforms such as Blynk, Thingspeak, AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing, Privacy and Security Issues in IoT.


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B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 7B	Application Development using Python	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Understand and appreciate the web architecture and services.
2. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
3. Demonstrate proficiency in handling Strings and File Systems.
4. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
5. Interpret the concepts of Object-Oriented Programming as used in Python.
6. Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

Syllabus: *(Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)***UNIT I:****(10 hours)****Python basics, Objects-** Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Operators, Standard Type Built-in Functions, Categorizing the Standard Types, Unsupported Types**Numbers** - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions, Related Modules**Sequences** - Strings, Lists, and Tuples, Mapping and Set Types**UNIT II:****(10 hours)****Files:** File Objects, File Built-in Function [open()], File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, Persistent Storage Modules, Related Modules**Exceptions:** Exceptions in Python, Detecting and Handling Exceptions, Context Management, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Why Exceptions (Now)?, Why Exceptions at All?, Exceptions and the sys Module, Related Modules**Modules:** Modules and Files, Namespaces, Importing Modules, Importing Module Attributes, Module Built-in Functions, Packages, Other Features of Modules**UNIT III:****(10 hours)****Regular Expressions:** Introduction, Special Symbols and Characters, Res and Python Multithreaded Programming: Introduction, Threads and Processes, Python, Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules**UNIT IV:****(10 hours)****GUI Programming:** Introduction, Tkinter and Python Programming, Brief Tour of Other GUIs, Related Modules and Other GUIs**Web Programming:** Introduction, Web Surfing with Python, Creating Simple Web Clients, Advanced Web Clients, CGI-Helping Servers Process Client Data, Building CGI Application, Advanced CGI, Web (HTTP) Servers


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III B.Sc. Degree Examination Semester – V

Department of Computer Science

(w.e.f: 2022-2023)

B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 6C	Data science	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Develop relevant programming abilities.
2. Demonstrate proficiency with statistical analysis of data.
3. Develop the ability to build and assess data-based models.
4. Demonstrate skill in data management
5. Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively

Syllabus: ((Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)

UNIT I:

(10 hours)

Introduction: The Ascendance of Data, What is Data Science? , Finding key Connectors, Data Scientists You May Know, Salaries and Experience, Paid Accounts, Topics of Interest, Onward.
Python: Getting Python, The Zen of Python, Whitespace Formatting, Modules, Arithmetic, Functions, Strings, Exceptions, Lists, Tuples, Dictionaries, Sets, Control Flow, Truthiness, Sorting, List Comprehensions, Generators and Iterators, Randomness, Object – Orienting Programming, Functional Tools, enumerate, zip and Argument Unpacking, args and kwargs, Welcome to Data Sciencester!

Visualizing Data: matplotlib, Bar charts, Line charts, Scatterplots.

Linear Algebra: Vectors, Matrices

UNIT II:

(10 hours)

Statistics: Describing a Single Set of Data, Correlation, Simpson's Paradox, some Other Correlation Caveats, Correlation and Causation.

Probability: Dependence and Independence, Conditional Probability, Bayes's Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem.

Hypothesis and Inference: Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B Test, Bayesian Inference.

Gradient Descent: The Idea behind Gradient Descent, Estimating the Gradient, Using the Gradient, Choosing the Right Step Size, Putting It All Together, Stochastic Gradient Descent.

UNIT III:

(10 hours)

Getting Data: stdin and stdout, Reading Files – The Basics of Text Files, Delimited Files, Scraping the Web - HTML and the parsing Thereof, Example: O'Reilly Books About Data, Using APIs – JSON (and XML), Using an Unauthenticated API, Finding APIs.

Working with Data: Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions Many Dimensions, Cleaning and Munging, Manipulating Data, Rescaling, Dimensionality Reduction.

Machine Learning: Modeling, What Is Machine Learning? Over fitting and under fitting, Correctness, The Bias-Variance Trade-off, Feature Extraction and Selection


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III B.Sc. Degree Examination Semester – V

Department of Computer Science

(w.e.f: 2022-2023)

B Sc	Semester :V(Skill Enhancement Course - Elective)	Credits: 4
Course: 7C	Python for Data science	Hrs/Wk: 4

Learning Outcomes: Students after successful completion of the course will be able to:

1. Identify the need for data science and solve basic problems using Python built-in data types and their methods.
2. Design an application with user-defined modules and packages using OOP concept
3. Employ efficient storage and data operations using NumPy arrays.
4. Apply powerful data manipulations using Pandas.
5. Do data pre-processing and visualization using Pandas

Syllabus: (Total Hours: 90 including Teaching, Lab, Field training, Unit tests etc.)

UNIT I:

(10 hours)

Introduction to Data Science - Why Python? - Essential Python libraries - Python Introduction- Features, Identifiers, Reserved words, Indentation, Comments, Built-in Data types and their Methods: Strings, List, Tuples, Dictionary, Set - Type Conversion- Operators. Decision Making- Looping- Loop Control statement- Math and Random number functions. User defined functions - function arguments & its types.

UNIT II:

(10 hours)

User defined Modules and Packages in Python- Files: File manipulations, File and Directory related methods - Python Exception Handling. OOPs Concepts -Class and Objects, Constructors - Data hiding- Data Abstraction-Inheritance.

UNIT III:

(10 hours)

NumPy Basics: Arrays and Vectorized Computation- The NumPy ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with NumPy Arrays- Basic Indexing and Slicing - Boolean Indexing-Transposing Arrays and Swapping Axes.

Universal Functions: Fast Element-Wise Array Functions- Mathematical and Statistical Methods-Sorting- Unique and Other Set Logic.

UNIT IV:

(10 hours)

Introduction to pandas Data Structures: Series, Data Frame and Essential Functionality: Dropping Entries- Indexing, Selection, and Filtering- Function Application and Mapping- Sorting and Ranking.

Summarizing and Computing Descriptive Statistics- Unique Values, Value Counts, and Membership. Reading and Writing Data in Text Format

UNIT V:

(10 hours)

Data Cleaning and Preparation: Handling Missing Data - Data Transformation: Removing Duplicates, Transforming Data Using a Function or Mapping, Replacing Values, Detecting and Filtering Outliers- String Manipulation: Vectorized String Functions in pandas.

Plotting with pandas: Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots.


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III B. Sc Electronics SEMESTER: V
(Skill Enhancement Course- Elective)
PAPER:-VI A — Industrial Electronics
[(W.e.f:2022-2023)]

Industrial Electronics

(ANY SIX EXPERIMENTS SHOULD BE DONE)

1. D.C Power supply and filters.
2. Transistor series regulator
3. Transistor as a shunt regulator
4. Voltage regulator using IC-7805 and IC-7905.
5. Voltage doubler using diodes
6. Voltage Tripler using diodes
7. SCR VI characteristics.
8. SCR Series inverter
9. SCR parallel inverter.

Practical (Laboratory) Syllabus: (30 hrs. Max marks: 50)

1. Familiarization of digital multi-meter and its usage in the measurements of
 (i) resistance, (ii) current, (iii) AC & DC voltages and for (i) continuity
 test (ii) diode test and (iii) transistor test.
2. Measure the AC and DC voltages, frequency using a CRO and compare the values Measured with
 other instruments like Digital Multi-meter.
3. Formation of Sine, Square wave signals on the CRO using Function Generator and measure
 their frequencies. Compare the measured values with actual values.
4. Display the numbers from 0 to 9 on a single Seven Segment Display module by Applying voltages.
5. Display the letters a to h on a single Seven Segment Display module by applying voltages.
6. Measurement of body temperature using a digital thermometer and list out the error and corrections.
7. Measurement of Blood Pressure of a person using a B.P. meter and record the values and
 analyze them.
8. Get acquainted with an available ECG machine and study the ECG pattern to understand the
 meaning of various peaks
9. Observe and understand the operation of a Digital Pulse oxy-meter and measure the pulse of
 different people and understand the working of the meter.



D.N.R COLLEGE (A):: BHIMAVARAM

III B. Sc Electronics

SEMESTER: V

(Skill Enhancement Course- Elective)

PAPER:-VI A — Industrial Electronics

[(W.e.f:2022-2023)]

Learning Outcomes:

Students after successful completion of the course will be able to:

1. Identify various facilities required to set up a basic Instrumentation Laboratory.
2. Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.
3. Demonstrate skills in using instruments like Rectifiers, Multi-meters, Power supplies, Voltage Regulators etc. through hands-on experience.
4. Understand the Principle and operation of different Electronic Heating devices.

UNIT I:

(20 hours)

Rectifiers and filters: Rectifiers— Half wave, full-wave and bridge rectifiers- Efficiency- Ripple factor- Regulation — Harmonic components in rectified output — Types of filters- Choke input (inductor) filter- Shunt capacitor filter- L section and section filters.

Voltage Regulators: Transistor Series voltage regulator - Transistor Shunt voltage regulator — Three terminal regulators (78XX and 79XX).

UNIT II:

(10 hours)

Power Supplies: Block diagram of regulated power supply — A simple regulated transistorized power supply (circuit and working) — Principle and working of switch mode power supply (SMPS).

UNIT III:

(10 hours)

Voltage Multipliers: Half wave voltage doubler, Full wave voltage doubler, Voltage Tripler circuit diagram and working mentioning of applications of voltage multipliers.

UNIT IV:

(10 hours)

Controlled rectifiers: SCR Half wave rectifier circuit, working with wave forms, mathematical analysis for resistive load - SCR Full wave rectifier circuit, working with wave forms, mathematical analysis for resistive load — SCR as inverter parallel and series circuits.

UNIT V:

(10 hours)

Heat effects: Resistance, inductance and dielectric heating. Principle of operations and its applications. Dielectric Properties: Introduction, effect of a dielectric on the behavior of a capacitor, dielectric losses, significance of the loss tangent.

REFERENCE BOOKS:

1. Unified Electronics Volume II by J.P Agarwal and Amit Agarwal.
2. Industrial Electronics, S.B. Biswas, Dhanapur Rai & Sons.
3. Industrial Electronics, G.K. Mithal, Khanna Publishers.
4. Electronic Devices and Circuits — G.K. Mithal.
5. Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)
6. Microelectronics- J. Millman and A. Grabel - TMH


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III B. Sc Electronics

SEMESTER: V

(Skill Enhancement Course- Elective)

PAPER:-VI IA -Electronic Instrumentation

[(W.e.f.2022-2023)]

Learning Outcomes: Students after successful completion of the course will be able to:1.

1. Identify various facilities required to set up a basic Instrumentation Laboratory.
2. Acquire a critical knowledge of various Electrical Instruments used in the Laboratory.
3. Demonstrate skills of using instruments like CRO, Function Generator, Multi meter etc. through hands on experience.
4. Understand the Principle and operation of different display devices used in the display systems and different transducers
5. Comprehend the applications of various biomedical instruments in daily life like B.P. meter, ECG, Pulse oxy-meter etc. and knows the handling procedures with safety and security.

UNIT I: Introduction To Instruments

(10 hrs) Types

of electronic Instruments - Analog instruments & Digital Instruments, DC Voltmeter and AC Voltmeter, Construction and working of an Analog Multimeter and Digital Multimeter(Block diagram approach), Sensitivity, $3\frac{1}{2}$ display and $4\frac{1}{2}$ display Digital multimeters, Basic ideas on Function generator. Block Diagram of Function Generator.

UNIT II: Oscilloscope

(10 hrs)

Cathode Ray Oscilloscope-Introduction, Block diagram of basic CRO, Cathode ray tube, Electron gun assembly, Screen for CRT, Time base operation, Vertical deflection system, Horizontal deflection system, Use of CRO for the measurement of voltage (AC and DC), frequency, phase difference, Different types of oscilloscopes and uses.

UNIT III: Transducers

(10 hrs)

Classification of transducers, Selection of transducers, Resistive, capacitive & inductive transducers, Resistive and capacitive touch screen transducer used in mobiles, Displacement transducer-LVDT, Piezoelectric transducer, Photo transducer, Digital transducer, Fibre optic sensors

OVERVIEW OF OPTICAL FIBER COMMUNICATION: Introduction, Historical development, general system, advantages, disadvantages, and applications of optical fiber communication

UNIT IV: Display Instruments

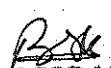
(10 hrs)

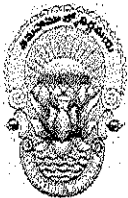
Introduction to Display devices, Seven Segment Displays, LED Displays, Construction and operation (Display of numbers), Types of SSDs (Common Anode & Common Cathode type), Limitations of SSDs, Liquid Crystal Displays, Applications of LCD modules.

UNIT V: Biomedical Instruments

(10 hrs)

Basic operating principles and uses of (i) Clinical thermometer (ii) Stethoscope (iii) Sphygmomanometer (iv) ECG machine (v) Radiography (vi) Ophthalmoscope (vii) Ultrasound scanning (viii) Pulse oxymeter (ix) Glucometer, Basic ideas of CT scan and MRI scan.


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III B. Sc Electronics

SEMESTER: V

(Skill Enhancement Course- Elective)

PAPER:-VI B — Embedded systems design

[(W.e.f:2022-2023)]

UNIT I:

(10Hrs)

Introduction to Embedded Systems:

Embedded systems overview, Design Challenge, Processor Technology, IC Technology, and Design Technology.

UNIT II:

(15Hrs)

Custom Single Purpose Processor – Hardware Development: Introduction, Combinational logic, Sequential logic, Custom Single Purpose Processor Design, RT-Level Custom Single-Purpose Processor.

UNIT III:

(15Hrs)

General Purpose Processor – Software Development: Introduction, Basic Architecture, Operation, Programmer's View, ASIPs, and Development Environment: Host and Target Machines, Linker / Locators for Embedded Software, Getting Embedded Software into the target system. Debugging Techniques: Testing on your Host Machine, and Instruction Set Simulators.

UNIT IV:

(10Hrs)

RTWA for Embedded Systems: Introduction, Timers, Counters and Watchdog Timers, UART, Pulse Width Modulators, Stepper Motor Controllers, Analog – to – Digital Converters, and Real Time Clocks.

UNIT V:

(10Hrs)

Advanced Communication Principles: Parallel Communication, Serial Communication, Wireless Communication, Serial Protocols: I²C, CAN, FireWire, and USB. Parallel Protocols: PCI BUS and ARM BUS. Wireless Protocols: IrDA, Bluetooth, and IEEE 802.11.

TEXT BOOKS:

1. Embedded System Design – A Unified Hardware / Software Introduction By Frank Vahid / Tony Givargis – WILEY EDITION.
2. Embedded Systems Architecture, Programming and Design – 2nd Edition By Raj Kamal –Tata McGraw-Hill Education.

REFERENCES BOOKS:

1. An Embedded Software Premier - David E- Siman, PEARSON
2. Education Embedded / real - time systems - DR. K.V.K.K. Prasad, dreamtech
3. The art of programming Embedded systems, Jack G. Ganssle, academic press.
4. Intelligent Embedded systems, Louis L. Odette, Adison Wesly, 1991



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III B. Sc Electronics

SEMESTER: V

(Skill Enhancement Course- Elective)

PAPER:-VI IB — Consumer Electronics

[(W.e.f:2022-2023)]

Learning Outcomes:

- To study Microwave ovens – block diagram - working - types – wiring and safety instructions. – care and cleaning
- To study washing machines – block diagram - working - types – wiring and safety instructions. – care and cleaning
- To study Air conditioners and refrigerators – block diagram - working - types – wiring and safety instructions. – care and cleaning
- To study Home/Office digital devices – block diagram - working - types – wiring and safety instructions. – care and cleaning
- To study Digital access devices like – block diagram - working - types – wiring and safety instructions. – care and cleaning

UNIT I:

(12hrs)

Microwave Ovens – Microwaves (Range used in Microwave ovens) – Microwave oven block diagram – LCD timer with alarm – Single-Chip Controllers – types of Microwave oven – Wiring and Safety instructions – care and Cleaning.

UNIT II:

(12hrs)

Washing Machines – Electronic controller for washing machines – Washing machine hardware and software – Types of washing machines – Fuzzy logic washing machines Features of washing machines.

UNIT III:

(12hrs)

Air Conditioners And Refrigerators - Air Conditioning – Components of air conditioning systems – All water air conditioning systems – All air conditioning systems – Unitary and central air conditioning systems – Split air conditioners.

UNIT IV:

(12hrs)

Home/Office Digital Devices – Fascimile machine – Xerographic copier – calculators – Structure of a calculator – Internal organization of a calculator – Servicing electronic calculators – Digital clock – Block diagram of a digital clock.

UNIT V:

(12hrs)

Digital Access Devices – Digital computer – Internet access – on line ticket reservation – functions and networks – barcode scanner and decoder – Electronic Fund Transfer – Automated Teller Machines(ATMs) – Set-Top boxes – Digital cable TV – Video on demand.

TEXT BOOKS:

1. S.P. Bali, Consumer Electronics – Pearson Education, New Delhi, 2005.
2. R.G. Gupta Audio and Video systems Tata McGraw Hill (2004)

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III B. Sc Electronics

SEMESTER: V

(Skill Enhancement Course- Elective)

PAPER:-VI IC – VLSI DESIGN

[(W.e.f:2022-2023)]

UNIT I:

(12 hrs)

Integrated Circuit- Definition, Classification's, and Advantages of IC's – MOS Transistors: Enhancement type, Depletion type, Modes of NMOS – CMOS, Fabrications: n-Well, p-Well.

UNIT II:

(12 hrs)

NMOS Inverter – CMOS inverter – VLSI Design Flow: Design Specification's Design Entry – Examples of (Circuit Diagrams only) NMOS, PMOS and CMOS.

UNIT III:

(12 hrs)

Basic logic gates in CMOS – Complex logic gate: Two, Three inputs of CMOS NAND gate – Combinational Logic: Two and Three inputs of CMOS NOR gate – Compound gates in CMOS.

UNIT IV:

(10 hrs)

VHDL: Brief History, Logical, Relational, Arithmetic, Shift and Rotate Operators, Data types. **Verilog**

HDL: Brief History, Logical, Relational, Arithmetic, Shift and Rotate Operators, Datatypes – Comparison of VHDL and Verilog HDL.

UNIT V:

(14 hrs)

Data – Flow Description's and HDL programs:- Basic Logic Gates, Universal Gates, Half-Adder, Multiplexer, Magnitude Comparator, Binary Adder.

TEXT BOOKS:

1. VLSI Design by Vilas S.Baged.
2. VHDL and Verilog programming By Nazeih M.Botros.
3. VLSI Design By A.Albert Raj and T.Latha.


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D.N.R COLLEGE (A):: BHIMAVARAM
III B. Sc Electronics
SEMESTER: V
(Skill Enhancement Course- Elective)
PAPER:-VI IC -- DATA COMMUNICATION AND NETWORKING
[(W.e.f:2022-2023)]

UNIT I:

(12 Hrs)

Data Communication and its Components – Introducing of Network, Types of Networks: Personal Area Network, wide Area Network.

UNIT II:

(14 hrs)

Network Topologies: Bus Topology, Star Topology, Ring Topology, Mesh Topology, Tree Topology, Hybrid, Topology.

UNIT III:

(10 Hrs)

Transmission Media's - Guided Media: Twisted pair Cable, Coaxial Cable, Optical FiberCable. Un-Guide Media: Radio Waves, Microwaves, Infrared.

UNIT IV:

(10 Hrs)

Data Transmissions: Digital – To – Digital Conversion (line coding only), Analog – To – Digital Conversion (PCM only), Digital – To – Analog (ASK only) Analog – To – Analog Transmission (AM only) – Transmission Modes (Parallel and Serial).

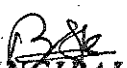
UNIT V:

(14 Hrs)

Frequency Division Multiplexing, Time Division Multiplexing Wave Division Multiplexing. Modems: Traditional Modems, Cable Modems.

TEXT BOOKS:

1. Data communication and Networking (2 Edition) By Behrouz A.Forouzan.
2. Data and Communication by Stallings Williams.
3. Computer Networks By Kurose James F.


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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM
(Affiliated to Adikavi Nannaya University)
III B.Sc. Degree Examination Semester – V
Subject – Microbiology
Paper – 6A Food, Agriculture and Environmental microbiology
(w.e.f:2022-2023)

UNIT I:

No. of Hours: 8

Intrinsic and extrinsic parameters that affect microbial growth in food Microbial spoilage of food - fruits, vegetables, milk, meat, egg, bread and canned foods Food intoxication (botulism).
 Food-borne diseases (salmonellosis) and their detection.

UNIT II:

No. of Hours: 8

Principles of food preservation - Physical and chemical methods. Fermented Dairy foods – cheese and yogurt.
 Microorganisms as food – SCP, edible mushrooms (white button, oyster and paddy straw).
 Probiotics and their benefits.

UNIT III:

No. of Hours: 8

Soil Microbiology: Microbial groups in soil, microbial transformations of carbon, nitrogen, phosphorus and sulphur. Biological nitrogen fixation. Microflora of Rhizosphere and Philosopher microflora, microbes in composting.

Importance of mycorrhizal inoculums, types of mycorrhizae associated plants, mass inoculums.
 Production of VAM, field applications of Ectomycorrhizae.

UNIT IV:

No. of Hours: 8

Beneficial microorganisms in Agriculture: Biofertilizer (Bacterial Cyanobacterial and Fungal), microbial insecticides, Microbial agents for control of Plant diseases.

Plant – Microbe interactions.

Diseases caused by bacteria and fungi to various commercial crops: groundnut rust & Citrus canker and food crops: Rice Blast (Pyriculariaoryzae) Bacterial blight of rice (Oryzasativa and O. glaberrima) Biodegradation, Biogas production, Biodegradable plastics.

UNIT V:

No. of Hours: 12

Terrestrial Environment: Soil profile and soil microflora. Aquatic Environment: Microflora of fresh water and marine habitats. Atmosphere: Aeromicroflora and dispersal of microbes. Extremophiles.

Methods to detect portability of water samples.

Outlines of Solid Waste management: Sources and types of solid waste, Methods of solid waste disposal (composting and sanitary landfill).

Liquid waste management: Composition and strength of sewage (BOD and COD), Primary, secondary and tertiary sewage treatment.


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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.Sc. Degree Examination Semester – V****Subject – Microbiology****Paper –7A Management of Human Microbial Diseases and Diagnosis****(w.e.f:2022-2023)****UNIT I:****No.of Hours: 8**

Definition and concept of health, disease, infection, and pathogen. Bacterial, Viral, Fungal and Protozoan Diseases of various human body systems. Disease associated clinical samples for diagnosis - any three diseases of each.

UNIT II:**No. of hours: 8**

General account of epidemiology: principles of epidemiology, current epidemics (AIDS, nosocomial, acute respiratory syndromes). Collection of clinical samples (oral cavity, throat, skin, blood, CSF, urine and faeces) and precautions required. Method of transport of clinical samples to laboratory and storage.

UNIT III:**No. of hours: 8**

Mechanism of bacterial pathogenicity, colonization and growth, virulence, virulence factors, exotoxins, enterotoxins, endotoxins and neurotoxins.

Examination of sample by staining - Gram stain, Ziehl-Neelson staining for tuberculosis, Giemsa-stained thin blood film for malaria.

Preparation and use of culture media - Blood agar, Chocolate agar, Lowenstein-Jensen medium, MacConkey agar, Distinct colony properties of various bacterial pathogens.

UNIT IV:**No. of hours: 6**

Serological Methods - Agglutination, ELISA, immunofluorescence, Nucleic acid based methods - PCR, Nucleic acid probes. Diagnosis of Typhoid, Dengue and HIV, Swine flu. Role of vectors- biology of vectors. (1) House fly (2) Mosquitoes (3) sand fly.

UNIT V:**No. of hours: 6**

Importance, Determination of resistance/sensitivity of bacteria using disc diffusion method, Determination of minimal inhibitory concentration (MIC) of an antibiotic by serial double dilution method. Epidemiological investigations to identify a disease, Problems of drug resistance and drug sensitivity. Drug resistance in bacteria.

SUGGESTED READING

- ☐ Ananthanarayan R and Paniker CKJ (2009) Textbook of Microbiology, 8th edition, Universities Press Private Ltd.
- ☐ Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. (2013) Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication.
- ☐ Collee JG, Fraser, AG, Marmion, BP, Simmons A (2007) Mackie and McCartney Practical Medical Microbiology, 14th edition, Elsevier.
- ☐ Randhawa, VS, Mehta G and Sharma KB (2009) Practicals and Viva in Medical Microbiology 2nd edition, Elsevier India Pvt Ltd.
- Tille P (2013) Bailey's and Scott's Diagnostic Microbiology, 13th edition, Mosby.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM
(Affiliated to Adikavi Nannaya University)
III B.Sc. Degree Examination Semester – V
Subject – Microbiology
Paper – 6B Microbial Biotechnology and r – DNA Technology
(w.e.f:2022-2023)

UNIT I:

No. of hours: 8

Introduction to microbial biotechnology, Bacterial genes, genomes and genetics. Recombinant microbial biotechnology products, biotechnology regulation and ethics. Restriction and Modification: Classification of restriction endonucleases. Enzymes used in molecular cloning; Polymerases, ligases, phosphatases, kinases and nucleases; Advanced Molecular biology techniques, Electrophoresis and Blotting techniques.

UNIT II:

No. of hours: 8

Restriction and Modification: Classification of restriction endonucleases. Enzymes used in molecular cloning; Polymerases, ligases, phosphatases, kinases and nucleases; Advanced Molecular biology techniques, Electrophoresis and Blotting techniques.

Cutting and joining DNA: (cohesive end ligation, methods of blunt end ligation).

Transfection and transformation. Selection of transformed cells. Screening methods (Genetic marker and blue white screening).

UNIT III:

No. of hours: 7

Cloning vehicles - Plasmid, Bacteriophage, Construction of genomic and cDNA libraries. Advantages of cDNA libraries. Concept of single cell proteins, probiotics and their applications. Microbial production of fuels: alcohols, hydrogen and methane. Microbial production of polymers: xanthanes gums.

UNIT IV:

No. of hours: 7

Methods of gene sequencing - Maxam - Gilberts and Sanger's dideoxy chain termination methods; Polymerase chain reaction technique (Components in PCR and PCR conditions). Methods of gene transfer in fungi, yeast and higher plants using microinjection, microprojectile bombardment (gene gun method, Electroporation and *Agrobacterium* mediated transformation).

Expression of cloned genes in bacteria, yeast, plant and animal cells. Basic principles and application of biosensors. Nucleic acid probe technology.

UNIT V:

No. of hours: 7

Concept of genetically modified microorganisms. Bt cotton : production, advantages and limitations. Probable advantages and disadvantages of genetically modified crops. Role of microorganisms in creation of transgenic animals and plants.

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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM
(Affiliated to Adikavi Nannaya University)
III B.Sc. Degree Examination Semester – V
Subject – Microbiology
Paper –7B Biostatistics and Bioinformatics
(w.e.f:2022-2023)

UNIT I:

No.of hours: 7

Definition, nature and scope of bioinformatics. Bioinformatics versus computational biology. Branches of bioinformatics. Basic concepts in bioinformatics. Introduction to Biological data bases: NCBI, EMBL, EXPASY, PIR, Pfam. Concept of World Wide Web: HTML, HTTP.

UNIT II:

Searching sequence data bases using BLAST. Multiple sequence alignment– progressive alignment–profiles–multi dimensional dynamic programming. Biostatistics: Measures of Central tendency and distribution–mean, median, mode, range, standard deviation, variance.

UNIT III:

No.of hours: 7

Basic principles of probability theory, Bayes theorem, Normal distribution, statistical inference – Types of errors and levels of significance. Comparison of variance (F-test), small sample test, t-test for comparison of means, chi square test. Analysis of variance–one way and two way, multiple comprises.

UNIT IV:

No.of hours: 7

Correlation and Linear regression. Sequence Analysis: Introduction to hidden Markov models.

Genomics and proteomics: Molecular phylogenetics: Construction of Phytogenetic trees using parsimony method and branch & bound method. Clustering methods– UPGMA & neighbor-joining. Fragment assembly, peptide sequencing using mass and spectroscopy data. Comparative genomics.

UNIT V:

No.of hours: 8

Modeling: Protein secondary structure prediction–Chou Fasmanrules– Neural networks– discriminant analysis. Prediction of transmembrane segments in Membrane proteins. Protein3D structure prediction– homology– threading – Potential energy functions–energy minimization– molecular dynamics–simulated annealing.

SUGGESTED READINGS:

1. Daniel, 2006, Biostatistics, Eighth Edition. John Wisley and sons.
2. Durbin, Eddy, Krogh, Mithison, Biological sequence analysis.
3. T.A.AttwoodandD.J.parry-smith, 2001, Introduction of Bioinformatics.
4. A.D.Baxevaris,1998, Bioinformatics: Apractica lguide to the analysis of Genes and proteins,(Edited) B.F.Publication.
5. David W, 2005, Bio-informatics;sequenceandGenomeAnalysis,2ndEdition By Mount CB Publishers.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.Sc. Degree Examination Semester – V****Subject – Microbiology****Paper –6C Microbial Quality Control Instrumentation and Techniques****(w.e.f:2022-2023)****UNIT I :****No.of hours:7**

Microbial quality control definition, history and introduction. Standard Methods involved in assessment of microbial quality control. Q.A and Q.C definitions and importance. Traditional Microbiological Quality Controlling methods: Sampling methods, TVC, APC and serial dilution techniques. Microbiological criteria. Laboratory facility design for quality control: Sterilization, disinfection and decontamination. Personnel training: Hygiene and handling techniques. Documentation. Good laboratory practices.

UNIT II:**No.of hours: 8**

Culture media used in QC and QA: Design of specialized media for identification of pathogens. Good laboratory practices in culture media preparation: raw material, water, pH. Uses of media. Selective and indicator media used in pharmaceutical and food industries. Instruments associated in QC and QA: Principle involved, working conditions, uses and precautions of Laminar Air Flow (LAF), Autoclave, Incubator, pH meter, Colony counter, Hot air oven, Centrifuges and storage devices.

UNIT III:**No.of hours: 7**

Techniques for enumeration of microorganisms: sample preparation from Aqueous, soluble, insoluble, medical and pasteurized materials. Counting methods: pour plate, spread plate, membrane filtration. Most Probable Number (MPN) and MIC. Turbidimetric methods. Staining techniques for identification bacteria and Fungi.

UNIT IV:**No.of hours:7**

Microscopy – Principles of light, phase, fluorescent & electron microscopes; Microscopic techniques: Basic principles and applications of phase – contrast microscopy, fluorescent microscopy and electron microscopy, types of electron microscopy– scanning and transmission. Radio isotopes: radiometric analysis, stable and radioactive isotopes, preparation, labeling, detection and measurement of isotope

UNIT V :**No.of hours:7**

Principles of Centrifugation – Centrifugation techniques – preparative and analytical methods, density gradient centrifugation. General principles and applications of chromatography – Paper, Column, Thin layer, Gas, Ion exchange, Affinity chromatography, HPLC, FPLC, GCMS and Gel filtration. Electrophoresis- moving boundary, zone (Paper Gel) electrophoresis. Immuno electrophoresis. Immuno blotting. Isoelectric focusing, 2-Delectrophoresis, Principles of colorimetry.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM**(Affiliated to Adikavi Nannaya University)****III B.Sc. Degree Examination Semester – V****Subject – Microbiology****Paper – 7C Drug Design, Discovery and Intellectual Property Rights (IPR)
(w.e.f:2022-2023)****UNIT I:****No. of Hours: 7**

Introduction- History of drug design, Current approaches and philosophies in drug design, Molecular mechanisms of diseases and drug action with examples. Pharmaceutical products of microbial origin (antibiotics) animal origin (sex hormones), plant origin (Alkaloids & Morphine). Sources of Drugs- Microbial drugs, Plants as a source of drugs, *E. coli* as a source of recombinant therapeutic proteins.

UNIT II:**No. of Hours: 7**

Expression of recombinant proteins in yeasts, animal cell culture systems.. Rational drug design and Combinatorial approaches to drug discovery. Drug development process- Impact of genomics and related technologies upon drug discovery: Gene chips, Proteomics, Structural genomics and Pharmacogenetics. Drug manufacturing process- Guides to good manufacturing practice.

UNIT III:**No. of Hours: 7**

Vaccines and adjuvant- Traditional vaccine preparations, Attenuated and inactivated viral and bacterial vaccines, Toxoids. Peptide vaccines. Adjuvant technology. Nucleic acid as drugs- Gene therapy: Basic approach to gene therapy, Vectors used in gene therapy - Manufacture of viral vectors, Non-viral vectors. Gene therapy and genetic disease, cancer, Gene therapy and AIDS. Gene based vaccines.

UNIT IV:**No. of Hours: 8**

Introduction: general introduction to IPR (parent, plant breeder's right). Trademarks, industrial design, trade secrets (or) undisclosed information integrated circuit designs. Patenting principle, international – standards and patent validity (neem and relaxins), recent developments in patent system and patentability of biotechnology, invention IPR issues of the Indian context. Copy right and rights related to copy right, International standards as per WHO, ISI, bio safety and validation.

UNIT V:**No. of Hours: 7**

Biotechnology and hunger: challenges for the Indian biotechnological research and industries. Bio safety: the Cartagena protocol on bio safety. Bio safety management: key to the environmentally responsible use of biotechnology, ethical implications of biotechnology product techniques, social and ethical implications of biological weapons

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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM
(Affiliated to Adikavi Nannaya University)
III B.Sc. Degree Examination Semester – V
Subject – Biotechnology(w.e.f : 2022-23)

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 6B	Organic Farming	Hrs/Wk: 4

Learning outcomes

Students after successful completion of the course will be able to

1. Understand the soil profile and nutrients in soil
2. Appreciate the importance of organic manure and bio fertilizers
3. Produce vermi compost, farmyard manure from bio waste
4. Acquire skill on isolation and maintenance of bio fertilizers

Syllabus: (Total 90 hrs. (including Teaching, Lab, Field Training and unit tests etc.)

UNIT I: Soil:

(10h)

Definition, soil formation, composition and characteristics. Types of soils. Distribution of soil groups in India. Acidic, Alkaline and heavy metal contaminated soil. Methods of reclamation. Effects of chemical dependent farming on yield and soil health.

UNIT II: Plant Nutrition

(10h)

Macro and micro nutrients, functions of nutrients in plant growth and development. Nutrient uptake and utilization by plant. Types of fertilizers. Organic, inorganic and bio fertilizers. Chemical fertilizer. Advantages & disadvantages of their use. Importance of organic and bio fertilizers.

UNIT III: Organic Farming

(10h)

Definition, concept, benefits. Integrated farming system (combination of organic and inorganic). Mixed farming system. Concept of different cropping systems in relation to organic farming, Inter cropping, crop rotation. Organic farming process. Organic fertilizers, crop nutrients and effective microorganisms in Organic farming.

UNIT IV: Organic compost

(10h)

Definition, types of compost, farm yard compost, green leaf compost, animal husbandry, animal housing, animal feeding, animal health, breeding goals.

Vermi compost: Introduction, vermi composting material, species of earthworms, small scale, large scale composting process. Vermicompostings, harvesting, processing and drying. Nutrient content of vermi compost. Field application methods.

UNIT V: Biofertilizers

(10h)

Introduction, status and scope. Structure and characteristic features of bacterial bio fertilizers- *Azospirillum*, *Azotobacter*, *Bacillus*, *Pseudomonas*, *Rhizobium* and *Frankia*. Cyanobacterial biofertilizers- *Anabaena*, *Nostoc*, *Hapalosiphon* and fungal biofertilizers- AM mycorrhiza and ectomycorrhiza. Mechanism of nitrogen fixation and phosphorus solubilization.

REFERENCES:

1. Principles of Organic Farming:: by E Somasundaram,D Udhaya Nandhini,M Meyyappan ;2021
2. Organic farming in India:: by Arpita Mukherjee; 2017
3. Biofertilizer and biocontrol agents for agriculture;; by AM Pirttilä · 2021
4. Trends in Organic Farming in India;; by S. S. Purohit, 2006
5. Biofertilizers for Sustainable Agriculture and Environment;; by Bhoopander Giri Ram Prasad, Qiang-Sheng Wu, Ajit Varma; 2019

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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM

(Affiliated to Adikavi Nannaya University)

III B.Sc. Degree Examination Semester – V

Subject – Biotechnology(w.e.f : 2022-23)

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 7B	Biofertilizers and Biopesticides production	Hrs/Wk: 4

Learning outcomes:

On successful completion of the practical course, student shall be able to

1. Understand the importance of bio fertilizers for sustainable agriculture.
2. Appreciate the role of VAM in P solubilization
3. Define bio pesticide and its nature
4. Produce bio fertilizers and bio pesticides on large scale
5. Able to prepare inoculums for field application

Syllabus: (Total 90 hrs (including Teaching, Lab, Field Training and unit tests etc.)

UNIT I: Bio fertilizers

(10h)

Introduction, history, concept, scope of bio fertilizers in India. Classification, microorganisms used as bio fertilizers. Bacterial, fungal and algal bio fertilizers. Symbiotic and a symbiotic microorganisms. Mechanism of nodulation and nitrogen fixation.

UNIT II: Mycorrhizal bio fertilizers

(10h)

Importance, types, characteristic features of ecto and endo mycorrhiza. Mechanism of phosphorus solubilization. Uptake of phosphates by the roots. Consortium based inoculums and significance.

UNIT III: Bio pesticides

(10h)

Definition, concept, history, scope and importance of biopesticides.

Classification - botanicals, bacterial, fungal and viral based biopesticides. Mechanism of action of *Bacillus thuringiensis* and *Trichoderma viridae* as bio control agents.

UNIT IV: Mass production techniques

(10h)

Media, types, preparation. Methods of isolation, streak plate, spread plate and pour plate techniques, purification and identification of microorganisms used as bio fertilizers and bio pesticides. Mass production and packing techniques.

UNIT V: Field application methods

(10h)

Preparation of carrier based inoculum. Sphagnum, peat, vermiculite as inoculums carriers. Dosage standardisation. Seed treatment, foliar application, root dressing and soil application techniques. Storage and maintenance of inoculum.

REFERENCES:

1. Biofertilizers: Commercial Production Technology and Quality Control, 2017 by Dr. P.Hyma
2. Biofertilizers Technology, 2010, by S.Kaniyan, K.Kumar and K. Govinda rajan
3. Biofertilizers for Sustainable Agriculture, 2017; by Arun K Sharma
4. Advances In Plant Biopesticides 2021, by Dwijendra Singh, Springer India
5. A Textbook of Integrated Pest Management, 2013 by Ram Singh & Vikas Jindal G.S. Dhaliwal


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D.N.R. COLLEGE (AUTONOMOUS)BHIMAVARAM
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III B.Sc. Degree Examination Semester – V
Subject – Biotechnology (w.e.f : 2022-23)

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 6A	Techniques in nursery development	Hrs/Wk: 4

Learning outcomes:

Students after successful completion of the course will be able to

1. Understand different types of nurseries
2. Identify various facilities required to set up of a nursery
3. Understood expertise related to various practices in a nursery
4. Acquire skills to get an employment or to become an entrepreneur.

II. Syllabus: (Total 90 hrs. (including Teaching, Lab, Field Training and unit tests etc.)

UNIT I: Introduction to Nursery

(10h)

Definition, objectives and importance. Basic requirements for a nursery layout and components of a good nursery. Types of nurseries. Bureau of Indian standards (BIS - 2008) related to nursery.

UNIT II: Nursery inputs

(10h)

Tools, implements and containers. Nursery media. Electricity, equipment and machinery management. Types of nursery beds and their preparations. Precautions and maintenance of nursery beds.

UNIT III: Seeds and Propagules

(10h)

Selection of seed and different sowing methods. Use of different plant parts for vegetative propagation to raise nursery. Different techniques of vegetative propagation.

UNIT IV: Management Practices

(10h)

Routine seasonal operations in a nursery. Supply of water, nutrients and removal of weeds. Identification of pests and diseases, control and prevention methods.

UNIT V: Grafting techniques

(10h)

Introduction to grafting, definition, types and tools for grafting. Steps involved in simple, splice graft, tongue graft, Whip graft, cleft graft and wedge graft. Grafting of horticultural & floricultural crops and applications.

REFERENCES:

1. Ratha Krishnan, M., *et al.* (2014) Plant Nursery
2. Management: Principles and Practices, Central Arid Zone Research Institute – ICMR, Jodhpur, Rajasthan.
3. Vikas Kumar, Anjali Tiwari, Practical manual of Nursery management, Agri – biotech Press, New Delhi.
4. Tarai Ranjan Kumar, (2020) Plant propagation and nursery management, New India Publishers.
5. P.K.Ray, (2020) Essentials of plant nursery management.
6. P.K.Ray, (2012) How to start and operate a Plant Nursery.


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D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM

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III B.Sc. Degree Examination Semester – V

Subject – Biotechnology (w.e.f : 2022-23)

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 7A	Hydroponics cultivation	Hrs/Wk: 4

Learning outcomes:

Students after successful completion of the course will be able to

1. Understand the concept of hydroponics
2. Acquire the knowledge on soilless cultivation system
3. Prepare media for hydroponics cultivation
4. Learn the hydroponic cultivation technique

Syllabus: (Total 90 hrs. including Teaching, Lab, Field Training and unit tests etc.)

UNIT I: Introduction to Soilless culture

(10h)

Definition, History and origin of soilless culture, Present status of hydroponics—contrasts with soil based culture, Applications & future developments.

UNIT II: Macronutrients, micronutrients

(10h)

Functions and effect on plants, deficiency symptoms of the following essential minerals N, P, Mg, Ca, K, S, Fe, Mn, Cu, Zn, B, Mo, Physical factors, light (Quantity, energy, photoperiodism etc), Temperature (Heating and cooling), Humidity, CO₂, ppm, pH and TDS.

UNIT III: Cultural conditions

(10h)

Plant nutrition. Inorganic salts (fertilizers) major and minor nutrients formulating, monitoring and analysing. Selection of fertilizers, media used for hydroponics—expanded clay, rock wool, coir, perlite, pumice, vermiculite, sand gravel etc. Weed management, diseases and pest control.

UNIT IV: Techniques in hydroponics

(10h)

Static solution culture, continuous-flow solution culture and aeroponics.

UNIT V: Cultivation of crop plants by hydroponics

(10h)

Passive sub-irrigation, Ebb and flow or flood and drain irrigation. Deep water culture protocols for –Tomato cultivation through Dutch bucket method, chills cultivation through NFT system, Spinach through raft System and measurements of yield.

REFERENCES:

1. Keith Roberto, *How to Hydroponics*. The future Garden Press New York 4th Edition
2. Howard M. Resh. *Hobby Hydroponics*. CRC Press, USA.
3. Prasad S and Kumar U. *Green House management for Horticultural crops*. Agro-Bios India.
4. Dahama A.K. *Organic Farming for Sustainable Agriculture*. Agrobios, India
5. Subba Rao N.S. (1995). *Biofertilizers in Agriculture and Forestry*. Oxford and IBH Publishing Company. Pvt. Ltd New Delhi.

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III B.Sc. Degree Examination Semester – V**Subject – Biotechnology (w.e.f : 2022-23)**

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 6C	Apiculture	Hrs/Wk: 4

Learning outcomes

Students after successful completion of the course will be able to

1. Understand the basic concepts of Apiculture.
2. Obtain the elementary knowledge of different species and races of honey bees
3. Appreciate the importance of health and hygiene in Bee keeping
4. Maintain the Bee hives in a scientific way

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training and unit tests etc.)**UNIT I: Biology of Bees****10 hrs**

History, Classification and Life Cycle of Honey Bees. Social Organization of Bee Colony.

UNIT II: Rearing of Bees**10 hrs**

Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth. Methods of Extraction of Honey (Indigenous and Modern).

UNIT III: Diseases and Enemies**10 hrs**

Bee Diseases and Enemies. Control and Preventive measures.

UNIT IV: Economy and Entrepreneurship**10 hrs**

Products of Apiculture Industry and its Uses (Honey, Bee Wax, Propolis) and Pollen.

UNIT V: Entrepreneurship in Apiculture**10 hrs**

Bee Keeping Industry: Present and future, Role of Bees in cross pollination in horticulture and agriculture. Prospects of apiculture as self-employment venture.

REFERENCES:

1. Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
2. Graham, J M (1992) The hive and the honey bee. Dadant and Sons, Hamilton, Illinois.
3. Mishra R.C. (1995) Honey bees and their management in India. ICAR Publication New Delhi.
4. Singh, S. (1971) Beekeeping in India, ICAR publication.
5. Bisht, D.S. (2004). Agricultural Development in India, Anmol Pub. Pvt. Ltd.
6. Singh S.(1964). Beekeeping in India, Indian council of Agricultural Research, New Delhi
7. Mehrotra, K.N. Bisht, D.S. (1981). Twenty-five years of apiculture research at IARI. Apiculture in relation to agriculture.


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III B.Sc. Degree Examination Semester – V
Subject – Biotechnology (w.e.f : 2022-23)

B. Sc	Semester -V (Skill Enhancement Course -Elective)	Credits: 4
Course: 7C	Pearl Culture	Hrs/Wk: 4

Learning outcomes

Students after successful completion of the course will be able to

1. Understand the basic concept of pearl culture.
2. Obtain the elementary knowledge regarding the Anatomical and Physiological aspects of fresh water oysters.
3. Acquaint with the various types of implantation methods and pearl culture surgery tech- niques.
4. Acquire skill on production of pearl and its marketing for economic gain

Syllabus: (Total Hours: 90 including Teaching, Lab, Field Training and unit tests etc.)

UNIT I: Overview of Pearl oyster

(10h)

Biology of Pearl oyster: Pearl producing molluscs. Morphology and anatomy of Pearl oyster, Life cycle of pearl oyster.

UNIT II: Process of Pearl formation

(10h)

Structure and Histology of mantle. Natural Process of Pearl formation. Chemical composition of Pearls. Economic importance of pearls.

UNIT III: Pearl oyster culture

(10h)

Pearl oyster culture Techniques of pearl oyster culture (Fresh water and Marine water) for artificial production of pearls. Pearl culture techniques -Rafts, long lines, Pearls oyster baskets, under water platforms, mother oyster culture/Collection of oysters, rearing of oysters, Environmental parameters.

UNIT IV: Pearl Oyster surgery

(10h)

Selection of Oyster, Graft tissue preparation, Nucleus insertion, Conditioning for surgery, Post-operative culture, harvesting of pearl, clearing of pearl.

UNIT V: Pearl culture Economy

(10h)

Diseases and Predators of Pearl oysters' Present status, prospects and problems of pearl industry in India.

REFERENCES:

1. Haws Maria (2002). The basics of pearl farming: a Layman's manual: (U.S.A). CTSA publications.
2. Alexander E .Farn (1986) pearls :(U.S.A.).Butterworth Heinemann publications.
3. Le Jia Li (2014) new technologies to promote freshwater pearl culture (China) Ocean Press publications.
4. Bardach, J.E.W (1972) Aquaculture farming and husbandry of freshwater and Sorting of Pearl. Marketing and economics concerned with Pearl Culture. Generation marine organisms
5. David Dobilet (1995) Pearl farming (Australia) Nat Geographic Mag publication
6. Yuan Cha Da (2014) Environmental effects Pearl farming (China) Jiangxi People publishing house.

D.N.R. COLLEGE (AUTONOMOUS) BHIMAVARAM
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II B.Sc. Degree Examination Semester – IV
Subject – Bio-Chemistry (w.e.f : 2022-23)

B.Sc.	Semester - IV	Credits: 4
Course:4	PHYSIOLOGY, NUTRITIONAL AND CLINICAL BIOCHEMISTRY	Hrs/Wk: 4

Aim and objectives of Course (Physiology, Nutritional and Clinical Biochemistry):

The student will get knowledge on different physiological systems and their functions in the human body. By studying blood, its composition and its functions the student will understand the importance of blood.

Learning outcomes of Course:

- This course will also provide knowledge on hormones, their functions and the diseases occurring due to alterations in the levels of hormones.
- By studying this course the student will know the nutritional importance of proteins, carbohydrates, lipids, vitamins and minerals.
- Clinical biochemistry unit along with practicals will enable the student to do diagnostic tests for liver diseases, Gastro intestinal diseases, renal diseases and nutritional deficiencies.

UNIT I:

12hours

Digestion and Blood: Digestion and absorption of carbohydrates, lipids and proteins. Role of enzymes and gastrointestinal hormones in digestion. Composition of blood, Blood groups, coagulation of blood and disorders of blood coagulation (haemophilia). Hemoglobin and transport of gases in blood (oxygen and CO₂). Types of anemias, haemoglobinopathies-sickle cell anemia.

UNIT II:

12hours

Nervous system and excretory system: Introduction to nervous system, general organization of nervous system, Neurons-structure, types, properties and functions; Neurotransmitters, Cerebrospinal fluid-composition and functions, Reflex-types and properties. Introduction to excretory system. Organization of kidney, Structure and functions of nephron, Urine formation, Role of kidneys in maintaining acid-base and electrolyte balance in the body.

Unit III:

12 hours

Endocrinology: Endocrinology- organization of endocrine system. Classification of hormones. Outlines of chemistry, physiological role and disorders of hormones of thyroid, parathyroid, pituitary and hypothalamus. Introduction of gastrointestinal hormones. Mechanism of hormonal action- signal transduction pathways for glucocorticoids and insulin. Adrenalin, estrogen and progesterone.

UNIT IV:

12hours

Nutritional Biochemistry: Balanced diet. Calorific values of foods and their determination by bomb calorimeter. BMR and factors affecting it. Specific dynamic action of foods. Energy requirements and recommended dietary allowance (RDA) for children, adults, pregnant and lactating women. Sources of complete and incomplete proteins. Biological value of proteins. Malnutrition-Kwashiorkor, Marasmus and PEM. Vitamins- sources, structure, biochemical roles, deficiency disorders of water and fat soluble vitamins. Introduction to nutraceutical and functional foods. Bulk and trace elements-Ca, Mg, Fe, I, Cu, Mo, Zn, Se and F.

UNIT V:

12hours

Clinical Biochemistry: Plasma proteins in health and disease. Liver diseases-jaundice. Liver function tests- conjugated and total bilirubin in serum, albumin: globulin ratio, Serum enzymes in liver diseases-SGOT, SGPT, GGT, CPK, Acid and alkaline phosphatases. Serum lipids and lipoproteins. Normal and abnormal constituents of urine. Renal function tests-Blood urea, creatinine, GFR, creatinine clearance. GTT and gastric and pancreatic function tests.


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II B.Sc. Degree Examination Semester – IV
Subject – Bio-Chemistry (w.e.f : 2022-23)

B.Sc.	Semester - IV	Credits: 4
Course:5	MICROBIOLOGY, IMMUNOLOGY AND MOLECULAR BIOLOGY	Hrs/Wk: 4

Aim and objectives of Course (Microbiology, Immunology and Molecular biology):

- This course will enable the student to know various microbes such as bacteria, fungi and viruses, their structures and other properties and diseases caused by them.
- The student will also get knowledge in their commercial applications by making use of their beneficial effects such as fermentation in alcohol production, nitrogen fixation in agriculture etc.

Learning outcome of Course:

- The student will get knowledge in immune system, vaccines and also understand the pathogenesis of auto immune diseases and immune deficiency diseases.
- This course will provide knowledge and expertise in molecular biology such as genes, their structure and importance. This will also enable the student to know the applications of PCR in cloning and diagnosis of genetic and viral diseases.
- The practicals will provide the expertise to the student to work in microbiology laboratory, food and pharma industries, and biotech companies for production of vaccines and other life-saving drugs.

UNIT I:

12hours

Microbiology: Introduction to microbiology and microbial diversity. Classification of microorganisms- prokaryotic and eukaryotic microorganisms. Bacterial structure, growth curve and kinetics of growth. Introduction to viruses-plant and animal viruses, structure, life cycle, Food and dairy microbiology. Nitrogen Fixation Nitrogen cycle, Non-biological and biological nitrogen fixation, photosynthetic and non-photosynthetic systems, Nitrogenase system. Utilization of nitrate ion, Ammonia incorporation into organic compounds

UNIT II:

12 hours

Microbial techniques: Preparation of different growth media, isolation and culturing and preservation of microbes, Gram's staining- Gram positive and Gram-negative bacteria, motility and sporulation, Sterilization techniques -Physical methods, chemical methods, radiation methods, ultrasonic and antibiotic resistance.

UNIT III:

12 hours

Applied Biochemistry : Fermentation Technology: Batch, continuous culture techniques, principle, types of fermentors. Pasteur Effect. Industrial production of chemicals- alcohol, acids (citric acid), solvents (acetone), antibiotics (penicillin), Enzyme Technology: Immobilization of enzymes and cells, industrial applications, enzymes in Bioremediation.

UNIT IV:

12hours

Immunology: Organs and cells of immune system. Inmate and acquired immunity, Cell mediated and humoral immunity (T-cells and B-cells). Classification of immunoglobulins, structure of IgG. Epitopes / antigenic determinants. Concept of haptens. Adjuvants. Monoclonal antibodies. Antigen-antibody reactions- agglutination, immunoprecipitation, immunodiffusion. Blood group antigens. Immunodiagnostics- ELISA, RIA. Vaccines and their classification. Traditional vaccines-live and attenuated. Modern vaccines- recombinant and peptide vaccines. Outlines of hypersensitivity reactions.

UNIT V:

12 hours

Molecular biology: Types of RNA and DNA, DNA replication-leading and lagging strands, Okazaki fragments, inhibitors of DNA replication. Genetic code, Protein synthesis-transcription, translation, inhibitors of protein synthesis. Outlines of cloning technology, vectors, restriction enzymes, PCR, applications of cloning in agriculture, industry and medical fields.

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III B.Sc. Degree Examination Semester –V**Subject – Bio-Chemistry (w.e.f : 2022-23)**

B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6C	Genetic Engineering	Hrs/Wk:4

UNIT -I**Basics of Genetic engineering**

Introduction, historical perspective, basics of cloning, Vectors, Restriction enzymes, plasmids
PBR 322, PUC vector, Cosmids, YACs, cDNA libraries.

UNIT -II**Genetic Engineering in Animals**

Gene transfer methods in Animals. Transfection. Microinjection, Embryonic-stem cells Gene transfer and Retro-virus Gene transfer methods to create transgenic animals. Applications of transgenic animals in agriculture, medicine and pharmaceuticals.

UNIT -III**Genetic engineering in Plants**

Manipulation of Plant Genes-Electroporation, Shotgun method, *Agrobacterium* mediated gene transfer. Applications in Crop improvement, disease and pest resistance, tolerance to environmental stress. Genetically engineered foods.

UNIT- IV**Genetic engineering in Microorganisms**

Gene transfer methods in microorganisms - transformation, transduction and conjugation.
Transposons.

UNIT- V**Genetic engineering-Environment**

Bioremediation Biodegradation, Biofuels and Bioplastics from genetically engineered rape oil seed and other crops as substitutes for fossil fuels, Biosensors.


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III B.Sc. Degree Examination Semester –V

Subject – Bio-Chemistry (w.e.f: 2022-23)

B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7C	Bioinformatics	Hrs/Wk:4

UNIT- I

Scope of Bioinformatics

No. of Hours:6

Genomics, structural and functional genomics, genome annotations, gene production approaches and tools. DNA microarray and computational analysis tools. Computer aided drug design and systems biology.

UNIT- II

Biological data bases

No. of Hours:6

Introduction to biological databases. Primary, secondary and composite databases, NCBI, EBI, Nucleic acid databases (Gene Bank), EMBL, DDBJ, NDB) protein database, (PIR, Swissport, TrEMDL, PDB) Metabolic databases (KEGG, EcoCyc).

UNIT -III

Sequence Alignments:

Similarity, identities and homology. Concept of alignment pairwise sequence alignment, gaps, gap-penalties, scoring matrices, PAM 250, BLOSUM62, Local and Global Sequence alignment, multiple sequence alignment, progressive alignment, Logarithm alignment. Application of multiple sequence alignment- CLUSTAL W, BLAST-blastn, blastp and blastx

UNIT- IV

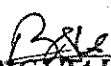
Genome projects

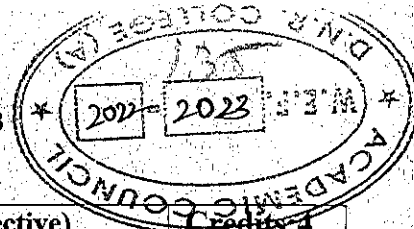
General introduction to genome projects (rice and *Mycobacterium tuberculosis* genome project). Special emphasis on Human Genome Project (HGP). Science behind HGP, benefits of HGP, genetic testing standard, quality and commercialization.

UNIT- V

Proteomics

Introduction, principle, technique of swiss- 2D PAGE data base. Gel analysis, post gel analysis, MALDITOF. Significance and applications of proteomics in modern biology.


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B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 6A	Clinical Biochemistry	Hrs/Wk:4

UNIT - I

Introduction:

Organization of Clinical laboratory. Introduction to instrumentation and automation in Clinical biochemistry laboratories, safety regulations and first aid. General comments on specimen collection, Type of specimen for biochemical analyses. Precision, accuracy, quality control, precautions and limitations.

UNIT - II

Basics of Hepatic and Renal physiology:

Evaluations of biochemical changes in liver and kidney diseases, Liver function tests (LFTs), Renal function tests (RFTs), GFR. Diagnostic biochemical profile.

UNIT - III

Glucose metabolism

Digestion, absorption and assimilation of carbohydrates. Enzymes and hormones (Insulin, Glucagon) in regulation of blood glucose levels. Clinical significance of variations in blood glucose levels, disorders - Diabetes mellitus, Insulin resistance

UNIT - IV

Lipid profile: Lipids, fats, Triglycerides, cholesterol, fatty acids, PUFAS. Digestion and absorption of lipids. Composition and functions of lipoproteins. Clinical significance of elevated lipoproteins.

Exercises

Estimation of triglycerides, cholesterol, LDL, VLDL and HDL cholesterol.

UNIT - V

Cardiovascular diseases: Basic cardiovascular physiology, biochemical symptoms associated with cardiovascular diseases and their evaluation. Involvement of enzymes in diagnosis of heart diseases including Aspartate transaminase, Isoenzymes of creatine kinase and lactate dehydrogenase and troponin.

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III B.Sc. Degree Examination Semester –V
Subject – Bio-Chemistry (w.e.f : 2022-23)

B.Sc	Semester – V (Skill Enhancement Course- Elective)	Credits:4
Course: 7A	Haematological and Immunological Techniques	Hrs/Wk:4

UNIT - I

Introduction

Organization of Clinical Immunology laboratory. Introduction and maintenance of clinical Immunology laboratory; hazards in clinical laboratory; units; 'normal range', reference values. Factors affecting reference values quality control in laboratory – use of external and internal standards; use of WHO standards.

UNIT - II

Composition of blood and Lymph

Plasma and cells-RBC, WBC, platelets, blood clotting, plasma proteins, separation and applications, plasma therapy. Lymph.

UNIT - III

Advanced diagnostic methods

Identification of viral, bacterial and other diseases - ELISA, Western blot, RT-PCR, Tissue Histopathology, fixing, staining (H&E) and microtome sections

UNIT - IV

Auto immunity

Introduction, Auto recognition, classes of auto immuno diseases. (Hashimoto disease, thyrotoxicosis, Systemic lupus erythematosus, Autoimmune haemolytic anaemia, Rheumatoid arthritis).

UNIT - V

Immunoglobulins (Igs)

Types of Igs, nature and structure of Igs –Light chain, heavy chain and functions. Adjuvants, Antibody production, enzymatic cleavage of Igs, Haptens.

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B.B.A. Degree Examination
(w.e.f : 2022-23)

B.B.A Semester – III

ORGANIZATIONAL BEHAVIOUR

Objective of the Course structure: The course is structured in such a way that after understanding the importance of human resources management in an organisation, it is also important to understand human behavior in any system. When an individual enters an organization, his/her behavior as an individual in response to the new environment needs to be understood. Also his behavioural responses in a group are important, since an organisation is nothing but a group of individuals working together to achieve objectives. Finally his responses to the culture and systems of the organisation are again significant aspects.

Unit 1: INTRODUCTION

Introduction to Organisational Behaviour, the OB Model, Roles of Manager in OB, Challenges and Opportunities for OB

Unit 2: THE INDIVIDUAL

Foundation of Individual Behaviour: Concepts of Motivation, Personality, Values.

Unit 3

Attitudes, Perception, Learning, Individual Decision-Making and Problem-Solving.

Unit 4: THE GROUP

Foundation of Group Behaviour: Concepts related to Communication, Leadership, Power and Politics, Work Teams and Group Dynamics, Transaction Analysis, Johari Window Model

Unit 5: THE ORGANISATION

Foundation of the Organisation: Concepts related to Organisation Structure, Organization Culture, Organization Change & Development, Organizational Conflict and Discipline.

Suggested Reading:

Organizational Behavior – Stephen P. Robbins, Timothy A. Judge, Seema Sanghi

Organisational Behaviour – L. M. Prasad

Organizational Behavior, Human Behavior At Work – John W. Newstrom

Management & Organisational Behaviour – Laurie J. Mullins

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B.B.A. Degree Examination
Subject – BBA
(w.e.f : 2022-23)

	Semester: III	Credits:4
Course:3B	HUMAN RESOURCE MANAGEMENT	Hrs/Wk:5

Course outcomes: Upon completion of this course, the students will be able to:

Acquire knowledge, process and techniques of HRM in an Organisation.

Obtain the skills to manage the Human Resources.

Unit-I: Introduction: Concept, Scope, Objectives and Importance of HRM, Evolution of HRM, Personnel Management Vs. HRM, Functions of HRM

Unit-II: Acquisition of Human Resource: Concept or Human Resource Planning, Objectives, need and importance of HR Planning, Process of HR Planning, Job Analysis, Job Description and Job Specification.

Recruitment: Introduction to Recruitment, Process and Sources of Recruitment. Selection: Meaning of Selection, Steps in Selection Process, Concept of Placement Concept of Induction. Concept of Transfer and Concept of Promotion.

Unit-III: Training & Development: Concept and Importance of Training, types of Training, Methods of Training, Evaluation of Training effectiveness.

Career Planning and development: Concept, Objectives and Path.

Unit-IV: Job Evaluation: Concept of Job Evaluation, Methods of Job Evaluation. Performance Appraisal: Concept and Importance of Performance Appraisal, Methods of Performance Appraisal. Compensation Management: Introduction of Compensation Management, Objectives and Components of Compensation.

Unit-V: Industrial Relations: Definition and importance of Industrial Relations – collective bargaining. International HR: Introduction to International Human Resource Management.

References:

- 1.P.Jyothi&D.N.Venkatesh, Human Resource Management, Oxford University Press, New Delhi.
2. BiswajeetPattanayak, Human Resource Management, Prentice-Hall of India, New Delhi.


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B.B.A Degree Examination

Subject – BBA
(w.e.f : 2022-2023)

B.B.A SEMESTER – III
FINANCIAL MANAGEMENT

COURSE OBJECTIVE

To introduce the participants with the basic fundamentals and tools and techniques of Corporate Financial Management in a changing, challenging and competitive global economic environment.

Unit-I: Financial management: meaning, nature and scope of finance; financial goals: profit maximization, wealth maximization; finance functions:- investment, financing and dividend decisions.

Unit-II: Capital budgeting: nature of investment decisions; investment evaluation criteria- net present value, internal rate of return, profitability index, payback period, accounting rate of return, NPV and IRR comparison; capital rationing; risk analysis in capital budgeting.

Unit-III: Working capital: meaning, significance and types of working capital; determinants of working capital; sources of working capital; management of inventory; management of cash; management of account receivables.

Unit-IV: Capital structure theories: traditional and MM hypotheses; determining capital structure in practice; Capital structure planning. Cost of capital: meaning and significance of cost of capital; calculation of cost of debt, preference capital, equity capital and retained earnings; Operating and financial leverages.

Unit-V: Dividend decisions—Types of dividend- dividend models - Determinants of dividend policy - Practical aspects of dividend.

SUGGESTED READINGS

Home, James Van Financial Management & Policy

Soloman Ezra The Theory of Financial Management

Hunt William and Donaldson Basic Business Finance .

Kuchal, S.C. Financial Management

Bradley Fundamentals of Corporation Finance

Pandey, I.M. Financial Management

Fred, Weston J. The Scope & Methodology of Finance

Weston & Brigham Essentials of Management Finance

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B.B.A Degree Examination
(w.e.f : 2022-2023)

BBA	Semester: IV	Credits:4
Course:4A	TRAINING & DEVELOPMENT	Hrs/Wk:5

Course outcome: Upon completion of this course, the students will be acquainted with the different methods of Training and Development in the organizations

Unit-I:

Meaning and Definition - Need for Training - importance of Training, Objectives of Training, Responsibility for Training Training Vs Development

Unit- II:

Steps in Training Programs, Training Policy, Training courses, support material for training , Training period, Training for Different employees principles of learning.

Unit- III:

Training methods: On the Job, Vestibule Training, Training by Experience Workman, Training by Supervisors,, Demonstrations and examples, Simulation, Apprenticeship. Off the Job: Lecturers, Conference method, Seminar or Team Discussion, Case Studies, Role playing, Programmed instruction, T-Group training, Audio-Visual aids, Retraining

Unit -IV:

Development: Importance of Development - Management Development, Purpose and objectives of Development, Stages in development programs, Components of development program, Factors inhibiting Development.

Unit-V:

Coaching and Counselling: Methods, Management syndicate, Incident process, In- Basket, Sensitivity counselling - Special Projects, Committee assignments conferences, Management games.

References:

1. P.Subba Rao, VSP, Rao, Human Resource Management; Konark Publishing Houses , Mumbai.
2. Subas Gurg & S C Jain, Managing Human Resource, Arihant Publications, Jaipur.
3. Beardwell & Len Holdmen, Human Resource Management, Macmillan Publisher


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B.B.A Degree Examination
(w.e.f : 2022-2023)

3. Organiza	Semester: IV	Credits:4
Course:4B	BUSINESS LAW	Hrs/Wk:5

Course outcome: Upon completion of this course, the students will be acquainted with the different aspects of managing Legal activities in the organizations.

Unit-I: Law of Contract – Essentials of valid contract, Kinds of Contracts, Offer, Acceptance, Consideration, Capacity of parties to a Contract, Free Consent, Stranger to the Contract.

Unit-II: Contingent Contracts, Performance of Contract, Discharge of Contract, Quasi Contracts, Breach of Contracts and remedies, Contract of Bailment and Pledge, Contract of Agency.

Unit-III: Companies Act, Definition of Company, Kinds of Company, Memorandum of Association, Article of Association, Prospectus, Meetings and Resolution.

Unit-IV: Sale of Goods Act 1930 – Meaning and Definition, Essentials of Sale Contract, Contract of Sale, Agreement to sell, Conditions and Warranties, Unpaid Seller, Caveat Emptor, Sale by Non-owner.

Unit-V: The Essential Commodity Act, 1955; The Competition Act, 2002, The Consumer Protection Act, 2019

References:

Indian Contract Act – Bare Act, Government of India.

N.D. Kapoor Mercantile Law, Sultan Chand & Company, New Delhi.

Avatar Singh Mercantile Law, Vikas Publication.

Balchandani: Business Laws.

S.D. Geet and M.S. Patil: Business Laws.

S.S. Gulshan: Business Laws.

N.M. Wechlakar: Business Laws.


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B.B.A Degree Examination
(w.e.f : 2022-2023)

SMALL, MEDIUM AND MICRO ENTERPRISES

Course outcomes: Upon completion of this course, the students will be able to :
Understand the structure and functioning of Medium, Small and Micro Enterprises.
Setup own ventures and emerge as entrepreneurs

Unit-I:

Small and Medium Enterprises: Significance in Indian economy - Problems and the steps taken up by the Government to tackle their problems - Role of government in promoting small and medium enterprises - incentives provided to Backward Area Development.

Unit-II:

Project Formulation: Project identification and Project Feasibility study – Project report preparation, location of Units , Industrial estates and the role of IDBI and NIESBUD.

Unit-III:

Management Functions in Small and Medium Enterprises - Finance function: Capital Estimation, Sources of finance - Subsidies and incentives, Venture Capital
- Marketing and Human Resource Management functions.

Unit-IV:

Sickness in Small and Medium enterprises - Causes of sickness, Prevention of sickness, and Remedial measures for sickness Role of Board for industrial & Financial Reconstruction(BIFR).

Unit-V:

Introduction to MSME's - Role of SIDO, SSIDC, SISI, DIC - Prospects for small-scale industries

References:

1. C.S.V. Murthy, Small Scale Industries and Entrepreneurial Development, Himalaya Publishing House.

Vasant Desai, Management of SSI, Himalaya publishing House, Delhi, 1998. Entrepreneurial Development, Sultan Chand & Co. Ltd., New Delhi. 1999.


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BBA	Semester: IV	Credits:4
Course:4D	INTERNATIONAL BUSINESS	Hrs/Wk:5

Course outcome: Upon completion of this course, the students will acquire the skillsof managing the International Business of the organizations.

Unit-I:

Introduction - Need - Difference between Domestic and International/Foreign Trade. Difference between globalisation of trade international trade- Free Trade Vs Protected Trade, Trade Barriers, Monetary and Non-Monetary

Unit-II:

Foreign Exchange: Factors influencing exchange rate fluctuations, Euro market and instruments (LIBOR, MIBOR, etc), Foreign market operations, participants, spot-future forward and option market.

Unit-III:

Balance of Payment: Contents, disequilibria in BOP, measures to bring back equilibrium in BOP, convertibility of currencies, Current account and Capital account convertibility, exchange control, reasons and methods.

Unit-IV:

WTO and Trade blocks - WTO Formulation, advantages and disadvantages of WTO membership to developing countries. Trade blocks: Reasons for trade block formation, different types of trade blocks - member countries and economies condition and trade commodities of LAFTA., SAFTA, NAFTA., ASEAN, CARICOM and EU.

Unit-V:

Procedure and Documents: Export and Import procedure, principal and auxiliary documents, bill of lading, consular invoice, commercial invoice, AR and GP forms, Mate receipt, Letter of credit - Packing list - Incentives to exports, recent Exim policy

References:

1. C. Jeeva nandam, Foreign Exchange Practice, Concepts and Control, Sultan Chand & Sons.
2. T.S. Balagopal, Export Management, Himalaya Publishing House.
3. KP M Sunda ram&Rud radatta, Indian Economy .

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COST MANAGEMENT & ACCOUNTING

Course outcome: : Upon completion of this course, the students will get familiarized with the different aspects of Cost and Management Accounting activities in the organization.

Unit-I: Introduction: Management accounting- nature – scope – Importance – functions- Distinguish between financial Accounting, Cost Accounting and Management Accounting - Cost Concepts and Classification.

Unit-II: Elements of Cost: Materials: Material control Selective control, ABC technique – FOO – Methods of pricing – Issues – FIFO – LIFO, Weighted average, (including problems). Labour: Control of labour costs time keeping and time booking Idle time Methods of remuneration Labour incentives schemes

Unit-III: Financial statement Analysis: financial Statements Need for analysis of financial statements• comparative statements- common size statements- Trend analysis.

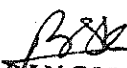
Unit-IV: Ratio Analysis: Meaning-Accounting Ratios- uses - limitations - types of ratios - profit and loss account ratios - balance sheet ratios - mixed ratios.

Unit-V: Costing Techniques: Marginal Costing-cost classification- Standard Costing – Historical Costing - Differences between marginal costing and absorption costing - marginal cost equation- contribution- p/v ratio- margin of safety-BEP Analysis - (including problems).

References:

Cost & Management Accounting: Kishore. R.M. 4th ed Taxman Allied Service 2.Principles & Practice Of Cost Accounting : Bhattacharyya, A.K. 3rd ed PHI 3.Management & Cost Accounting: Drury, Colin 6th ed Thompson Books

4.Cost Accounting: Managerial Emphasis: Homgren C. T/ Datar, S.M/ Foster, G.12th ed Pearson


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(w.e.f : 2022-2023)

BBA	Semester: IV	Credits:4
Course:4F	FINANCIAL SERVICES	Hrs/Wk:5

Course outcome : Upon completion of this course, the students will get enlightened with the different aspects of Financial Services in the organizations.

Unit-I: Financial Services: Concept, Nature and Scope of Financial services – Fund based and Non-Fund based and Modern Activities- Innovative Financial Instruments- Regulatory frame work of financial services in India, Growth of Financial services.

Unit – II: Merchant Banking - Meaning – Types –Services of Merchant Banks- Merchant Bankers as Lead Managers- Responsibilities of Merchant bankers – Role of Merchant bankers in Issue Management.

Unit-III: Leasing: Lease Evaluation, Types of Lease, Hire Purchase Agreements- Evaluation of Hire purchase Agreements.

Unit-IV: Concept of Credit rating – Meaning –Functions –Debt rating of Crisil, ICRA, CARE –SEBI guidelines for Credit Rating- Credit Cards –Mutual funds –concept and objectives – Functions.

Unit-V: Factoring and Forfeiting: Meaning, Role in financial services - Theoretical Framework, Factoring services in India - Venture Capital Financing- Venture Capital Guideliness- Methods of Venture Financing

ADDITIONAL INPUTS:

Unit- I: Fund based and Non-Fund based and Modern Activities, Innovative Financial Instruments

Unit –II: Services of Merchant Banks , Merchant Bankers as Lead Managers

Unit-IV: SEBI guidelines for Credit Rating

Unit-V: Venture Capital Guideliness- Methods of Venture Financing

References:

1. Khan M.Y., Financial Services, Tata McGraw Hill Education Private Limited, New Delhi.
2. Vasant Desai, Financial Markets and Financial Services, Himalaya Publishing House, Mumbai.
3. Siddiah, T., Financial Services, Pearson
4. Tripathy Nalini Prava, Financial Services, Prentice Hall of India, New Delhi.
5. Guruswamy.S, Financial Services, Tata McGraw Hill Education Pvt. Ltd., New Delhi.
6. V. Avadhani, Financial Services in India, Himalaya Publishing House, Mumbai, 2009.
7. Rajesh Kothari, "Financial Services in India", SAGE.



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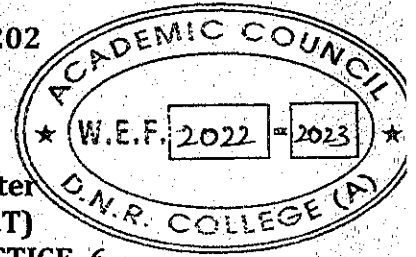
III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, CA, B.Voc A&T)

Title of the Course: MANAGEMENT ACCOUNTING AND PRACTICE -6

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023



SYLLABUS

UNIT I: Introduction

Nature & Scope of Management Accounting – Management Accounting Principles – Significance of Management Accounting - Difference between management accounting, financial accounting and Cost accounting – Limitations of Management Accounting – Installation of Management Accounting – Tools of Management Accounting.

UNIT 2: Ratio Analysis

Meaning - Advantages and Limitation of Ratio Analysis – Types of Ratios –Profitability Ratios- Gross Profit Ratio (GPR) – Net Profit Ratio (NPR) – Operating Ratio –Solvency Ratios- Current Ratio – Liquidity Ratio – Debt-Equity Ratio-Turnover Ratios-Fixed Assets Turnover Ratio – Working Capital Turnover Ratio – Debtors Turnover Ratio – Creditors Turnover Ratio - Stock Turn Over Ratio - Return on Investment (ROI)-Calculation and interpretation.

UNIT 3: Fund Flow and Cash Flow Analysis as per AS3

Meaning and Concept of Working Capital (Fund) – Fund Flow Statement –Meaning and Uses of Funds Flow Statement – Preparation of Funds Flow Statement. Cash Flow Statement – Meaning and Uses of Cash Flow Statement – Preparation of Cash Flow Statement – Difference between Cash Flow Statement and Funds flow Statement.

UNIT 4: Budgeting and Budgetary Control

Meaning of Budget – Forecast and Budget - Elements of Budget – Features – objectives and budget procedure – Classification of Budgets - Meaning of Control – Meaning of Budgetary control – objectives of Budgetary control system – Advantages and Limitations of Budgetary control system. Prepare cash budget, fixed budget and flexible budget.

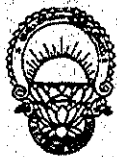
UNIT 5: Management Reporting:

Reports - Meaning — Modes of Reporting – Requisites of a good report — Kinds of Reports – General formats of Reports - Need for Management Reporting- financial reporting Vs. Management Reporting - Strategies for Writing Effective Reporting.

References

1. Management Accounting and financial control S.N. Maheswari, Sultan Chand and Sons.
2. Principles of Management Accounting by Manmohan & Goyal, Publisher: PHI Learning
3. Cost and Management Accounting by SP Jain and KL Narang
4. Introduction to Management Accounting – Horn green and Sundlem
Publisher: PHI Learning
5. Cost and Management Accounting by M.N. Arora, Vikas Publishing House PVT Ltd.,

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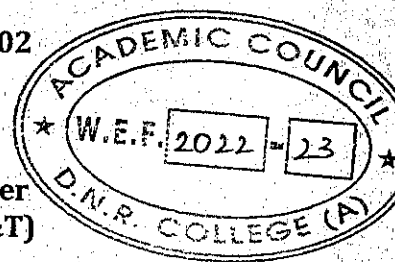
III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, CA & B.Voc A&T)

Title of the Course: Cost Control Techniques – 7

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023



SYLLABUS

Unit 1: Introduction-Nature and Scope

Introduction: Meaning of Cost Control – Cost Control Techniques – Requisites of effective Cost Control System – Cost Reduction – meaning – essentials for an effective cost Reduction Program – Scope of cost reduction - Difference between Cost Control and Cost Reduction –Meaning of cost audit – Types of Cost Audit – Auditing techniques.

Unit 2: Activity Based Costing

Concept of ABC – Characteristics of ABC – Categories of ABC – Allocation of Overheads under ABC – Cost Reduction under ABC – advantages of implementing ABC –Application on overhead allocation on the basis of ABC-

Unit 3: Cost Volume Profit Analysis (CVP Analysis)

Applications of Marginal Costing – profit planning – Evaluation of Performance-fixing selling price – Key Factor –Make or Buy decision – Accept or Reject - closing down or suspending activities –

Unit 4: Standard Costing and Variance Analysis

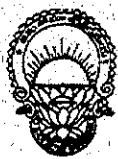
Concept of Standard Cost and Standard Costing – Advantages and limitations – analysis of variances-importance of Variance Analysis - computation and application of variances relating to material and labour.

Unit 5: Application of Modern Techniques

Kaizen Costing – Introduction – objectives – scope –Principles – 5 S (Sort, Set in Order, Shine, Standardize, and Sustain) in Kaizen Costing– Advantages and Disadvantages of Kaizen Costing. Learning Curve Analysis-concept and Application.

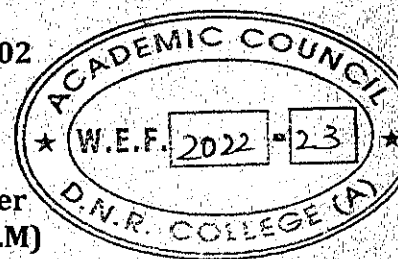
III. References

1. Cost and Management Accounting by SP Jain and KL Narang.
 2. Cost Accounting by M.C. Shukla, T. S. Grewal & Dr M. P. Gupta, S. Chand and Company Private Limited, New Delhi.
 3. Cost Accounting: Principles & Practice Bookby M. N. Arora, Vikas Publishing House Private Limited.
 4. Advanced Cost Accounting: JK Mitra, New Age International
 5. Advanced Cost Accounting: SN Maheswari, S. Chand and Company Private Limited, New Delhi.
- Web Sources: Web sources suggested by the concerned teacher and college librarian including reading material.



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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.COM (General, C.A. & B.Voc R.M)
Title of the Course: LIFE INSURANCE WITH PRACTICE -6
(Skill Enhancement Course (Elective), 4 Credits)
2022-2023

SYLLABUS

Unit-I: Features of Life insurance contract

Life Insurance- Features- Advantages - Group Insurance - Group Gratuity Schemes - Group Superannuation Schemes, Social Security Schemes- Life Insurance companies in India.

Unit-II: Plans of Life Insurance

Types of Plans: Basic - Popular Plans - Term Plans-Whole Life-Endowment-Money Back- Savings-Retirement-Convertible - Joint Life Policies - Children's Plans - Educational Annuity Plans - Variable Insurance Plans - Riders

Unit-III: Principles of Life Insurance

Utmost Good Faith- Insurable Interest- Medical Examination - Age proof, Special reports - Premium payment - Lapse and revival - Premium, Surrender Value, Non-Forfeiture Option - Assignment of Nomination- Loans - Surrenders - Foreclosure.

Unit-IV: Policy Claims

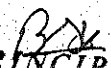
Maturity claims, Survival Benefits, Death Claims, Claim concession - Procedures - Problems in claim settlement - Consumer Protection Act relating to life insurance and insurance claims.

Unit-V: Regulatory Framework and Middlemen

Role of IRDAI & other Agencies - Regulatory Framework - Mediators in Life Insurance - Agency services - Development Officers and other Officials.

III: References:

1. G. S. Pande, Insurance - Principles and Practices of Insurance, Himalaya Publishing.
2. C. Gopalkrishna, Insurance - Principles and Practices, Sterling Publishers Private Ltd.
3. G. R. Desai, Life Insurance in India, MacMillan India.
4. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
5. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
6. P.S. Palandi, Insurance in India, Response Books - Sagar Publications.
7. Taxman, Insurance Law Manual.
8. <https://www.irdai.gov.in>
9. <https://www.policybazaar.com>


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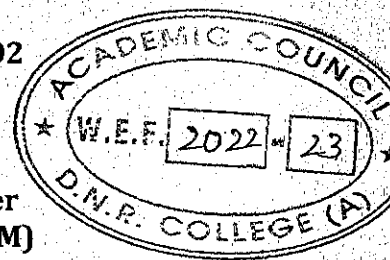
(Affiliated to Adikavi Nannaya University)

III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM (General, C.A. & B.Voc R.M)

Title of the Course: GENERAL INSURANCE PROCEDURE AND PRACTICE - 7

(Skill Enhancement Course (Elective), 4 Credits)



2022-2023

SYLLABUS

Unit-I: Introduction

General Insurance Corporation Act - General Insurance Companies in India - Areas of General Insurance- Regulatory Framework of Insurance- IRDA - Objectives -Powers and Functions - Role of IRDA- Insurance Advisory Committee.

Unit-II: Motor Insurance

Motor Vehicles Act 1988 - Requirements for compulsory third party insurance - Policy Documentation & Premium- Certificate of insurance - Liability without fault - Compensation on structure formula basis - Hit and Run Accidents.

Unit-III: Fire & Marine Insurance

Kinds of policies - Policy conditions -Documentation- Calculation of premium- Calculation of Loss- Payment of claims.

Unit-IV: Agriculture Insurance

Types of agricultural insurances - Crop insurance - Problems of crop insurance - Crop Insurance Vs Agricultural relief - Considerations in Crop insurance - Live Stock Insurance.

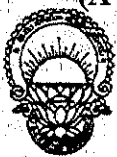
Unit-V: Health & Medical Insurance

Types of Policies-Calculation of Premium- Riders-Comprehensive Plans-Payment of Claims.

References:

1. M. N. Mishra, Insurance Principles and Practices, Chand & Co, New Delhi.
2. M.N.Mishra, Modern Concepts of Insurance, S.Chand & Co.
3. P.S. Palandi, Insurance in India, Response Books - Sagar Publications.
4. C. Gopalkrishna, Insurance - Principles and Practices, Sterling Publishers Private Ltd.
5. G. R. Desai, Life Insurance in India, MacMillan India.
6. <https://www.irdai.gov.in>
7. <https://www.policybazaar.com>
8. Web resources suggested by the Teacher concerned and the College Librarian including reading material.


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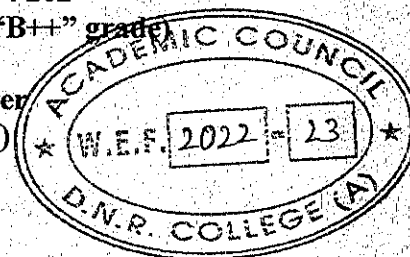
III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, B.Voc R.M)

Title of the Course: DIGITAL MARKETING-6

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023



SYLLABUS

Unit 1: Introduction

Digital marketing: Meaning – importance – traditional online marketing vs digital marketing – online market place analysis Micro Environment – Online Macro Environment - trends in digital marketing – competitive analysis.

Unit – II: Web site planning and creation

Web Site: meaning – objectives – components of website - website creation – incorporation of design and– adding content, installing and activating plugins.

Unit 3: Search Engine Optimization (SEO)

SEO: Meaning – History and growth of SEO –Importance of Search Engine - On page Optimization – off page optimization – Role of Search Engine Operation- google Ad words – Search Engine Marketing: Campaign Creation – Ad Creation, Approval and Extensions.

Unit 4: Social Media Marketing

Meaning of social media and Social Media Marketing – social Management tools-strategy and planning – social media network – Social Networking – video creation and sharing – use of different social media platforms - Content creation - Blogging – Guest Blogging.

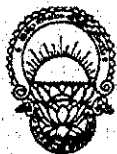
Unit 5: Email marketing

Meaning – Evolution of email – importance of email marketing – Development and Advancements in e mail marketing - email marketing platforms – creating and Tracking emailers–create forms – create opt-in lists – mapping industry trends and eliminating spam messages.

III. References

1. Digital Marketing for Dummies by Ryan Deiss & Russ Henneberry, publisher John Wiley first edition 2020.
2. Youtility by JayBaer, Published by Gilda MediaLL C Portfolio 2013,
3. Epic Content Marketing by Joe Pulizzi, McGraw-Hill Education, 2013
4. New Rules of Marketing and PR byDavid Meerman Scott.Wiley, 2017
5. Social Media Marketing All-in-one Dummies by JanZimmerman, DeborahNg, John Wiley & Sons.


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III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, B.Voc R.M)

Title of the Course: SERVICE MARKETING - 7

(Skill Enhancement Course (Elective) 4 credits)

2022-2023

SYLLABUS

Unit 1: Introduction: Nature and Scope of services

Introduction: Nature and Scope of services characteristics of services, classification of services – need for service marketing - reasons for the growth of services sector, Overview of marketing Different Service Sectors -Marketing of Banking Services - Marketing in Insurance Sector - Marketing of Education Services.

Unit-2: Consumer Behavior in Services Marketing

Customer Expectations on Services- Factors influencing customer expectation of services. - Service Costs experienced by Consumer, the Role of customer in Service Delivery, Conflict Handling in Services, Customer Responses in Services, Concept of Customer Delight

Unit-3: Customer Relationship marketing and Services Market Segmentation.

Customer Relationship marketing: Meaning -Importance of customer & customer's role in service delivery, Benefits of customer relationship, retention strategies. Services Market Segmentation: - Market segmentation -Basis & Need for segmentation of services, bases of segmentation services, segmentation strategies in service marketing.

UNIT 4: Customer Defined Service Standards.

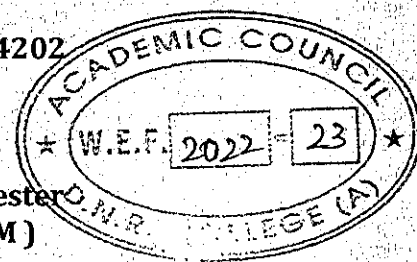
Customer Defined Service Standards - Hard and Soft, Concept of Service Leadership and Service Vision -Meeting Customer Defined Service Standards -Service Flexibility Versus Standards - Strategies to Match Capacity and Demand - managing Demand and Supply of Service -applications of Waiting Line and Queuing Theories to Understand Pattern Demand.

Unit 5: Service Development and Quality Improvement.

Service Development – need, importance and Types of New Services - stages in development of new services, service Quality Dimensions - Service Quality Measurement and Service Mapping, Improving Service Quality and Service Delivery, Service Failure and Recovery.

References :

1. John E.G. Bateson, K.Douglas Hoffman: Services Marketing, Cengage Learning, 4e, 2015 publication
2. Vinnie Jauhari, Kirti Dutta: Services Marketing: Operations and Management, Oxford University Press, 2014.
3. Valarie A. Zeithaml and Mary Jo-Bitner: Services Marketing – Integrating Customer Focus Across The Firm, Tata McGraw Hill Publishing Company Ltd., 6e, 2013. Nimit Chowdhary, Monika Chowdhary, Textbook of Marketing Of Services: The Indian Experience, Macmillan, 2013.
4. K. Rama Mohana Rao, Services Marketing, Pearson, 2e, 2011.

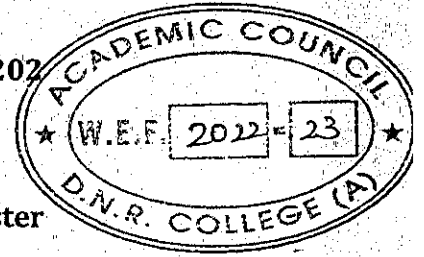



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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.Voc A&T



Title of the Course: ADVERTISING AND MEDIA PLANNING

(Skill Enhancement Course (Elective) 4 credits)
2022-2023

SYLLABUS

UNIT-I: Introduction, Nature and Scope Advertising- Nature and Scope- Functions - Impact on Social, Ethical and Economical Aspects - Its Significance – Advertising as a Marketing Tool and Process for Promotion of Business Development - Criticism on advertising

UNIT-II: Strategies of Advertisements

Types of Advertising Agencies and their Strategies in Creating Advertisements - Objectives - Approach - Campaigning Process - Role of Advertising Standard Council of India (ASCI) - DAGMAR approach

UNIT-III: Process of Advertisement

Creativeness and Communication of Advertising –Creative Thinking – Process – Appeals – Copy Writing - Issues in Creation of Copy Testing –Slogan Elements of Design and Principles of Design

UNIT-IV: Media Planning

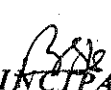
Advertising Media - Role of Media - Types of Media - Print Media - Electronic Media and other Media - Advantages and Disadvantages – Media Planning - Selection of Media

UNIT-V: Analysis of Market Media

Media Strategy – Market Analysis -Media Choices - Influencing Factors - Target, Nature, Timing, Frequency, Languages and Geographical Issues - Case Studies

References:

1. Bhatia. K.Tej - Advertising and Marketing in Rural India - Mc Millan India
2. Ghosal Subhash - Making of Advertising - Mc Millan India
3. Jeth Waney Jaishri & Jain Shruti - Advertising Management - Oxford university Press
4. Advertising Media Planning, Seventh Edition Paperback – by Roger Baron (Author), Jack Sissors (Author)
5. Media Planning and Buying in 21st Century – Ronald D Geskey
6. Media Planning and Buying: Principles and Practice in the Indian Context – Arpita Menon
7. Publications of Indian Institute of Mass Communications
8. Advertising and Salesmanship. P. Saravanavel, Margham Publications


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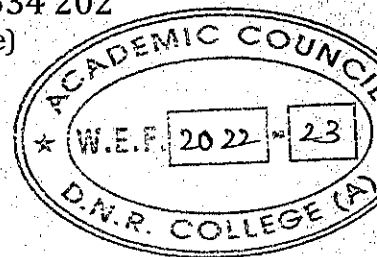
Title of the Programme: **B.Voc (Accounting & Taxation)**

Title of the Course: **Sales Promotion and Practice**

(Examination at the end of 5th semester)

SYLLABI OF SALES PROMOTION AND PRACTICE

2022-2023



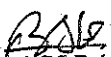
UNIT-I: Introduction to Sales Promotion: Nature and Scope of Sales Promotion- Influencing Factors - Sales Promotion and Control - Strengths and Limitations of Sales Promotion – Sales Organization - Setting-up of Sales Organization - Types of Sales Organization.

UNIT-II: Sales Promotion and Product Life Cycle: Types of Sales Promotion - Consumer Oriented - Trade Oriented - Sales Oriented - Various Aspects -Sales Promotion methods in different Product Life Cycle – Cross Promotion - Sales Executive Functions- Theories of Personal Selling - Surrogate Selling.

UNIT-III: Strategies and Promotion Campaign: Tools of Sales Promotion - Displays, Demonstration, Fashion Shows, Conventions - Conferences, Competitions –Steps in designing of Sales Promotion Campaign – Involvement of Salesmen and Dealers – Promotional Strategies - Ethical and Legal issues in Sales Promotion.

Unit-IV: Salesmanship and Sales Operations: Types of Salesman - Prospecting - Pre-approach and Approach - Selling Sequence - Sales budget, Sales territories, Sales Quota's - Point of Sale – Sales Contests - Coupons and Discounts - Free Offers - Showrooms and Exhibitions - Sales Manager Qualities and functions.

Unit-V: Sales force Management and Designing: Recruitment and Selection - Training - Induction - Motivation of sales personnel - Compensation and Evaluation of Sales Personnel - Designing of Events for Enhancing Sales Promotion

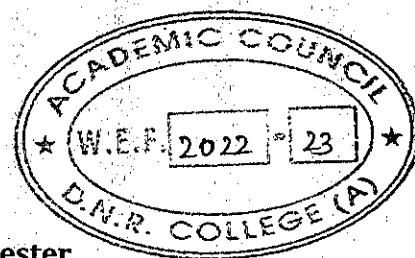

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III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(ACCOUNTING&TAXATION)

Title of the Course: E COMMERCE
(Skill Enhancement Course) (Elective 4 Credits)
2022-2023

SYLLABUS

UNIT 1: Introduction, Nature and Scope

Introduction- Definition –importance- Nature and scope of e commerce-Advantages and limitations- Types of ecommerce – B2B,B2C,C2B,C2C,B2A,C2A- Framework e commerce

UNIT 2:- Environmental and Technical support Aspects

Technical Components- Internet and its component structure-Internet Vs Intranet, Vs Extranet and their differences-Website design- its structure-designing, developing and deploying the system

UNIT 3. –Security and Legal Aspects

Security environment –its preliminaries and precautions-protecting Web server with Firewalls- Importance of Digital Signature –its components – Cyber Law-Relevant Provisions of IT Act 2000.

UNIT 4. - Operational Services of e Commerce

E retailing –features- E Services-Banking, Insurance, Travel, Auctions, Learning, Publication and Entertainment-Payment of utilities (Gas, Current Bill, Petrol Products)- On Line Shopping (Amazon, Flip kart, Snap deal etc.)

UNIT 5.–E Payment System

Types of e payment system- its features-Digital payments (Debit Card/Credit Cards, Internet Banking, Mobile wallets- Digital Apps (unified Payment Services-Phone Pay, Google Pay, BHIM Etc.) Unstructured Supplementary Services Data (Bank Prepaid Card, Mobile banking)

III. References:

1. Bharat Bhaskar , Electronic Commerce Framework, Technology and Application. McGraw Hill Education
2. Bajaj,D.Nag,E Commerce, Tata McGraw Hill Publication
3. Whitely David , E-Commerce, McGraw Hill
4. TN Chhabra ,E Commerce, Dhanapat Rai & Co
5. Dave Chaffey, E Business and E Commerce Management, Pearson Publication
6. Dr.Pratikumar Prajapati, Dr.M.Patel, E Commerce , Redshine


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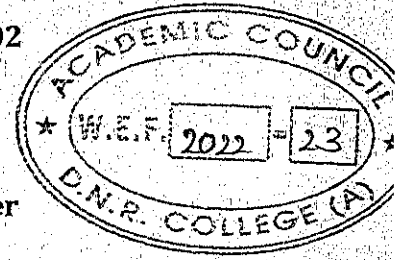
III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(B.Voc A&T)

Title of the Course: E-Filing

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023



SYLLABUS

UNIT 1: Introduction, Nature and Scope

Introduction- Definition –importance and scope of returns--Types of Assesses –under IncomeTax and Goods and Service Tax-Sources of income-

UNIT 2:- Returns filing under Income Tax

Types of Returns- Mode of filing-Manual-Electronic Bureau of Internal Revenue Form (eBIR) Electronic Filing and Electronic and Payment System (eFPS)-for Individuals- ITR1,ITR2,ITR3,ITR4,For Firms and CompaniesITR5,ITR6,ITR7.

UNIT 3:-Penalties and Prosecution under Income Tax

Nonpayment, failure to comply,-Concealment-, Book Audit, Loans-International transactions,TDS

UNIT 4:-Returns filing under Goods Service Tax

GSTR1, GSTR2, GSTR3A, GSTR3B, GSTR4, GSTR5, GSTR6

UNIT 5.-Penalties and Prosecution under GST

Differences between fees and penalty-Types of penalties under section 122 to 138

II. References:

1. Varun Panwar ,Jyothi Mahajan Introduction to efilng returns MKM Publishers
2. Hemachandjain and H.N.Tiwari Computer Application in Business Taxman's Publication
3. SusheelaMadan Computer Application in Business MKM Publishers
4. www.incometaxindiafiling.gov.in
5. www.taxguru.in
6. www.bharatlaws.com
7. www.cbic-gst.gov.in
8. www.taxmann.com

Web resources suggested by the Teacher concerned and the College Librarian including readingmaterial


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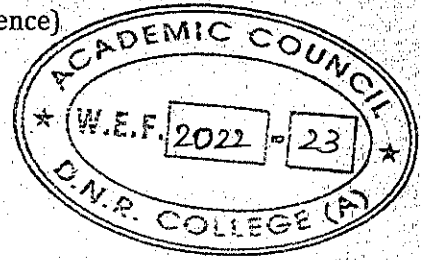
Title of the Programme: **B.Voc (Risk Management)**

Title of the Course: **Risk Management -1**

(Examination at the end of 5th semester)

2022-2023

SYLLABI OF RISK MANAGEMENT -1



SYLLABUS

UNIT-1: Risk Management introduction: Risk Management concept, Risk Management Objectives, Risk Management process, Risk identification, Risk measurement & Evaluation, Risk control, Risk Finance, Role of Insurance, Role of Derivative Instruments.

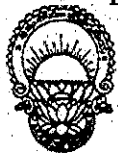
UNIT-2: Management of Pure Risk and Insurance: Pure Risk, Cost of Risk, Objectives of managing Pure Risk, Methods of managing Pure Risk, Assessment of Pure Risks, Identification of Expected Losses, Measurement of Expected Losses

UNIT-3: Risk Retention: Factors determining Retention, Insurance and Value Maximization. Evaluation of Insurance, Kinds of insurance, Principles of Insurance.

UNIT-4: Insurance Industry-Regulation and Development: Insurance Business, Privatization of Insurance Industry, Transformation of Insurance Industry in India, the challenges, Effects of Globalization, Regulatory Framework, Insurance Sector Reforms.

UNIT-5: Insurance Regulatory & Development Authority: Duties and Powers of Insurance Regulatory and Development Authority, Protection of Consumer Interests, Players in the Insurance market, Life Insurers, Non-life Insurers, Dimensions in Insurance Market, Reinsurance, Bancassurance, Alternative Risk Transfer (ART).


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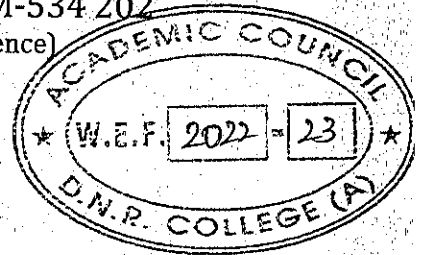
Title of the Programme: **B.Voc (Risk Management)**

Title of the Course: **Risk Management -2**

(Examination at the end of 5th semester)

2022-2023

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Risk Management is an integral part of corporate planning. It envisages a systematic approach for identification, measurement and control of risks faced by an organization. The objective in introducing this course is to meet the requirements of Students of Management Courses who generally wish to acquire an understanding of markets which exist for managing both insurable and non insurable risks.

Unit-1:Pricing and Development of Insurance Products and Claims Management: Insurance Products profile, Insurance products-Life, Marine, Fire, Other Major Insurance Products, Pricing of Insurance Products, Expected Claim costs, Administrative Costs, Investment Income, Profit Loading,

Unit-2:Rating: Rating, New Product Development, Stages in New Product Development, Product Development- The Changing Scenario, Claims Management, Guidelines for Settlement of Claims - Life Insurance, Marine Insurance, Motor Insurance, Miscellaneous Claims.

Unit-3: Introduction to Derivatives: The Derivative Concept, History of Derivatives Market, Functions of Derivatives Market, Risk Management, Price Discovery, Transactional Efficiency, Financial Engineering, Participants in the Derivatives World, Hedgers, Speculators, Arbitrageurs, Intermediary Participants, Institutional and Legal Framework, Derivatives Market in India.

Unit-4:Forwards and Futures: Forwards, Futures, Futures Vs. Forwards, Types of Futures, Social Benefits of Future Markets, Pricing of Futures and Forwards, the Mechanics of Buying and Selling Futures, Hedging Strategies using Futures, Arbitrage Opportunities, Futures Market in India -Recent Developments.

Unit-5:Fundamentals of Options: History of Options, Parties in Options Trading, Players in Options Market, Types of Options, Mechanics of Options, Trading in Options, Margin System, Options Payoffs, Options Prices, Index Options, Currency Options, Interest Rate Options, Options in Futures.


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III B.Com Degree Examination at the end of 5th Semester

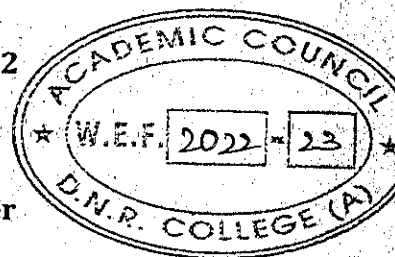
Title of the Programme: B.COM (General, CA)

Title of the Course: Advanced Corporate Accounting

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023

SYLLABUS



Unit-I: Purchase of Business

Meaning - Purchase Consideration - Methods for determining Purchase Consideration- Discharge of Purchase Consideration-Accounting Treatment.

Unit-II: Amalgamation of Companies

Meaning and Objectives-Provisions for Amalgamation of Companies as per Accounting Standard 14- Accounting Treatment.

Unit-III: Internal Reconstruction of Companies

Meaning - Forms of Internal Reconstruction - Alteration of Share Capital and Reduction of Share Capital - Accounting Treatment.

Unit-IV: Accounts of Holding Companies

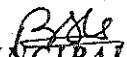
Meaning of Holding Companies and Subsidiary companies- Consolidated Financial Statements- Legal requirements on Consolidation- Calculation of Minority Interest-Accounting Treatment.

Unit-V: Liquidation

Meaning - Modes of Winding up of a Company- Liquidator's Final Statement of Account - Calculation of Liquidator's Remuneration - Preparation of Statement of Affairs and Deficiency Account-Accounting Treatment

References:

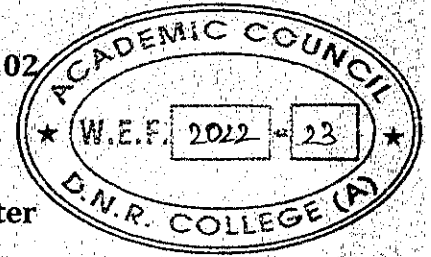
1. Goyal, Bhushan Kumar. Corporate Accounting. Taxmann, New Delhi
2. Kumar, Alok. Corporate Accounting. Kitab Mahal
3. Monga, J.R. Fundamentals of Corporate Accounting. Mayur Paper Backs, New Delhi
4. Sah, Raj Kumar, Concept Building Approach to Corporate Accounting, Cengage
5. Sehgal Ashok & Sehgal Deepak. Corporate Accounting
6. Tulsian P.C. Corporate Accounting. S Chand & Co. New Delhi
7. <https://thebooksee.net/ad/advanced-corporate-accounting-and-accounting-standards>
8. We bresourcessuggested by theTeacher concerned and the College Librarian including reading material


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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.COM(General, CA)
Title of the Course: Software Solutions to Accounting
(Skill Enhancement Course (Elective), 4 Credits)

2022-2023

SYLLABUS

Unit-1:ComputerizedAccounting

Microsoft Excel Spread Sheet-Functions in Excel- Preparation of Accounts, Statements and Budget using MS Excel-Analysis and Interpretation.

Unit-II:IntroductiontoLeadingAccountingSoftwares-Busy-Marg-QuickBooks-ZohoBooks-Tally- Features and Accounting.

Unit-III:TallyERP-9-CompanyCreation-Tally Startup Screen- Gateway of Tally-Create a Company-Alter & Delete company-Backup and Restore-Security Features in Tally.

Unit-IV:Tally-AccountingMasters-Groups-CreateLedgers-Alter&Delete-InventoryMasters- Creating Stock Groups –Stock Items-Unit of Measurement-Alter &Delete.

Unit-V:Tally-Voucher Entry-Vouchers Types -Vouchers Entry-Alter and deleting Settings Purchase Vouchers and Sales Vouchers including Tax component–Reports Generation.

References

1. Nadhani,AshokK,TallyERP 9TrainingGuide,BPBPublishations
2. Tally9 in SimpleSteps, Kogent SolutionsInc.,John Wiley&Sons.
3. Tally9.0 (EnglishEdition), (GoogleeBook)ComputerWorld
4. Tally.ERP 9 MadeSimple BasicFinancial AccountingbyBPBPublisher.
5. TallyERP9For Real TimeAccountingbyAvichiKrishnan.
6. Fundamentalsof Computers, byV. Rajaraman,PHI.
7. TallyERP 9 book advanceduser,Swayam Publication(www.tallyerp9book.com)
8. *WebresourcessuggestedbytheTeacherconcernedandtheCollegeLibrarianincludingreading material*


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III B.Com Degree Examination at the end of 5th Semester

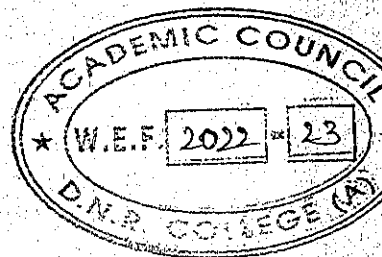
Title of the Programme: B.COM(General, CA)

Title of the Course: Stock Markets

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023

SYLLABUS



UNIT1:Introduction,Nature,Scope and basics of stock market

Introduction of Investments-Need of Investment-Short and Long Term investment- Money market Vs Capital Market-Primary Market-Secondary Market-Depositories-Buy Back Shares-Forward Contract and Future Contract- Types of Investors- Speculators, Hedgers, Arbitraders.

UNIT2:Capital Markets

Definition-Participants of Capital Market Participants-Primary Market issues of Equity Shares and Preference Shares and Debentures its types Mutual Funds –Secondary Market- /Stock Exchange-National Stock Exchange of India-Over the Counter Exchange of India –Qualified Individual/Institutional Buyers-Under writers.

UNIT3.-FinancialIntermediaries

Depositories- -Buy Back of Shares-- Forward Contract and Future Contract- differences – Participants in Future Contract-Clearing of Mechanism.

UNIT4.Stock Indices

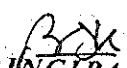
Index and itstypes-SENSEX-CalculationMethodology-TypesofClearingMembers.

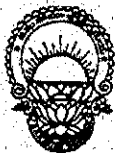
UNIT5.-RegulatoryMechanism

Security and Exchange Board of India (SEBI)-Powers, functions,-Over The Counter Exchange(OTCE)of India-Functions and Mechanism.

References:

1. I.M.Pandey.,Financial Management,VikasPublishingHouse
2. PrasannaChandra,FincialManagementTaTaMcGrawHill
3. Bhole.L.M. FinancialMarketsandInstitutions,TataMcGrawHillPublishingHouse
4. KhanMY,JainPK,FinancialManagement,TataMcGrawHill
5. KishoreRavi.M.,FinancialManagement,TaxmanPublication
6. *Web resources suggested by the Teacher concerned and the College Librarian includingreading material*

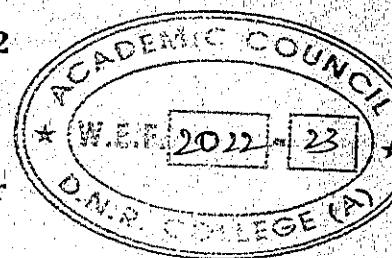

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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.COM (General, CA)
Title of the Course: Stock Markets Analysis
(Skill Enhancement Course (Elective), 4 Credits)

2022-2023

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UNIT 1: Introduction, Nature, Scope and basics of stock market

analysis Introduction of Investments-Need of Security Analysis-Types of analysis-
Fundamental Analysis, Technical Analysis, Quantity Analysis.

UNIT 2: Fundamental Analysis-Based on Company's Records and Performance-EPS Ratio-
Price to Sales Ratio-P/Earnings Ratio, P/Equity Ratio, ROID/P Ratio- Intrinsic Value-

UNIT 3. -Technical Analysis- Based on Share Price Movement and Market Trends-
Bullish Pattern-Bearish pattern

UNIT 4-

Quantity Analysis: Based on data for special Research purpose (Descriptive, Correlation,
Comparative and Experimental) by preparing questionnaire, observation, focus groups and interviews
-Dow Theory

UNIT 5.-Mutual Funds

Importance and the role of Mutual Fund -Types of Mutual Funds-Variety of schemes in India-
Growth Fund, Income Fund, Growth and Income Fund, Tax planning schemes, other categories,
Asset Management Mutual Funds-its method of analysis's

References:

1. Khan.M.Y.Financial Management, Vikas Publishing House
2. Bhole.L.M.Financial Markets and Institutions, Tata McGraw Hill Publishing House
3. Prasanna Chandra, Investment Analysis and Portfolio Management, Tata McGraw Hill
4. Damodharan Aswath, Valuation: Security Analysis for
Investment and corporate Finance., John Wiley, New York
5. Francis.J.C., Investment Analysis and Management, Tata McGraw Hill
- 6 Web resources suggested by the Teacher concerned and the College Librarian including reading material


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III B.Com Degree Examination at the end of 5th Semester

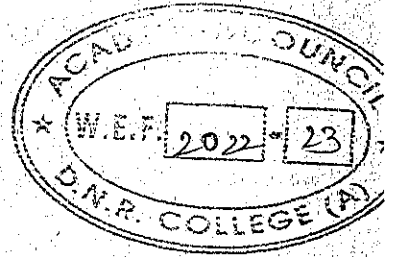
Title of the Programme: B.COM(General, CA)

Title of the Course: Logistics Services and Practice

(Skill Enhancement Course (Elective), 4 Credits)

2022-2023

SYLLABUS



UNIT1: Introduction

Logistics - meaning - Principles of Logistics-Technology & Logistics - Informatics.
Warehouse-Meaning - Types -Benefits of Warehousing. Transportation-Meaning -Types -
Benefits. Courier/Express-Meaning-Courier Guidelines- Pricing in Courier- Express Sector for
international and domestic shipping-Reverse logistics in e-commerce sector.

UNIT2:GlobalLogistics

Global SupplyChain-OrganizingforGlobalLogistics-StrategicIssuesinGlobalLogistics
-Forces driving Globalization- Modes of Transportation in Global Logistics Barriers to Global Logistics-
Markets and Competition-Financial Issues in Logistics Performance.

UNIT3:Inventory

Need of Inventory-Types of Inventories-Basic EOQ Model-Classification of material -
ABC Analysis-VED,HML,-
MaterialRequirementPlanning(MRP)-meaningandAdvantagesMaterialshhandlingand storage systems-
Principles of Materials Handling.

UNIT4:Warehousing&Distribution Operations

Need for Warehouse - Importance of warehouse- Stages involved receipt of goods- Advanced
shipment notice (ASN)-Warehouse Activities- receiving, sorting, loading,
unloading,Picking,Packingand dispatch -safety rules and Procedures tobe observed in a
Warehouse.

Unit5:RetailLogisticsandSupplyChain Management

Concepts of Retail Logistics and supply chain- Supply chain efficiency-Fundamentals of Supply
Chain and Importance - SCM concepts and Definitions - Supply chain strategy- StrategicDrivers
of Supply Chain Performance - key decision areas- External Drivers of Change.

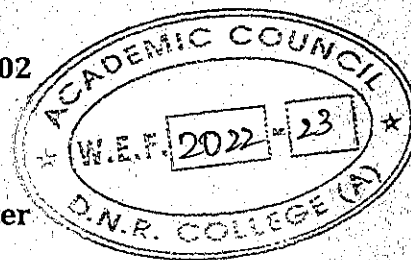
References

1. VinodVSople(2009) LogisticManagement(2ndEdn.)Pearson Limited.
2. Logistics Management for International Business: Text and Cases,
Sudalaimuthu&AnthonyRaj, PHILearning,First Edition, 2009.
3. FundamentalsofLogisticsManagement(TheIrwin/McGraw-HillSeriesinMarketing),Doug
las Lambert,JamesRStock, LisaM.Ellram,McGraw-hill/Irwin,FirstEdition,1998.
4. Fundamentalsof
LogisticsManagement,DavidGrant,DouglasM.Lambert,JamesR.Stock, Lisa M.
Ellram,McGrawHill HigherEducation, 1997.
5. LogisticsManagement, IsmailReji,ExcelBook,FirstEdition,2008


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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.COM(General, CA)
Title of the Course: EXIM Procedure and Practice
2022-2023



SYLLABUS

UNIT1: Introduction of EXIM policies and procedures

Objectives of EXIM policies- Role of export houses in the development of Economy- State Trading Corporations and SEZs- Flow of Procedure for export and import process.

UNIT2: Product planning and for import and export

Export Promotion Councils in India and Commodities Board of India- Its functions and their role
- Registration cum Membership Certificate (RCMC) and registration of Export Credit and Guarantee Corporation of India (ECGC)

UNIT3: Documentation at the time of EXIM goods

Commercial documents- Principal and Auxiliary documents - Regulatory documents (relating to Goods, Shipment, Payment, Inspection, Payment, Excisable and FERA)

UNIT4: Payment Procedures in foreign trade

Factors determining for Payment and methods of Receiving Amount- Payment in advance- Documentary Bills- Documentary credit under Letter of Credit- Different types of Letters of Credit - Open account with periodical settlement.

UNIT5: Insurance and Shipment of Goods

Cargo Insurance (Marine)- Types of Marine insurance policies- Kinds of losses - Shipment of goods- Clearing and forwarding agents- its role and significance- Classification of services Essential and Optional services-clearance procedures for export of goods.

References

1. Rama Gopal.C; Export and Import Procedure- New Age International Publishers
2. Neelam Arora, Export and Import Procedure and documentation- Himalaya Publishing House
3. Dr. Swapna Pilai, Export and Import Procedure & documentation- Sahitya Bhawan Publications
4. Sudhir Kochhar, Export and Import Procedure- Aggarwal Bookhouse
5. Web resources suggested by the Teacher concerned and the College Librarian including reading material

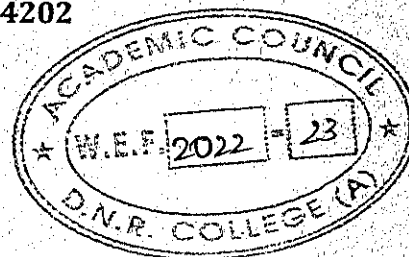

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III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(ACCOUNTING&TAXATION)

Title of the Course: E COMMERCE
(Skill Enhancement Course) (Elective 4 Credits)
2022-2023

SYLLABUS

UNIT 1: Introduction, Nature and Scope

Introduction- Definition –importance- Nature and scope of e commerce-Advantages and limitations- Types of ecommerce – B2B,B2C,C2B,C2C,B2A,C2A- Framework e commerce

UNIT 2:- Environmental and Technical support Aspects

Technical Components- Internet and its component structure-Internet Vs Intranet, Vs Extranet and their differences-Website design- its structure-designing, developing and deploying the system

UNIT 3. –Security and Legal Aspects

Security environment –its preliminaries and precautions-protecting Web server with Firewalls-Importance of Digital Signature –its components – Cyber Law-Relevant Provisions of IT Act 2000.

UNIT 4. - Operational Services of e Commerce

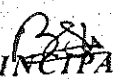
E retailing –features- E Services-Banking, Insurance, Travel, Auctions, Learning, Publication and Entertainment-Payment of utilities (Gas, Current Bill, Petrol Products)- On Line Shopping (Amazon, Flip kart, Snap deal etc.)

UNIT 5.–E Payment System

Types of e payment system- its features-Digital payments (Debit Card/Credit Cards, Internet Banking, Mobile wallets- Digital Apps (unified Payment Services-Phone Pay, Google Pay, BHIM Etc.) Unstructured Supplementary Services Data (Bank Prepaid Card, Mobile banking)

III. References:

1. Bharat Bhaskar , Electronic Commerce Framework, Technology and Application. McGraw Hill Education
2. Bajaj,D.Nag,E Commerce, Tata McGraw Hill Publication
3. Whitely David , E-Commerce, McGraw Hill
4. TN Chhabra ,E Commerce, Dhanapat Rai & Co
5. Dave Chaffey, E Business and E Commerce Management, Pearson Publication
6. Dr.Pratikumar Prajapati, Dr.M.Patel, E Commerce , Redshine


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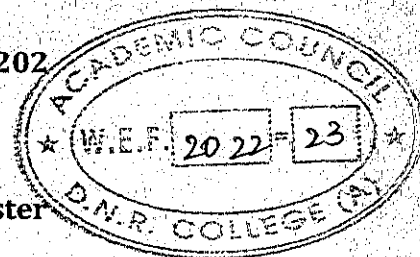
III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, CA)

Title of the Course: Real Time Governance System (RTGS)

2022-2023

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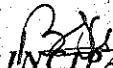


UNIT 1: Introduction to E-Governance

- Government, Governance and Good Governance
- What is E-Governance or Electronic Governance?
- E-Government and E-Governance: A conceptual Analysis
 - ❖ Objectives
 - ❖ Components
 - ❖ application domains
 - ❖ four phase model
 - ❖ implementing E-Governance
 - ❖ issues while implementing E-Governance
 - ❖ Opportunities and challenges
- Types of E-Governance
- What is Real-Time Governance (RTG)
- Real Time Governance Society (RTGS)

UNIT 2: E-Governance Infrastructure

- Data Systems infrastructure
 - ❖ Executive Information Systems
 - ❖ Management Information Systems
 - ❖ Knowledge Management Systems
 - ❖ Transaction Processing Systems
- Legal Infrastructural preparedness
 - ❖ IT Act 2000
 - ❖ Challenges to Indian law and cybercrime scenario in India
 - ❖ Amendments of the Indian IT Act
- Institutional Infrastructural preparedness
 - ❖ Internet
 - ❖ intranet
 - ❖ extranet
- Human Infrastructural preparedness
 - ❖ Top-level management
 - ❖ Middle-level management
 - ❖ Low-level management


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- Technological Infrastructural preparedness
- ❖ Information and communications technology
- ❖ Data Warehousing
- ❖ Cloud Computing

UNIT 3: E-Governance: Country Experience

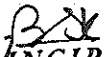
- INDIA
- US
- UK
- AUSTRALIA
- DUBAI

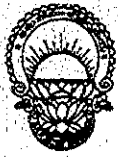
UNIT 4: E-Governance in India

- Andhra Pradesh
- Karnataka
- Kerala
- Uttar Pradesh
- Madhya Pradesh
- West Bengal
- Gujarat

UNIT 5: Latest Applications in Real Time Governance

- Agriculture
- Rural Development
- Health care
- Education
- Tourism
- Commerce and Trade


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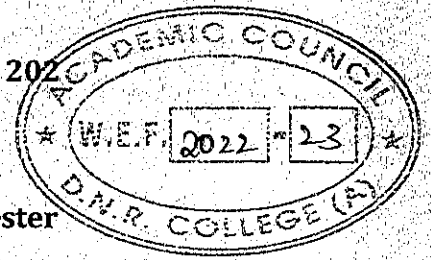
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III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General, CA)

Title of the Course: Digital Imaging

2022-2023



UNIT-I

1. Types of Graphics
Raster v/s Vector
Graphics
2. Types of Objects
Audio formats
Video formats
Image formats
Text document formats
3. Types of video editing
4. Different color modes.
5. Image Scanner
Types of Image Scanners

UNIT-II

1. What is GIMP?
2. GIMP tool box window
3. Layers Dialog
4. Tool Options Dialog
5. Image window
6. Image window menus

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UNIT-III

Improving Digital Photos

- Opening files
- Rescaling saving files
- Cropping
- Brightening & Darkening
- Rotating
- Sharpening

Introduction to layers

- 2. What is layer?
- Using layer to add text
- Using move tool
- Changing colors
- Simple effects on layers
- 2.5 Performing operations on layers
- 2.7 Using layers to copy and paste

UNIT-IV

Drawing:

- Drawing lines and curves
- Changing colors and brushes
- Erasing
- Drawing rectangles, Circles and other shapes
- Outlining and filling regions
- Filling with patterns and gradients

Selection:

- Working with selections
- Select by color and fuzzy
- Select Bezier paths
- 2.5 Modifying selections with selection modes

UNIT-V

Erasing and Touching Up:

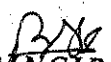
- 1.1 Dodge and burn tool
- Clone tool
- Sharpening using convolve tool
- Correcting Color Balance

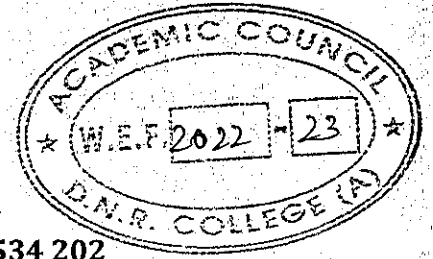
Filters:

- Filters
- Blur
- Enhance
- Noise Filters

References:

Textbook: Beginning GIMP from Novice to professional by Akkana Peck,
Second Edition, A press


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III B.Com Degree Examination at the end of 5th Semester

Title of the Programme: B.COM(General)

Title of the Course: Income Tax Procedure and Practice

2022-2023

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Unit-I: Computation of Total Income and Tax Liability

Computation of Total Income and Tax Liability of Individuals-Firms and Companies-

Procedure for Assessment including Problems in calculation of tax for firms & Companies

Unit-II: Clubbing of Income-Set off of Losses

Meaning of clubbing of income- Different items come under the provisions of clubbing of income

Meaning of set-off of losses and carry-forward and set-off of losses - Types of set-off - Intra-set off and Inter-set off

Unit-III : Tax Payment-Penalties

Advance Payment of Tax - Persons liable to pay Advance Tax - Procedure for Computation of Advance Tax - Due Dates for the Payment of Advance Tax - Consequences of Non-payment of Advance Tax-Refund of tax, interest on refund-Appeals and Revisions

Unit-IV: Returns Filing

Procedure for Assessment - Filing of Return - Prescribed Forms for filing of Returns - PAN & TAN-On-line filing of Returns-26 AS -Traces.

Unit-V: TDS & TCS and Filing

TDS-TCS-Provisions in brief relating to TDS/TCS-Schedule for deposit & Submission of Returns of TDS-Form-16 generation.

References:

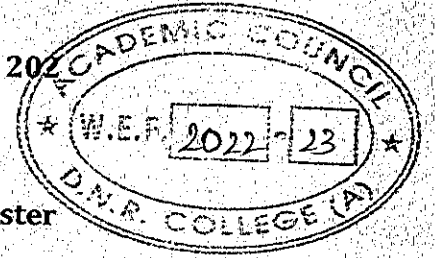
1. Systematic Approach to Income Tax, Girish Ahuja & Ravi Gupta, Bharat Law House Pvt. Ltd, New Delhi.
2. Income Tax, Vinod K. Sinhanian & Monica Sinhanian, Taxmann Publications Pvt. Ltd, New Delhi.
3. Taxation Law & Practice, Mehtrotra & Goyal, Sahitya Bhavan Publications, Agra.
4. E.A. Srinivas, Corporate Tax Planning, Tata McGraw Hill.
5. Vinod K. Sinhanian, Taxman's Direct Taxes Planning and Management.
6. Bhagawati Prasad, Direct Taxes Laws Practice, Vishwa Prakashan.
7. <https://incometaxindia.gov.in>
8. Web resource suggested by the Teacher concerned and the College Librarian including reading material


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(Accredited by NAAC at "B++" grade)
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III B.Com Degree Examination at the end of 5th Semester
Title of the Programme: B.COM(General)
Title of the Course: GST Procedure and Practice
2022-2023



SYLLABUS

Unit-I: GST-Liability and Payment

Output tax liability - Input tax credit utilization-- Schedule for payment of GST-
Interest/penalty for late/non-filing of return-Payment of GST-GST Network

Unit-II: GST-Accounting Masters and Inventory Masters in Tally

Company Creation- General Ledgers & GST Ledgers Creation - Stock Groups , Stock Items
and Unit of Measure-GST Rate Allocation to Stocks

Unit-III: GST Voucher Entry

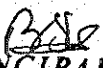
GST Vouchers - Customizing the Existing Voucher types with applicable GST Rates - Mapping
of Input Tax Credit on Purchase Vouchers - Output Tax on Sales Vouchers- Purchase and Sales
Voucher Entries with Single Rated GST and Multiple Rated GST Goods.

Unit-IV: GST Returns

Regular Monthly returns and Annual Return- Returns for Composition Scheme- Generation
of Returns-GSTR-1, GSTR-2, GSTR-3, GSTR-4, GSTR-9, GSTR-3B

Unit-V: Payment of GST online

Payment of GST-Electronic Filing of GST Returns-Refunds-Penalties-Administrative structure of GST
Officers-Powers-Jurisdiction.


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DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture

Semester-I

Paper- AQC 101- TOOLS AND TECHNIQUES FOR BIOLOGY

Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

Unit-I

- 1.1. Assay- Definition, Biological & Chemical assay.
- 1.2. Microscopy- Principles and applications of light, dark field, phase contrast, fluorescence, transmission, electron, scanning electron microscopes.
- 1.3. Different fixation and staining techniques for EM. Freeze-etch, freeze-fracture methods for EM, Image processing methods in microscopy.
- 1.4. pH meter: Operation of pH electrodes, Principles and applications of Ion-selective and gas sensing electrodes, Oxygen electrodes

Unit-II

- 2.1. Centrifugation -Basic principles of centrifugation, types of centrifuges, applications of preparative and analytical ultra-centrifuges.
- 2.2. Principles and applications of sedimentation, lyophilization.
- 2.3. Chromatography: Principles and applications of gel-filtration, ion-exchange and affinity chromatography; TLC, GC & HPLC

Unit-III

- 3.1. Properties of electromagnetic radiations; Principles, instrumentation and applications of UV, visible, infrared, NMR spectroscopy; Spectrofluorimetry and mass spectrometry.
- 3.2. X-ray diffraction, Incorporation of radio-isotopes in biological tissues and cells.
- 3.3. Radiolabeling techniques: Detection and measurement of different types of radio-isotopes used in biology, Molecular imaging of radio-active material, safety guidelines.

Unit-IV

- 4.1. Micro-biological Techniques: Media preparation & sterilization, Inoculation & Growth monitoring,
- 4.2. Biochemical Mutants & their uses, Microbial assays.

References

1. Introduction to Instrumental Analysis. Robert Braun. McGraw Hill International Editions
2. A Biologist Guide to Principles and Techniques of Practical Biochemistry. K. Wilson & K.H. Goulding, ELBS Edn.

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DNR (A) College, PG Courses Bhimavaram

M.Sc-Aquaculture

Semester-I

Paper- AQC 102 - BIOSYSTEMATICS, BIODIVERSITY AND EVOLUTION

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week - 4

Credits-4

Max.Marks-100

UNIT - I

- 1.1.Biosystematics- Definition and basic concepts. Importance and applications of biosystematics.Material Basis of Biosystematics.
- 1.2.Biological classification-Theories and objectives. Procedures in taxonomy - Taxonomic collections. taxonomic keys.
- 1.3.Types of taxonomy- Conventional types, Cytotaxonmy. Chemotaxonomy and Molecular taxonomy. Concept of Zoological Nomenclature.

UNIT - II

- 2.1 .Origin of basic biological molecules. Abiotic synthesis of organic monomers and polymers. Concept of Oparin and Haldane. Experiment of Miller. Evolutionary time scale – Eras,Periods and epochs.
- 2.2. Origin and diversification of eukaryotes - Origin of cells and firstorganisms. Evolution of eukaryotic cell from prokaryotes. Evolution of eukaryotic genomes. duplication and divergence.
- 2.3 .Molecular divergences, molecular clocks and molecular drive.Phylogenetics- Molecular tools in phylogeny.

UNIT - III

- 3.1.Universal common ancestor and tree of life – three domain concepts of living kingdom. hierarchical components of bio-diversity. Evolutionary relationships among taxa. Concepts ofspecies.
- 3.2.Species category, subspecies and other infraspecific categories. Hierarchy of categories.
- 3.3.Speciation- Genetics of speciation, modes of speciation, Patterns and mechanisms of reproductive isolation. Allopatry, sympatry, Convergent evolution, Sexual selection, Co- evolution.

UNIT - IV

- 4.1Concepts of evolution – An overview of evolutionary biology, & theories of organic evolution. Concepts of Neutral Evolution.
- 4.2.Population genetics- Populations, gene pool, Gene frequency; Hardy Weinberg law. Concepts and rate of change in gene frequency through Natural selection, mutation, migration and random genetic drift. Phylogenetic gradualism , punctuated equilibrium and origin of higher categories

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DNR (A) College, PG Courses Bhimavaram

M.Sc-Aquaculture

Semester-I

Paper- AQC 103- BIOMOLECULES

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

UNIT - I

- 1.1 .Chemical foundations of biology, Amino acids – classification, Peptide bond,
- 1.2 .Proteins – classification, structural organization of proteins, primary structure, secondary structure, tertiary structure, quaternary structure,
- 1.3.Conformation of proteins (Ramachandran plot) - domains, motifs and folds.
Denaturation & renaturation of proteins.

UNIT - II

- 2.1.Carbohydrates: Definition and classification of carbohydrates, nomenclature,
- 2.2.Reaction of Mono-saccharides, Acid derivatives of Mono-saccharides, amino-sugars, Oligo-saccharides, structure and properties.
- 2.3.Chemistry and biological roles of homo and hetero-polysaccharides, peptidoglycan, glycosaminoglycans, glycoproteins and other glycoconjugates.

UNIT - III

- 3.1.Classification of Lipids & Fatty acids and their physicochemical properties,
- 3.2.characterization of fats and oil.
- 3.3.Structure, properties and biological roles of triacylglycerol, phospholipids, sphingolipids, Gangliosides, Prostaglandins, Thromboxanes, Leukotrienes and steroids.

UNIT - IV

- 4.1.Nucleic acids – nitrogen bases, nucleosides, nucleotides, physicochemical properties of nucleic acids, cleavage of nucleic acids by enzymatic and non-enzymatic methods.
- 4.2. Chemical synthesis of DNA; Nucleic acid sequencing, chromatin structure, Three dimensional structure of DNA; DNA denaturation and renaturation.
- 4.3. Types of RNA, Structure of RNAs – Secondary and Tertiary structure.

References

1. Nelson.D.L, Cox. M. M. Lehninger's Principle of Biochemistry. Freeman.
2. Murray. R.K, Granner.D.K, Mayes. P. A, Rodwell. V. W. Harper's Biochemistry, McGraw Hill.
3. Fundamentals of Biochemistry by Donald Voet.
4. Textbook of Biochemistry West, E.S., Todd, Mason & Vanbruggen, Macmillan & Co.
5. Biochemistry, Lubert Stryer.

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DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture

Semester-I

Paper- AQC 104- Molecular Cell biology

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

UNIT – I-Introduction

1. Experimental system in Cell Biology, Biomembranes-Molecular composition and arrangement, functional consequences
- 1.2. Transport across cell membrane: diffusion, active transport, pumps, uniports, symports and antiports.
- 1.3. Membrane potential, Co-transport by symporters or antiporters,
- 1.4. Transport across epithelia: Transport of macromolecules

UNIT – II-Cytoskeleton

- 2.1. Microfilaments and microtubules – structure and dynamics, Microtubules and Mitosis
- 2.2. Cilia and flagella
- 2.3. Cell movements – intracellular transport, role of kinesin and dynein, signal transduction mechanisms

UNIT – III Cell-Cell Signaling

- 3.1. Cell surface receptors, Second messenger system, MAP kinase pathways
- 3.2. Apoptosis: Definition, mechanism and significance of Cell-Cell adhesion and communication.
- 3.3. Ca^{++} dependent homophilic cell-cell adhesion, Ca^{++} independent homophilic adhesion, Gap junctions and connections, Integrins, Collagen.

UNIT – IV Cell cycle

- 4.1. Cyclins and cyclin dependent kinases Regulation of CDK-cyclin activity
- 4.2. Genome organization-Hierarchy in organization Chromosomal organization of genes and non-coding DNA Mobile DNA Morphological and functional elements of eukaryotic chromosomes
- 4.3. Intracellular protein traffic, Protein synthesis on free and bound polysomes, Uptake into ER.
- 4.4. Membrane proteins, Golgi sorting, post-translational modifications, Biogenesis of Mitochondria Trafficking mechanism.

References

1. Molecular Cell Biology, J. Darnell. H. Lodish and D. Baltimore, Scientific American Book INC, USA.
2. Molecular Biology of the Cell, B. Alberts, D. Bray, J. Lewis, M. Raff, K. Roberts and J.D. Watson Garland Publishing INC, New York.

DNR(A) College, PG Courses Bhimavaram
M.Sc-Aquaculture
Semester-I Practical Syllabus (w.ef.2022-23Admitted batch)
Paper- AQC 105- TOOLS AND TECHNIQUES FOR BIOLOGY

Hours per week- 3

credits -2

Max.Marks-50

1. Spectrophotometer – Estimation of biomolecules
2. Centrifugation – Demonstration and working
3. Separation Techniques - Paper chromatography
4. Electrophoresis – Demonstration and usage
5. pH Meter – Preparation of Phosphate buffer Preparation
6. Microscope –
 - a. Demonstration of oil immersion – WBC & RBC
 - b. Preparation of tissue for SEM & TEM procedure

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DNR(A) College, PG Courses Bhimavaram
M.Sc-Aquaculture Semester -I
Practical Syllabus (w.ef.2022-23 Admitted Batch)
Paper- AQC 106 -Biosystematics, Biodiversity and Evolution

Hours per week-3

credits -2

Max.marks-50

1. Invertebrate and Vertebrate Phyla-Some important specimens display
2. Types of Speciation-Models/Charts
3. Problems on Hardy-Weinberg law
4. Random genetic drift causing change in gene frequency-Practical demonstration.

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DNR(A) College, PG Courses Bhimavaram
M.Sc-Aquaculture Semester -I
Practical Syllabus (w.ef.2022-23 admitted Batch)
Paper- AQC- 107 Biomolecules

Hours per week-3

credits -2

Max.Marks-50

1. Estimation of glycine by formal titration
2. Estimation of proteins by Lowry and Biurett methods
3. Analysis and identification of monosaccharides
4. Estimation of maltose by DNS method
5. Determination of Iodine value of oils
6. Estimation of Cholesterol
7. TLC of Amino acids

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DNR (A) College, PG Courses Bhimavaram
M.Sc-Aquaculture Semester -I
Practical Syllabus (w.ef.2022-23 Admitted batch)
Paper- AQC 108- Molecular Cell Biology

Hours per week-3

credits -2

Max.marks-50

1. Light microscopic examination of tissues
2. Preparation of different cell-types Hepatoparenchymacells, adipocytes, macrophages, neuronal cells, epithelial cells
3. Squash preparation- Stages of Mitosis and Meiosis
4. Sub-cellular fractionation – separation of macromolecules
5. Isolation of genomic DNA

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DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture Semester -II

Practical Syllabus (w.ef.2022-23)

Paper- AQC 205- Biostatistics and Bioinformatics

Hours per week -3

credits -2

Max.marks-50

1. Sampling and Frequency distribution
2. Graphical presentation of the data
3. Measures of Central Tendency – Mean, median and mode
4. Measures of Dispersion – Standard deviation and Coefficient of variation
5. Correlation and Regression
6. Nucleic acid and protein databases.
7. Retrieval and analysis of DNA or protein sequence from NCBI
8. Sequence Alignment in excel sheet for data processing.

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DNR (A) College, PG Courses Bhimavaram

M.Sc- Aquaculture Semester-II

Paper- AQC 202- Animal Physiology

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

UNIT - I

- 1.1.Muscle-** Molecular Structure and properties of Muscle and muscle contraction, Sliding filament theory
- 1.2.Blood and Circulation** – Blood corpuscles, haemopoiesis and formed elements, plasma function, blood volume, blood volume regulation, Blood groups, Haemoglobin, immunity, haemostasis, factors affecting blood coagulation
- 1.3. Nervous system** - Neurons, action potential, gross neuro anatomy of the brain and spinal cord, central and peripheral nervous system, neural control of muscle tone and posture, Nerve impulses, Synaptic transmission & Neurotransmitters

UNIT - II

- 2.1.Thermoregulation-** Comfort zone, body temperature- Physical, chemical, neural regulation, acclimatization.
- 2.2.Osmoregulation-** In aquatic and terrestrial Environments mechanism of ionic regulation
- 2.3.Stress Physiology:-** Responses to biotic and abiotic factors: Light, temperature, Salts
- 2.4. 4.3. Role of Yoga and meditation on Health**

UNIT – III

- 3.1.Digestion:** absorption, energy balance of BMR
- 3.2.Respiratory system** - comparison of respiration in different species, anatomical considerations, transport of gases, exchange of gases, waste elimination, neural and chemical regulation of respiration.
- 3.3.Excretory System :** Comparative physiology of excretion, Kidney, Urine formation, Urine concentration, waste elimination, micturition, regulation of water balance, blood volume, blood pressure, electrolyte balance, acid-base balance.
- 3.4.Cardiovascular System:** Comparative anatomy of heart structure, myogenic heart, specialized tissue ECG - its principle and significance, heart as a pump, blood pressure.

UNIT - IV

- 4.1. **Sensory physiology:** Photoreceptors, Auditory, Chemoreceptor, Mechanoreceptors
4.2. **Physiological Adaptation:** Marine environment, shores, Estuaries, Fresh water and Terrestrial environment
4.3. **Endocrine system-** Brief account of structural features of Endocrine glands, Hormonal effects and regulation-basic concepts and methods (**Additional Input**).

References

- 1) Eckert, R. Animal Physiology: Mechanisms and adaptation, W. H. Freeman and Company, New York
- 2) Hochackka, P. W. and Somero, G. N. Biochemical adaptation, Princeton, N. J.
- 3) Hoar, W. S. General and comparative Animal physiology prentice Hall of India.
- 4) Schimdt Neisen, Animal physiology, Adaptation and Environment, Cambridge.
- 5) Stamd, F. L. Physiology: A regulatory systems approach, Macmillan publishing Co., New York.
- 6) Punmer, L. Practical Biochemistry, Tata McGraw-Hill.
- 7) Prosser, C. L. and Brown. Comparative Animal physiology.
- 8) Wilson, K. and Walker, j. Practical Biochemistry.

Guidelines to Paper Setter

1. Part – I Essay type questions.

Each question carries **15** marks.

4x15=60 M

FOUR questions are to be given at the rate of **TWO** internal choice questions from each unit (Total Four units) and student has to answer **ALL**.

2. Part – II Paragraph type questions.

Each question carries **Three** marks.

5x3=15 M

EIGHT questions are to be given and student has to answer any **FIVE**

3. Other information

Duration of examination - 3 hrs.

Maximum Marks - 75 M

Blue Print

Questions	Unit-I	Unit-II	Unit-III	Unit-IV
Essay Questions (1-4)	A or B	A or B	A or B	A or B
Short Answer questions (5-12)	02	02	02	02

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DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture Semester-II

Paper- AQC 203- Immunology

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

UNIT - I

- 1.1.Immunity**-innate and acquired, innate immune mechanisms, acute phase reactants, properties of acquired immunity
- 1.2.Immunogens and antigens**- Properties, factors governing immunogenicity, haptens, epitopes size and identification. Adjuvants- properties and mechanism of action.
- 1.3.Immunoglobulins**- structure, isotypes, allotypes and idiotypes. Functions of antibody in relation to structure

UNIT - II

- 2.1.Antigen-antibody interactions**- affinity of antibody, avidity, bonus effect, classical precipitin reaction, antigen-binding site of antibody, forces involved in antigen - antibody complex formation.
- 2.2.Lymphoid tissue**- primary and secondary lymphoid organs, structure and cellular organization. Lymphocyte traffic.
- 2.3.Cells involved in the immune response**- T cells, B cells, CD antigens, neutrophils, eosinophils and natural killer cells.
- 2.4.Antigen presentation** - pathways of antigen processing and presentation of intracellular and extracellular antigens.

UNIT - III

- 3.1.Antibody response** - Primary and secondary antibody response, antibody response to haptens, enumeration of antibody-forming cells, T- dependent and T-independent antigens.
- 3.2.Macrophage**- role in immune response and activation.
- 3.3.Cell mediated immunity**- helper, cytotoxic, suppressor T cells. *In vivo* and *in vitro* assays for assessment of cell mediated immunity
- 3.4.Complement**- classical and alternative pathways of activation. Regulation of complement activation and functions.
- 3.5.Antigen receptors** -On T and B cells. Generation of receptor diversity.

UNIT - IV

- 4.1.Development of immune system**- T cell ontogeny in thymus, thymic hormones, cell development.
- 4.2.Immunological tolerance** - pathways of tolerance and mechanisms of

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DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture Semester-II

Paper- AQC 204- Molecular Biology

Theory Syllabus (w.e.f. 2022-2023 admitted Batch)

Hours per week- 4

Credits-4

Max.Marks-100

UNIT - I

- 1.1. History and scope of Molecular Biology, DNA Structure and Replication
- 1.2. Prokaryotic and Eukaryotic DNA Replication Mechanics of DNA Replication
- 1.3. Enzymes and accessory proteins involved in DNA Replication

UNIT - II

- 2.1. Transcription, Prokaryotic Transcription Eukaryotic Transcription, RNA Polymerases
- 2.2. Post-transcriptional modifications in RNA Cap formation
- 2.3. Transcription Nuclear Export of m-RNA

UNIT - III

- 3.1. Translation, Genetic Code, Prokaryotic and eukaryotic Translation
- 3.2. Mechanisms of initiation, elongation and termination, Regulation of translation
- 3.3. Antisense and Ribozyme technology
- 3.4. Molecular mechanisms of antisense molecules, Inhibition of splicing, polyadenylation and translation.

UNIT - IV

- 4.1. Recombination and Repair, Holiday junction, gene targeting and gene disruption RecA and other Recombinases
- 4.2. DNA repair mechanisms, Molecular mapping of genome
- 4.3. Genetic and physical maps, Physical mapping and map-based cloning
- 4.4. Southern fluorescence insitu hybridization (FISH) for genome analysis

References

- 1. J.D. Watson, N.H. Hopkins, J.W. Roberts, J.A. Steitz and A.M. Weiner. Molecular biology of Gene. The Benjamin/Cummings Pub. Co. Inc., California.
- 2. Alberts, B., D. Bray, J. Lewis, M. Raff, K. Roberts and J.D. Watson.
- 3. Meyers, R.A. (Eds.) Molecular Biology and Biotechnology : A comprehensive desk reference. VCH Publishers Inc., New York.
- 4. Sambrook, J., E.F. Fritch and T. Maniatis. Molecular cloning : A Laboratory Manual. Cold Spring Harbor Laboratory Press, New York.
- 5. Brown, T.a. (Eds.). Molecular Biology Lab Fax. Bios Scientific Publishers Ltd., Oxford.

DNR(A) College, PG Courses Bhimavaram

M.Sc-Aquaculture Semester -II

Practical Syllabus (w.ef.2022-23)

Paper- AQC 205- Biostatistics and Bioinformatics

Hours per week -3

credits -2

Max.marks-50

1. Sampling and Frequency distribution
2. Graphical presentation of the data
3. Measures of Central Tendency – Mean, median and mode
4. Measures of Dispersion – Standard deviation and Coefficient of variation
5. Correlation and Regression
6. Nucleic acid and protein databases.
7. Retrieval and analysis of DNA or protein sequence from NCBI
8. Sequence Alignment in excel sheet for data processing.

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DNR(A) College, PG Courses Bhimavaram
M.Sc-Aquaculture Semester -II
Practical Syllabus (w.ef.2022-23 Admitted Batch)
Paper- AQC 206- Animal Physiology

Hours per week-3

credits -2

Max.marks-50

- 1.Digestive enzymes
- 2.Effect of body size vs oxygen consumption
- 3.Oxygen consumption vs temperature
4. Osmotic regulation
5. Ion concentration measurements
6. Spotters
 - a. Dissection- Pituitary gland of fish
 - b. Dissection- Nervous system of prawn

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DNR(A) College, PG Courses Bhimavaram
M.Sc-Aquaculture Semester -II
Practical Syllabus (w.ef.2022-23 admitted batch)
Paper- AQC 207- Immunology

Hours per week-3

credits -2

Max.marks-50

- 1.Blood grouping
- 2.Widal test for detection of typhoid bacteria
- 3.VDRL Test
- 4.SRID
- 5.Ouchterlony DID
- 6.Immunoelectrophoresis
- 7.Blood clotting time and bleeding time.
- 8.RIA –Demonstration
- 9.ELISA - Demonstration

DNR (A) College, PG Courses Bhimavaram

M.Sc-Aquaculture Semester -II

Practical Syllabus (w.ef.2022-23 admitted batch)

Paper- AQC 208 - Molecular Biology

Hours per week-3

credits -2

Max.marks-50

- 1.Estimation of DNA (Colorimetric method)
- 2.Estimation of RNA in tissue (Colorimetric method)
- 3.Fulgen reaction method for DNA localization
- 4.Localization of RNA by methyl green pyronin – ‘Y’
5. SDS PAGE of serum proteins.
- 6.Testing purity of DNA