

GOVERNMENT ARTS COLLEGE (AUTONOMOUS):: KARUR – 639 005

B.Sc., BOTANY COURSE STRUCTURE UNDER CBCS SYSTEM

(For the candidates admitted from the year 2011-12 onwards)

SEMESTER	COURSE	SUBJECT TITLE	SUBJECT CODE	INSTR. HOURS WEEK	CREDIT	EXAM HOURS	MARKS		TOTAL
							INT	ESE	
I	Tamil - I	Tamil – I	U11L1T1	6	3	3	25	75	100
	English - I	English – I	U11L1E1	6	3	3	25	75	100
	Core Course – I	Algae and Bryophytes	U11BO1C1	6	5	3	25	75	100
	Core Course – II	Practical – I (For CCI & III)	-	3	-	-	-	-	-
	First Allied Course-I	Allied Chemistry - I	U11CH1A1	5	3	3	25	75	100
	First Allied Course – II	Allied Chemistry – II (Practical)	-	2	-	-	-	-	100
	Environmental Studies	Environmental Studies	UES1	2	2	3	25	75	
				30	16				500
II	Tamil – II	Tamil – II	U11L2T2	6	3	3	25	75	100
	English – II	English – II	U11L2E2	6	3	3	25	75	100
	Core Course – II	Practical – I (For CCI & III)	U11BO2C2P	3	4	3	25	75	100
	Core Course – III	Fungi, Lichens, Plant Pathology & Plant Protection	U11BO2C3	6	5	3	25	75	100
	First Allied Course - II	Allied Chemistry – II (Practical)	U11CH2A2P	2	4	3	25	75	100
	First Allied Course – III	Allied Chemistry - III	U11CH2A3	5	3	3	25	75	100
	Value Education	Value Education	UVE2	2	2	3	25	75	100
				30	24				700
III	Tamil - III	Tamil- III	U11L3T3	6	3	3	25	75	100
	English – III	English -III	U11L3E3	6	3	3	25	75	100
	Core Course – IV	Cytology, Anatomy and Embryology.	U11BO3C4	6	5	3	25	75	100
	Core Course V	Practical – II (For CCIV)	-	3	-	-	-	-	-
	Second Allied Course - I	Allied Zoology - I	U11ZO3A1	5	3	3	25	75	100
	Second Allied Course - II	Allied Zoology - II (Practical)	-	2	-	-	-	-	-
	Non Core Elective I	Economic Entomology	U11ZO3N1	2	2	3	25	75	100
				30	16				500
IV	Tamil – IV	Tamil- IV	U11L4T4	6	3	3	25	75	100
	English – IV	English -IV	U11L4E4	6	3	3	25	75	100
	Core Course – VI	Pteridophytes, Gymnosperms, and Paleo Botany	U11BO4C6	5	5	3	25	75	100
	Core Course V	Practical – II (For CC IV & VI)	U11BO4C5P	2	4	3	25	75	100
	Second Allied Course II	Allied Zoology – II (Practical)	U11ZO4A2P	2	4	3	25	75	100
	Second Allied Course III	Allied Zoology - III	U11ZO4A3	5	3	3	25	75	100
	Skill Based Elective I	Ethno medicine	U11BO4S1	2	4	3	25	75	100
	Non Core Elective II	Communicable diseases and Management	U11ZO4N2	2	2	3	25	75	100
			30	28				800	
V	Core Course – VII	Genetics and Evolution	U11BO5C7	5	5	3	25	75	100
	Core Course – VIII	Morphology, Taxonomy and Economic Botany	U11BO5C8	5	4	3	25	75	100
	Core Course – IX	Environmental Science	U11BO5C9	5	4	3	25	75	100
	Core Course - X	Practical – III (Covering CC VII, VIII and CC IX)		3	-	-	-	-	-
	Core Course - XI	Practical – IV (Covering CC XII & XIII)		3	-	-	-	-	-
	Elective Course - I	Biostatistics and Computer Application	U11BO5E1	5	5	3	25	75	100
	Skill Based Elective II	Herbs and Drug Action	U11BO5S2	2	4	3	25	75	100
	Skill Based Elective III	Plant Tissue Culture	U11BO5S3	2	4	3	25	75	100
			30	26				600	
VI	Core Course – X	Practical – III (Covering CC VII, VIII and CC IX)	U11BO6C10P	3	4	3	25	75	100
	Core Course – XI	Practical – IV (Covering CC XII & XIII)	U11BO6C11P	3	5	3	25	75	100
	Core Course – XII	Microbiology	U11BO6C12	6	5	3	25	75	100
	Core Course - XIII	Plant Physiology, Biochemistry & Biophysics	U11BO6C13	6	5	3	25	75	100
	Elective Course - II	Biofertilizer and Biopesticides	U11BO6E2	5	5	3	25	75	100
	Elective Course - III	Biotechnology	U11BO6E3	6	4	3	25	75	100
	Extension Activities	Extension Activities		-	1				
		Gender Education		1	1	3	25	75	100
			30	30				700	
TOTAL				180	140				3800

Sl. No.: 1104

Subject Code: U11BO1C1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., BOTANY – I SEMESTER – CORE COURSE - I
(For the candidates admitted from 2011-12 onwards)

ALGAE AND BRYOPHYTES

UNIT- I Algae

Classification of Algae based on F.E. Fritsch (1935-45). Habit and Habitats of Freshwater, Marine and Terrestrial Forms. General characteristics and thallus organization of algae. Economic Importance of Algae.

UNIT- II Distribution, Ecology, Structure, Reproduction and Life History of the Following Types - *Oscillatoria*, *Chlamydomonas*, *Volvox*, *Coleochaete*, *Cladophora* and *Oedogonium* –(Structure only)

UNIT-III Distribution, Ecology, Structure, Reproduction and Life History of the Following Types - *Caulepra*, *Chara*, *Vaucheria*, *Diatoms*, *Sargassum* and *Polysiphonia* - (structure only)

UNIT-IV Bryophytes

General Classification of Bryophytes Based on E.V. Watson (1981). General characteristics of Bryophytes. Evolution of Gametophytes and sporophytes. Economic Importance of Bryophytes.

UNIT-V Distribution, Ecology, Structure, Reproduction and Life History of the Following Types -*Riccia*, *Porella*, *Anthoceros* & *Polytrichum* (Structure only)

Text Books

1. Vashista R.C. (1997), Botany for Degree students Algae and Bryophytes.S. Chand &Co. NewDelhi

Reference Books

Algae

1. Vashista, B.R. (1988) : Botany for degree students – Algae, S. Chand & Co., (P) Ltd., New Delhi – 567 pp.,
2. Pandey, B.P. (1993) : A Text Book of Botany – Algae, S. Chand & Co., (P) Ltd., New Delhi – 280 pp.,

Bryophytes

1. Smith, G.M. (1955) : Cryptogamic Botany Vol.II (2nd Edition) (Bryophytes & Pteridophytes) Tata McGraw Hill Publishing Co., New Delhi -399pp.,
2. Chopra, G.L. (1968) : A Class Book of Bryophyta, Hari Singh & Bros, Julunder – 248pp.,
3. Vashista, B.R. (1983). Botany for Degree students-Bryophyta, S. Chand& Co., New Delhi-392pp.,
4. Chopra, R.N. & Kumara, P.K. (1988) : Biology of Bryophytes, Wiley Eastern Ltd., New Delhi, Bangalore, Bombay, Calcutta, Hyderabad, Madras-340pp.,
5. Chopra, R.N.(Ed.) (1998). Topics in Bryology, Allied Printers (P) Ltd., New Delhi, Mumbai, Calcutta, Lucknow, Chennai, Nagpur, Bangalore, Hyderabad, Ahmebad – 202pp.

Sl. No 1204

Subject Code U11BO2C3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KARUR-05
B.Sc., BOTANY – II SEMESTER – CORE COURSE – III
(For the candidates admitted from 2011-12 onwards)
FUNGI, LICHENS AND PLANT PATHOLOGY

- UNIT- I Fungi**
Classification of fungi, General Characteristics, Mode of Life of main Classes and Economic Importance of Fungi.
- UNIT- II** A Study of the Structure and Reproduction in the Following – *Plasmodiophora, Albugo, Pencillium, Peziza, Polyporus, Puccinia, Fusarium, Mycorrhiza*
- UNIT-III Lichen**
Occurrence, Classification, Types, Structure, Reproduction and Uses of Lichen.
- UNIT-IV Plant Pathology:** Host, Causal Agent, Symptoms and Control Measures of the Following Diseases. *Mycoplasma* – Little Leaf of Brinjal, Virus – Tobacco Mosaic Virus. Bacteria - Citrus Canker. Fungi – Red Rot of Sugarcane – Tikka Disease of Groundnut, Blast Disease of Paddy.
- UNIT-V** Methods of plant protection – Cultural Practices – Physical, Chemical & Biological Controls and Quarantine Methods. Methods and Application of Fungicides and Pesticides. Toxic Hazards of Pesticides – Plant Protection Appliances – Seed Protection.

Text Book:

1. Pandey, B.P. (1997): College Botany Vol.I. Including Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology & Bryophyta, S. Chand & Co., New Delhi, India-280+416+223pp.

Fungi

1. Vashista, B.R. (1982). Botany of degree Students-Fungi, S.Chand &Co., New Delhi – 544pp.,

Plant Pathology

1. Govindaswamy, C.V. & Alagiamagalingam, M.N.981): Plant Pathology, Popular Book Depot, Chennai – 543 pp.,
2. Mehrotra, R.S. (1994): Plant Pathology, Tata McGraw Hill Publishing Co., Ltd., New Delhi-771pp.,
3. Pandey, B.P.(1999). Plant Pathology-Pathogens & Plant Diseases, S. Chand & Co., New Delhi-492pp.,
4. Sign, R.S.(2000). Introduction to Principles of Plant pathology (3rd Edition), Oxford & IBH Publishers, New Delhi, Calcutta-534pp.,

Plant Protection

1. Bap Reddy, D.&N.C. Joshi (1992): Plant Protection In India, Allied Publishers Ltd., New Delhi, Bombay, Calcutta, Madras, Nagpur, Ahmedabad, Bangalore, Hyderabad, Lucknow-550pp.,
2. Chattopadhyay, S.B.(1991): Principles & Procedures of Plant Protection (3rd Edition) Oxford & IBH Publishing cosec (P) Ltd.,

Sl. No.: 12P1

Subject Code: U11BO2C2P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., BOTANY – II SEMESTER – CORE COURSE –II
PRACTICAL - I (COVERING CC I & III)
(For the candidates admitted from 2011-12 onwards)

Algae and Bryophytes

1. To make suitable micro preparation of the type studies.
2. To identify micro slides relevant to the syllabus.
3. To identify types from Algal mixture.
4. To maintain a record note book.

Fungi, Lichens, Plant Pathology and Plant Protection

A study of vegetative, reproductive and micro preparation of Genera included in Fungi and Lichen.

Collection and study of diseases of plant materials cited in the theory.

Study of tools, chemicals, fungicides and pesticides.

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Subject Code: U11BO3C4

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – III SEMESTER – CORE COURSE -IV

(For the candidates admitted from 2011-12 onwards)

CYTOLOGY, ANATOMY AND EMBRYOLOGY

- UNIT-I** **Cytology** – Ultrastructure of Plant Cell, Cell Wall – Primary and Secondary, Cytoplasm, Plasma membrane, Cell Organelles, Endoplasmic reticulum, Golgi complex, Lysosome, Mitochondria, Plastids, Ribosomes, Nucleus.
- UNIT- II** Chromosomes – Morphology, Giant Chromosomes, DNA, RNA. Cell Division – Amitosis, Mitosis & Meiosis.
- UNIT-III** **Anatomy** – Plant tissues- permanent tissues- simple – parenchyma, collenchymas and sclerenchyma, complex – xylem and phloem. Meristems- Apical, Lateral and Intercalary meristems. Epidermal tissuesystem, Laticifers, stomatal types.
- UNIT-IV** Primary Structure of Root, Stem and Leaf in Dicots and Monocots. Secondary Growth of stem and root - Nodal anatomy Uni-and trilacunar types. Annual rings – Heart wood, Sapwood, Periderm formation; Anomalous secondary growth in Dicot stems – Eg., *Aristolochia*, *Bignonia* and *Boerhaavia* and Monocot Stem – *Dracaena*.
- UNIT-V** **Embryology** – Microsporogenesis Development of Anther;; Microgametogenesis; Ultrastructure of Pollen wall. Megasprogenesis - structure and development of Ovule, , Megagametogenesis (Polygonum - type of embryo-sac development), Fertilization. Endosperm – Nuclear, Cellular and Helobial. Development of Embryo – Dicot and Monocot.

Text Book

1. Pandey, B.P.(1989) : Plant Anatomy S. Chand & Co., New Delhi-608pp.,
2. Cytology by Agarwal and verma
3. An Introduction to embryology- Bhojwani

REFERENCES

1. De Robertis, E.D.P. & De Robertis, E.M.F 91980) : Cell and Molecular Biology (7th edition) Holt saunders international . Editions, Philadelphia, & Tokya-673pp.,
2. Rastogi, S.C.(1992) : Cell Biology Tata – McGraw – Hill Publishing Co., Ltd., New Delhi, India-408pp.,
3. Nair, P.G.K. & Prabhakara Achar, K.(1993) : A Text Book of Cell Biology Konark Publishers(P) Ltd., New Delhi – 214 pp.,
4. Singh, S.P. & Tomar, B.S. (1996) : Cell Biology Rastogi Publications, Meerut, India-232pp.,
5. Vasishta, P.C.(1977) : A Text Book of Plant Anatomy S. Nagin & Co., Jullunder & New Delhi-460pp.,
6. Singh, V., Pandey, P.C. & Jain, D.K. (1987) : Anatomy of Seed Plants Rastogi Publications, Meerut, India-391pp.,
7. An Introduction to Embryology- Maheswari and Bhojwani

Sl. No.:1304

Subject Code: U11BO3N1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS):: KARUR-05

B.Sc., ZOOLOGY – III SEMESTER – NON CORE ELECTIVE - I

(For the candidates admitted from 2011 -12 onwards)

HERBAL BOTANY

- UNIT- I** History of Medicinal Plants — Significance of Indian medicinal plants. Establishment of Medicinal Plant Gardens – Traditional Medicinal Systems: Ayurvedha, Siddha, Unani and Naturopathy – Traditional and Folklore Medicine.
- UNIT- II** Cultivation and Utilization of the Selected Medicinal Plants : *Adathoda, Aloe, Allium, Ocimum, and Vinca* - Role of National Medicinal Plants Board of India.
- UNIT-III** Definition of Plant Drugs – Classification of Natural Drugs : Alphabetical, Morphological, Pharmacological and Chemical.
- UNIT-IV** Drugs from Leaves (Eucalyptus), Flower (*Eugenia*), Fruits and Seeds (*Coriander*) Roots (*Rauwolfia*), Bark (*Cinchona*) and Wood (*Ephedra*).
- UNIT-V** Pharmacognosy – Definition and Scope. Biological Evaluation of Drugs. Drug adultration. Phytochemical Investigations – Quality Control of Herbal Drugs.

Text Book

1. M.K. Sinha.1996 Ethnobotany the renaissance of traditional herbal medicine- INA Shree publizers Jaipur

References:

1. Amruth, The Medicinal Plants Magazine (All Volumes) Medplant Conservatory Society, Bangalore.
2. Arumugam, K.R. and Muruges, N. 1990. Text book of Pharmacognosy.
3. Prajapathi, Purohit, Sharma and Kumar. 2003. A Hand book of Medicinal Plants. Agrobios Publications, Jodhpur.
4. Purohit and Vyas, 2004. Medicinal Plants Cultivation. Agrobios Publications, Jodhpur.
5. Wallis, T.B. Text book of Pharmacognosy. C.B.S. Publishers and Distributers.

Sl. No.: 14P1

Subject Code: U11BO4C5P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., BOTANY– IV SEMESTER – CORE COURSE – V
(For the candidates admitted from 2011-12 onwards)

PRACTICAL – II (COVERING CC IV & VI)

Cytology

A study of cell structure in plants and its organelles using electron micrographs from standard publications. Study of mitosis using squash technique.

Anatomy

Preparation and transverse sections of the following plant parts to observe and record the internal structure. Monocot and dicot stem, and leaf (primary structure), normal, secondary thickening in Dicot stem and root. Anomalous growth in *Boerhavia* stem, *Aristolochia*, *Bignonia*, and *Dracena*. Nodal anatomy – Uni and trilacunar.

Embryology

T.S of anther (young and mature) at various stages of development (slides only). L.S of ovule, types of ovules (Slides only) – Orthotropous and Anatropous., Embryo dissection.

Pteridophytes, Gymnosperms and Paleobotany

A Study of the Morphology and anatomy of both vegetative and reproductive parts of the living genera (*Psilotum*, *Lycopodium*, *Selaginella*, *Equisetum*, *Adiantum*, *Marselia*, *Cycas*, *Pinus*, *Gnetum*) and Fossil forms (*Rhynia*, *Lepidodendron*, *Calamites*, *Lepidocarpon*, *Williamsonia*).

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Subject Code: U11BO4C6

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., BOTANY – IV SEMESTER – CORE COURSE - VI
(For the candidates admitted from 2011-12 onwards)

PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY

- UNIT- I** **Pteridophytes** – General characteristics and classification (Sporne 1970), Morphology, structure, reproduction and Life-histories of the Following Genera- *Psilotum*, *Lycopodium* and *Selaginella*
- UNIT- II** *Equisetum*, *Adiantum* and *Marsilea*; Stellar evolution in Pteridophytes. Heterospory and origin of seed habit.
- UNIT-III** Gymnosperms – General characteristics and classification of Gymnosperms (Sporne, 1965). Morphology, structure and mode of reproduction and Life-histories of the following:- *Cycas*, *Pinus* and *Gnetum*.
- UNIT-IV** Paleobotany – Fossils and methods of fossilization – Geological time scale- -An elementary knowledge of the computation of the Age of fossils –Radio – Carbon dating.
- UNIT-V** A brief study of the following Fossil forms:- *Rhynia*, *Lepidodendron*, *Lepidocarpon*, *Calamites* & *Williamsonia*.

Text Books

1. Vashista, P.C. (1997) : Botany for Degree Students-Pteridophyta. S. Chand & Co., New Delhi, 501pp.,

References

1. Eames, A.J. (1936) : Morphology of Vascular Plants (Lower Groups) McGraw Hill, N.Y. pp.,
2. Smith, G.M. (1955) : Cryptogamic Botany Vol.II (2nd Edition) (Bryophytes & Pteridophytes) Tata McGraw Hill Publishing Co., New Delhi-399pp.,
3. Sporne, K.R.(1970) : The Morphology of Pteridophytes (The Structure of Ferns and Allied Plants) Hutchinson University Library, London-192pp.,
4. Sundara Rajan, S. (1994) : Introduction to Pteridophyta New Age International Publishers Ltd., Wiley Eastern Ltd., New Delhi, Bangalore, Bombay, Calcutta, Guwahati, Hyderabad, Lucknow, Madras, Pune, London-318pp.,
5. Vashista, A. – Gymnosperm – Chand Publication, New Delhi.

Sl. No.: 1404

Subject Code: U11BO4S1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – IV SEMESTER – SKILL BASED ELECTIVE I

(For the candidates admitted from 2011-2012 onwards)

ETHNOMEDICINE

- UNIT- I** Ethnobotany – Ethnomedical botany – Traditional and folklore medicine- Herbalism – Medicinal plants – History of herbal medicine.
- UNIT- II** Plants useful in Indian System of Medicine – Morphology and Taxonomy of local medicinal plants. Eg., Neem, *Asparagus*, *Aristolochia*, *Cucurbita*, *Lippia*, *Leucas*.
- UNIT-III** Establishment of herbal garden – Gardens in the hill and plains, House gardens- Plants for gardening.
- UNIT-IV** LEHGYAM – Methods of preparation and uses of Thippilli Rasayanaum, Centella lehgyam, Adathodai mamappegu, Venpoosani lehgyam, Karunai lehgyam.
- UNIT-V** Siddha medicine for children –**Cough** - types - productive chest cough non productive or dry cough, Barking cough, Whooping cough, Psychogenic cough, Reflex cough- Symptoms- Treatment. **Worms**- Intestinal worms- parasitic and non parasitic symptoms, - diagnosis- treatments. **Diarrhea** – causes –symptoms- treatments- preventions.

Text Book

1. M.K. Sinha.1996 Ethnobotany the renaissance of traditional herbal medicine- INA Shree publizers Jaipur

References:

1. Amruth, The Medicinal Plants Magazine (All Volumes) Medplant Conservatory Society, Bangalore.
2. Arumugam, K.R. and Muruges, N. 1990. Text book of Pharmacognosy.
3. Prajapathi, Purohit, Sharma and Kumar. 2003. A Hand book of Medicinal Plants. Agrobios Publications, Jodhpur.
4. Purohit and Vyas, 2004. Medicinal Plants Cultivation. Agrobios Publications, Jodhpur.
5. Wallis, T.B. Text book of Pharmacognosy. C.B.S. Publishers and Distributers.

Sl. No.: 1405

Subject Code: U11BO4N2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05
B.Sc., ZOOLOGY – IV SEMESTER –NON CORE ELECTIVE II
(For the candidates admitted from 2011-12 onwards)

HORTICULTURE

- UNIT-I** Horticulture:- Introduction, History and development, Importance and Scope of Horticulture, Classification of Horticultural Crops, Role of soil, water, climatic factors, Nutrition needs of horticultural crops.
- UNIT- II** Gardening- Designs, Types of Gardens, indoor and outdoor gardening, Kitchen garden and nursery maintenance , Floriculture. Cultivation of Commercial Flowers – Rose, chrysanthemum and Jasmines.
- UNIT-III** Plant propagation methods, vegetative propagation (cutting, layering, air layering grafting and budding) Stock-scion relationship.
- UNIT-IV** Cultivation and preservation methods of vegetable crops (Brinjal, Tomato and Bhindi): Pruning methods, hydroponics and Bonsai techniques.
- UNIT-V** Care of Horticultural plants- weeding top dressing – Lawn making – type s of Lawn grasses- Plants suitable for hedges.

Text Book:

1. H.D. Kumar (1999). Introduction to Horticulture.

PLANT BREEDING

1. Allard (1960) : Principles of Plant Breeding
John Wiley Publications, N.Y.
2. Baudai, M.M. (1974) : Practical Plant Breeding
Oxford IBH Publication, New Delhi.
3. Chandrasekaran, S.N.
Parathasarathy, S. (1975) : Cytogenetics and Plant Breeding
Varadhachary & Co., Chennai.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – V SEMESTER – CORE COURSE - VII**

(For the candidates admitted from 2011-12 onwards)

GENETICS AND EVOLUTION

Unit I : Scope of Genetics - Mendelian Laws: Law of Dominance - law of Segregation - Law of Independent Assortment. Monohybrid and Dihybrid crosses - Back cross & Test cross - Incomplete Dominance

Unit II: Interaction of genes (Deviation from Mendelian Ratio) Inheritance of comb shape in Fowls (9:3:3:1), Lethal Factor (2:1), Complementary Factor (9:7), Supplementary Factor (9:3:4) and Epistasis (12:3:1), Inhibitory Factor (13:3), Duplicate Factors (15:1), Multiple Factor Hypothesis, Multiple Alleles and Blood groups.

Unit III: Linkage and Crossing Over - Cytological Proof of Crossing Over; Mapping of Genes on the Chromosomes, Sex Linked Inheritance -Drosophila (Eye Colour) and Humans (Colour Blindness);Cytoplasmic Inheritance. Sex Determination in Drosophila, Humans and Plants.Chromosomal theory of sex determination – XX-XY, XX-XO, ZZ-ZW, Genetic balance theory of Bridges, Y chromosome in sex determination.

Unit IV: Mutation – Biochemical, Lethal, Somatic and Germinal mutations; Spontaneous and Induced Mutations - Mutagenic Agents; Point mutation, Chromosome mutation and Genomic mutation. Role of mutation in evolution. Polyploidy and its Types - Euploidy, Aneuploidy and Polyploidy – Autopolyploidy and Allopolyploidy - Examples. Biochemical Genetics of Neurospora, Gene Action.Gene Units – Cistron, Recon, Muton, Codon and Operon.

Unit V: Origin of life - Evolution Concepts in Diversity of Life. Theories of Lamarck, Charles Darwin and Modern Synthetic Theories.

Reference**GENETICS:**

- 1.Sinnott, E.W., L.c., Dunn & J.Dobshansky (1958): Principles of Genetics (5th Edition) McGraw Hill Publishing Co., N.Y. Toronto, London-459pp.,
2. Chandrasekaran, S.N. & Parathasarathy, S.V. (1965) : Cytogenetics and Plant Breeding P. Varadhachari & Co., Madras-
3. Strickberger, M.W. (1976) : Genetics (2nd Edition) MacMillan Publishing Co., Inc., N.Y., London-914pp.,
4. Herskowitz, L.H. (1977) : Principles of Genetics (2nd Edition) MacMillan Publishing Co., Inc., N.Y. & Collier-Macmillan,
5. Gupta, P.K. (2000) : Genetics Rastogi Publishers, Meerut, India-611pp.,
6. Agarwal., V.K. (2000) : Simplified Course in Genetics (B.Sc., Zoology) S. Chand & Co., New Delhi-168pp.,

EVOLUTION:

1. Savage, J.M. (1969) : Evolution (2nd Edition) Amarind Publishing Cosoc P (P) Ltd., New Delhi, Bombay, Calcutta
2. Gottlieb, L.D. & Jain, S.K. (1988) : Plant Evolutionary Biology Chapman & Hill, London, N.Y.-414pp.,
3. Shukla, R.S. & P.S. Chandel (1996) : Cytogenetics, Evolution & Plant Breeding S.Chand & Co., New Delhi
4. Verma, P.S. & V.K. Agarwal (1999) : Concepts of Evolution S. Chand & Co., New Delhi-148pp.,
5. Anna Sproule (1998) : Charles Darwin Scientists who have changed the world Orient Longmans, Hydrabad-64pp.,

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – V SEMESTER – CORE COURSE - VIII**

(For the candidates admitted from 2011-12 onwards)

MORPHOLOGY, TAXONOMY & ECONOMIC BOTANY**UNIT I : Morphology****Leaf** – Types, Phyllotaxy, Venation Pattern.**Inflorescence** – Types – Racemose, Cymose, Mixed and Special Types.

Descriptive terminology of Flower and Floral Parts.

Fruit – Classification. Details of Simple, Fleshy, Dry dehiscent and Dry Indehiscent, Aggregate and Multiple Fruits.**UNIT II** : Binomial System of Nomenclature. Systems of Classification – Bentham & Hooker and Engler & Prantl. Merits and Demerits of their Systems. Herbarium Techniques.**UNIT-III:** A Detailed Study of the Following Families and their Economic Importance. Annonaceae, Capparidaceae, Malvaceae, Sterculiaceae, Tiliaceae, Rutaceae, Anacardiaceae, Leguminosae, (Fabaceae, Caesalpiniaceae & Mimosaceae), Cucurbitaceae and Apiaceae.**UNIT-IV:** Rubiaceae, Asteraceae, Apocynaceae, Asclepiadaceae, Solanaceae, Convolvulaceae, Acanthaceae, Lamiaceae, Verbenaceae, Amaranthaceae, Euphorbiaceae, Liliaceae and Gramineae (Poaceae).**UNIT-V : Economic Botany** - A Brief Study of the Following Economic Plants and their main Economic Important Products.**Food** : Cereals (*Oryza*, *Eleusine*); Pulses (*Phaseolus*), Edible oil (*Seasamum*); Root Tubers (*Manihot*); Sugar (*Saccharum*).**Fibres** : Textiles (*Gossypium*) : Others (*Crotalaria*, *Agave*).**Medicines** – *Ocimum*, *Phyllanthus*, Alkaloid (*Solanum*).**Forest Products** : Major – Timber (Teak, Jack). Minor – Tannins, Gums, Resins, Turpentine.**Reference Books:**

1. Singh. V. D.K. Singh (1983) : Taxonomy of Angiosperms, Rastogi Publications , Meerut, India – 564.
2. Pandey, B.P (1997) : Taxonomy of Angiosperms S. Chand & Co., (P) Ltd.,
3. Naik. V.N. (1996) : Taxonomy of Angiosperms Publishing Co., New Delhi.
4. Vashista.P.C. : Taxonomy of Angiosperms, S. Chand & Co., (P) Ltd., Jullunder
5. Subramanian. N.S. : Laboratory Manual of Plant Taxonomy IInd Edition
6. Palaniappan. S : Angiosperm Galin Vagaipadu, V.K. Publishing House, Chennai – 685
7. Mathews K.M. (1987,1990) : Flora of Tamil Nadu and Carnatic.
8. Lawrence, G.H.M. : An Introduction to Plant Taxonomy The Central Book Depot., Allahabad.
9. Sharma, O.P. : Plant Taxonomy, TMH Publishing Co, New Delhi.
10. Hill.A.W. : Economic Botany TMH, New York

Sl. No.: 1503

Subject Code: U11B05C9

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – V SEMESTER – CORE COURSE - IX

(For the candidates admitted from 2011-12 onwards)

ENVIRONMENTAL SCIENCE

UNIT-I General Ecology – Approaches to the Study of Ecology, Autecology – Synecology, Plant Environment – Climatic, Edaphic and Biotic Factors (Interference on Plant Habit and animals – Grazing and Browing, By Humans – Deforestation, Agriculture).

UNIT- II Ecosystem Concept – Components Abiotic, Autotrophic Producers & Heterotrophic Consumers, Biomass Ecological Pyramids, Productivity – Primary, Secondary & Gross, Food Chain – Food Web & Energy Flow – Pond Ecosystem.

UNIT-III Vegetation – Units of Vegetation – Formation, Association, Consociation, Society – Development of Vegetation: Migration – Ecesis, Colonization, Methods of Study of Vegetation (Quadrat & Transect). Plant Succession – Hydrosere & Xeroseres. Morphological and Anatomical Features of Plants and Their Correlation to the Habitat Factors.

UNIT-IV Applied Ecology – Pollution and its Control, Atmospheric Pollution – Air – Pollution – Particulate Matter. Chemicals, Acid Rain, Radiation Pollution, Noise Pollution, Thermal Pollution, Soil Pollution : Industrial Effluents, Agricultural Pollution, Plant Residues, Insecticides, Pesticides, Fungicides, Herbicides. Water Pollution – Industrial Effluents (Water, Metals and Oil). Pollution Control Methods.

UNIT-V Ecology & Human Welfare: Conservation of Natural Resources – Conservation of Terrestrial (Soil and Forest). Conservation of Aquatic (Marine & Fresh-Water Bodies) Conservation of Energy. Wild life management. Scrub & Mangrove, Endemism.

Reference Books:

1. Puri G.S. (1960) : Indian Forest Ecology (VOL I & Vol. II). Oxford Book Co., New Delhi & Calcutta
2. Billings. W.B (1965) : Plants and the Eco System. Words worth Publishing Co., Inc., Belmont.
3. Misra. R (1968) : The Ecology Work book Oxford Book Co., Calcutta
4. Odum E.P. (1971) : Fundamentals of Ecology 3rd Edition, Sounders & Co., Philadelphia & Natraj Publishers, Dehradun – 574.
5. Kochhar.P.L. (1975) : Plant Ecology (9th Edition) S. Nagi & Co., Jullendhar
6. Agarwal. K.C. (1987) : Environmental Biology, Agro Botanical Publishers, India.
7. Vasihta.P.C.(1989-90) : Plant Ecology, Vishal Publications.
8. Kumar. H.D.(1992) : Modern Concepts of Ecology (7th Edition).
9. Shukla R.S. & P.S. : Plant Ecology & Soil Science S. Chand & Co, New Delhi.
Chandel (1991)

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Sl. No.: 1504

Subject Code: U11BO5E1

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – V SEMESTER – ELECTIVE COURSE – I

(For the candidates admitted from 2011-12 onwards)

BIO STATISTICS AND COMPUTER APPLICATION

- UNIT-I** **Bio Statistics** –Definition of Bio-Statistics, Collection of data – Primary and secondary data. Classification and tabulation – classification of data, tabulation of data, diagrammatic representation of data, graphic representation of data.
- UNIT- II** Skewness and kurtosis, Correlation of analysis – types, methods of studying correlation. Measures of central tendency – Mean, Median and Mode – Standard Deviation, Standard Error.
- UNIT-III** History of Computers, Types of Computers, Basic Computer Concepts, parts of a Computer – Input (Key Board, Mouse) and Output Devices (Monitors, Printers), Computer Memory (RAM, ROM), Storage Devices (Floppy Disk, Compact Disk, Hard Disk), Central Processing Unit, Software, Hardware, Computer Peripherals – Mouse, Modem.
- UNIT-IV** Computer Network (LAN, WAN), Organizing Information – the Database – Definition – Data Entry Indexing – Storage – Retrieval – Operating Systems – WINDOWS 2000.
- UNIT-V** Word Processing Software MS-office – MS Word, Excel, Power point, and Desk Top Publishing, A Basic Knowledge of Networking – Internet – E-mail Facilities, Computer application in Botany.

NOTE: No Practical for this Paper. Only Demonstration of Computer Application in Botany at The Computer Science Department Laboratory (or) Wherever a PC Facility is Available In the college.

RECOMMENDED TEXT BOOK:

1. Statistical methods – P.K. Gupta.
2. Biosatistics – Plani Paramount Publications.
3. Biosatistics – SARAS, Publication.
4. Computer fundamentals windows and Internet- Ramaiha publication
5. Internet –by Attwood

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Sl. No.: 1505

Subject Code: U11BO5S2

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – V SEMESTER – SKILL BASED ELECTIVE - II

(For the candidates admitted from 2011-2012 onwards)

HERBS AND DRUG ACTION

UNIT I History of herbal medicine- Indian system of medicine- Siddha, Ayurvedha and Unani Systems.

UNIT II Phytotoxins – types – mode of action – list of toxin rich plants – and their toxicity (Nux-vomica, Opium, Abres, Nicotiana)

UNIT III Botanical description and active principles in parts of herbal plants- leaves: *Murrya*, Mint - Flower: *Hybanthes*, Clove – fruits: *Annona*, Guava
Seeds: Kadukkai, Thondrikkai- plant as a whole: *Centella*, Neem

UNIT IV Natural drugs- Chemistry and features of *Aloe*, *Atropha*, *Acorus calamus*, *Cinchona*,

UNIT V Method of drug action – Central nervous system- drug used in disorders of Gastro-intestinal tracts and Cardio vascular diseases

Text Books:

1. Jain, 2001 Medicinal plants. National Book Trust, New Delhi.

References:

1. Gokhale S.M., M. C. K. Kokate and A.P Purohit Pharmagonosy. Nirali Prakashan
2. Agarwal, 1985. Drug plants in India, Kalyani, Publishers, Ludhiyana.
3. Bhattacharya, S.K 1988 Hand book of medicinal plants. Pointer publishers, Jaipur.

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Sl. No.: 1506

Subject Code: U11BO5S3

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – V SEMESTER – SKILL BASED ELECTIVE - III

(For the candidates admitted from 2011-2012 onwards)

PLANT TISSUE CULTURE

Unit I: History and scope of plant tissue culture- Plant tissue culture laboratory organization- Tools and techniques for plant tissue culture - (pH meter, Autoclave, Laminar flow chamber) - Glassware cleaning and dry heat sterilization.

Unit II: Media - composition - preparation - (MS medium, B5 medium and White's medium) - Moist heat sterilization - Explant sterilization- Carbon source, Hormone and solidifying agent.

Unit III Callus culture- Suspension culture- Meristem culture- Direct and indirect plantlet regeneration- Explant source- Somoclonal variations.

Unit IV Haploid production - Anther culture - pollen culture - (androgenic haploids) -ovary culture – ovule culture- (gynogenic haploids) - Diploidization of haploids and Cryopreservation.

Unit V Somatic embryogenesis - Factors affecting somatic embryogenesis - Advantages - Synthetic seed technology. Cryopreservation. Application of plant tissue culture in forestry and agriculture.

Text Book:

References:

1. Razdan M.K. 1993, An Introduction to Plant Tissue Culture, Oxford and IBH Publishing.
2. Dodds T.H. and Roberts I.W 1985, Experiments in Plant Tissue Culture, Cambridge University Press.
3. Kalyankumar (1992) Cell culture and somatic cell genetics of plant – 3 Volumes. Academic Press Inc.,

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Sl. No.: 16P1

Subject Code: U11BO6C10P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – VI SEMESTER – CORE COURSE - X

(For the candidates admitted from 2011-12 onwards)

PRACTICAL III (COVERING CC VII, VIII AND IX)

Genetics: Problems on simple, monohybrid and dihybrid ratio. Simple problem on interaction on factors included in the theory.

Morphology - Leaf types – phyllotaxy, venation pattern. **Inflorescence** – Racemose, cymose, mixed and special types. **Fruits:** Simple, fleshy, dry, dehiscent and dry indehiscent, aggregate and multiple fruits.

Taxonomy: Training in dissection, observation, identification and sketching of floral parts of plants belonging to the families mentioned in the syllabus along with floral diagram and floral formula, Descriptions of plants in technical terms.

Annonaceae, Capparidaceae, Malvaceae, Sterculiaceae, Tiliaceae, Rutaceae, Anacardiaceae, Leguminosae (Fabaceae, Ceasalpinaceae, Mimosaceae), Cucurbitaceae, Rubiaceae, Asteraceae, Apocynaceae, Asclepiadeaceae, Solanaceae, Convolvulaceae, Acanthaceae, Lamiaceae, Verbenaceae, Amaranthaceae, Euphorbiaceae, Liliaceae, and Poaceae.

Environmental Science: 1. Study of morphological and anatomical features of hydrophytes and xerophytes, 2. Study of morphological features of epiphytes, parasites and halophytes 3. Study of vegetation by the quadrat, line transect, estimation of frequency, density and dominance cover. 4. Determination of soil and water pH 5. Retentively, absorption and capillarity of soil.

Practical : 50 Marks

Note: Students should submit 25 Herbarium sheets for practical examination :10 Marks
Tour compulsory for maximum 5 days and submit tour report for
practical examination : 5 Marks
Record :10 Marks

75 Marks

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – VI SEMESTER – CORE COURSE - XI**

(For the candidates admitted from 2011-12 onwards)

PRACTICAL IV (COVERING COURSES XII & XIII)**Micro Biology: common for all.**

1. Media Preparation – Sterilization Procedure
2. Isolation of Micro Organisms from Water and Soil.
3. Gram Staining of Bacteria

Physiology Experiments: Individual

1. Determination of Osmotic Pressure of Rheo Leaf
2. Effect of Light Intensity on Transpiration Using Ganong's Potometer
3. Comparison of Stomatal and Cuticular Transpiration by Cobolt Chloride Test
4. Determination of Absorption and Transpiration Ratio.
5. Measurement of Oxygen Evolution Under Different Colored Light Using Wilmotl's Subbler
6. Determination of Photosynthetic Rate Under Different CO₂ Concentration.
7. Measurement of Respiration Rate Using Germinating Seeds and Flower Buds with Simple Respires Cycle
8. Separation of Plant Pigments by Paper chromatography

Bio-Chemistry Experiments

1. Extraction and Estimation of Protein
2. Extraction and Estimation of Lipid
3. Extraction and Estimation of Total Hydrogen

Bio Physics

1. pH Meter
2. Centrifuge
3. Spectrophotometer
4. Electrophoretic Apparatus

Demonstration by

1. Osmosis
2. Ganong's Light Screen
3. Anaerobic Respiration Fermentation
4. Fermentation
5. Lever Auxanometer
6. Clinostat

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – VI SEMESTER – CORE COURSE - XII**

(For the candidates admitted from 2011-12 onwards)

MICROBIOLOGY

UNIT I Introduction, History and scope of microbiology. General characteristics and classification of microorganisms (Whittaker's), Bacteria (Bergey's) and viruses (LHT).

UNIT II Bacterial morphology, Cell structure, Nutrition, Respiration and reproduction. Viruses and phages - morphology and reproduction. Yeast – morphology - cell structure, physiology and multiplication. Economic importance of Bacteria and Yeasts.

UNIT III Culture of microorganisms - Types of culture medium, Methods of sterilization, Methods of growing and maintenance of cultures, isolation and pure culture techniques of bacteria and fungi.

UNIT IV Soil microbiology- Rhizosphere and soil microflora. Agricultural microbiology -N₂ - Fixing bacteria, Phosphate solubilizing bacteria mycorrhizae – Aquatic microbiology: Microbiology of fresh, marine water and sewage. Air microbiology: Indoor and outdoor environment. Food microbiology - Microbial spoilage of food, Food poisoning and Food preservation - principles, physical and chemical methods of preservation.

UNIT V Medical microbiology- bacterial diseases – Tuberculosis and Cholera, viral diseases - Poliomyelitis and Influenza, Fungal diseases- Mycoses. Antibiotics and chemotherapeutic agents.

REFERENCES:

- | | | | |
|----------------------------------|--------|---|---|
| Pelczar, M.J.,
Chan, E.C.S., | | : | <i>Microbiology</i>
Tata McGraw Hill Publishing Co., Ltd., New Delhi – 918p |
| Sharma, P.D. | (1993) | : | <i>Microbiology</i>
Bastogi Publications, Meerut, India-359pp., |
| Gunasekaran, P. | (1995) | : | <i>Laboratory Manual In Microbiology</i>
New Age International (P) Ltd., Publishers, New Delhi, Bangalore,
Bombay, Calcutta, Guwahati, Hyderabad, Lucknow, Madras,
Pune, London, Bangkok-141pp., |
| Dubey. R.C. &
Maheswari, D.K. | (1999) | : | <i>A Text Book of Microbiology</i>
S. Chand & Co., New Delhi-682 pp., |
| SubbaRao, N.S. | (1999) | : | <i>Soil Microbiology – (4th Edition)</i>
Oxford & IBH Publishing Co., (P) Ltd., New Delhi – 424 pp., |

Sl. No.: 1602

Subject Code: U11BO6C13

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05

B.Sc., BOTANY – VI SEMESTER – CORE COURSE - XIII

(For the candidates admitted from 2011-12 onwards)

PLANT PHYSIOLOGY, BIOCHEMISTRY & BIOPHYSICS

- UNIT- I** **Plant Physiology** - Water –Physical and Chemical Properties – Osmotic and Non-Osmotic Uptake of Water. Ascent of Sap, Transpiration, Physiology of Stomata, Translocation of Solutes, Mineral Nutrition, Mineral Uptake: Passive and Active Role of Major and Minor Elements.
- UNIT- II** Respiration: Respiratory Substrates. Aerobic and Anaerobic. Glycolysis. Krebs's Cycle and Oxidative Phosphorylation, Energetics of Respiration. Photosynthesis : Radiant Energy and its Role in Photosynthesis. Absorption Spectrum, Action Spectrum, Role of Pigments, Enhancement Effect ; Photosystems I & II, Photoelectron Transport, Photophosphorylation, Products of Light Reaction and Their Utilization. Carbon Assimilation : Calvin Cycle Hatch & Slack Pathway, CAM Pathway – Photorespiration.
- UNIT-III** Plant Growth : Regulatory Substances, Auxins, Kinetins, Gibberellins, Abscissic Acid and their Function. role of Hormones in Flowering, Senescence and Abscission, Photoperiodism, Phytochrome Vernalization.
- UNIT –IV** **Biochemistry**
Definition of pH its Determination. Buffers and Electrolytes and their Functions. A brief treatment of the chemistry of the following Primary plant product – Carbohydrates, Lipids, Protein, Enzymes - Classification, Structure and Function.
- UNIT – V** Biophysics - Laws of thermodynamics, Redox potential, Entropy, Enthalpy. ATP in bioenergetics chemical bounds – Biological effect of ionizing radiation.

REFERENCES:

1. Fundamental of Plant Physiology – V.K. Jain
2. Plant Physiology – Prohit
3. Text book of Plant Physiology – Verma and Shukla
4. Biochemistry – Jain, J.L.
5. Biophysics – Salil Bose.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – VI SEMESTER – ELECTIVE COURSE - II**

(For the candidates admitted from 2011-12 onwards)

BIOFERTILIZERS AND BIOPESTICIDES

- UNIT – I** Biofertilizer – Definition –Types of Biofertilizers – Nitrogen fixation: Symbiotic and Non-Symbiotic– Diazotrophs –Rhizobium: Isolation, Identification and Mass production of *Rhizobium*. Host cell *Rhizobium*.
- UNIT – II** Isolation and Characteristic features of *Azospirillum*, *Azotobacter*, *Anabaena* and *Frankia*. Inoculum production of cyanobacteria. Cultivation of *Azolla*.
- UNIT – III** Mycorrhizal fungi as biofertilizers – Ecto and Endo mycorrhiza – VAM Association, Types, Occurrence, Collection, Isolation and Inoculum production
- UNIT – IV** Large scale production of biofertilizers–Organic farming–Carrier materials–Rhizosphere effect – Microbial products influencing plant growth. Biological control of weeds – Mycoherbicides – Insects as biocontrol agents.
- UNIT – V** Biopesticides- Definition, Kinds of Biopesticides: *Bacillus thuringiensis*, Biocontrol of insect pests – Microbial Pesticides - Viral Pesticides, Mycopesticides

Text Book

1. Subba Rao, N.S. 2000 Soil Microbiology. Oxford and IBH Publishing Co. Ltd.

Reference:

1. Verma A and Hock B. 1995. Mycorrhiza. ISBN
2. Yaacovokan, 1994 – *Azospirillum*, CBC Press.
3. Wicklow, D.T. and B.E. Soderstrom. 1997, Environmental and Microbial Relationships. Springer ISBN.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS): KARUR-05**B.Sc., BOTANY – VI SEMESTER – ELECTIVE COURSE - III**

(For the candidates admitted from 2011-12 onwards)

BIOTECHNOLOGY**Unit-I**

Biotechnology- Definition Scope and Importance, Biotechnology as an interdisciplinary area. Global impact of biotechnology. Health care – Agriculture- Industrial- and Environmental biotechnology. Biotechnology in India. Commercial potential of biotechnology. Need for future development.

Unit II

Gene transfer mechanism in bacteria- Conjugation- transformation – transduction. Gene transfer techniques – Agrobacterium- DNA mediated –Transgenic crops. Crop improvement – resistance –viral-insect-microbial, stress and tolerance methods

Unit III

Plasmids- General account, Plasmid as vector Eg. pBR 322, Ti plasmids, cosmids. phagmids, Blotting techniques- Southern, Western blotting.- Steps involved in gene cloning and PCR technique.

Unit IV

Concepts Hybridoma and monoclonal antibodies-Vaccine production. Edible vaccine. Concept of stem cell culture and its application. Techniques of Gene transfer Techniques (Microinjections, electrophoration and particle bombardment).

Unit - V

Agriculture biotechnology- Biomass production of Spirulina, - Environmental Biotechnology - Waste treatment- solid and liquid waste treatment. Domestic sewage and Bioremediation.

RECOMMENDED TEXT BOOK:

1. R.C. Dubey. Text book of Biotechnology. S. Chand Company LTD Ram Nagar, New Delhi, 11 0555
2. Biotechnology- Expanding Horizons. B.D. Singh, Kalyani Publishers, Ludhiana
3. Concepts in Biology. Enger. Tata McGraw Hill
4. Plant Biotechnology. Ignacimuthu
5. Biotechnology from A to Z. William Bains. Tata McGraw Hill
6. Cohn and Stumph. Outline of Biotechnology. Wiley eastern
7. Plant and tissue culture. Radinath and Bhogwani- IRL press.
8. Molecular Biotechnology. Bernard R.Glick and Pasternaik.
9. Dixon and Gonzales- Plant cell culture a practical approach. The basics. IRL press.

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)::KARUR-05**B.Sc., – III SEMESTER – ALLIED COURSE - I
(FOR ZOOLOGY MAJOR)**

(For the candidates admitted from 2011 -12 onwards)

ALLIED BOTANY I

- UNIT- I** **Morphology:** Leaf Shape, Phyllotaxy – Inflorescence – Racemose Cymose, Mixed and Special Type in Relation Families Specified Terminologies With Reference to Flower Description.
- UNIT- II** **Taxonomy:** Naming of Plants – Bi-Nomial – Systems of Classification by Bentham and Hooker – Study of the following Families and their Economic Importance Annonaceae, Rutaceae, Leguminosae (Sensu lato) Cucurbitaceae, Apocynaceae, Lamiaceae, Euphorbiaceae, Liliaceae, Poaceae.
- UNIT-III** **Cytology and Genetics**
Cytology: An Electron Microscope Structure of a Cell and a Brief Outline of the Organelles, Cell Wall Cell Membrane, endoplasmic Reticulum, Mitochondria, Chloroplast, Nucleus, Mitosis and Meiosis.
Genetics: Mendel's law of Inheritance – Monohybrid and Di-Hybrid Ratios With Simple Problems.
- UNIT-IV** **Anatomy and Embryology**
Anatomy: Primary and Secondary Tissues and Their Distribution (Excluding Anomalous Types).
Embryology: Structure and Development of Anther, Male Gametophyte Polygonum Type of Embryosac, Endosperm. (Excluding endosperm Haustoria) Development of Dicot Embryo)
- UNIT-V** **Ecology and Evolution:**
Ecology: Plant Habitat - Climatic, Edaphic and Biotic Factors.
 Xerophytes - (Nerium, Opuntia)
 Mesophytes - (Helianthus, Hibiscus)
 Hydrophytes - (Hydrilla, Nelumbium)
Evolution - Organic Evolution – Evidences, Theories of Lamarck Darwin.

RECOMMENDED TEXT BOOK:

Sl. No.: 14P2

Subject Code: U11BO4A2P

GOVERNMENT ARTS COLLEGE (AUTONOMOUS)::KARUR-05

**B.Sc., – IV SEMESTER – ALLIED COURSE - II
(FOR ZOOLOGY MAJOR)**

(For the candidates admitted from 2011 – 12 onwards))

ALLIED BOTANY II – PRACTICAL

1. Study of vegetative, reproductive micro preparation included in the Algae, Fungi, Bryophyte, Pteridophyte, Gymnosperm.
2. Preparation and Transverse section of following plant parts to observe and record the internal structure.
E9: monocot & Dicot stem.
3. To study the following families as in the syllabus.
4. Demonstration by
Osmosis
Ganong's Potometer
Anaerobic respiration
Lanes Auxanometer
Clunostat
Beaker & Funnel expt.

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GOVERNMENT ARTS COLLEGE (AUTONOMOUS)::KARUR-05**B.Sc.,– IV SEMESTER – ALLIED COURSE - III
(FOR ZOOLOGY MAJOR)**

(For the candidates admitted from 2011 – 12 onwards)

ALLIED BOTANY III**UNIT- I THALLOPHYTES**

Algae: General Characters of Algae. Study of the Following General with Structure, Reproduction and Life History. Oscillatoria, Volvox, Oedogonium, Chara, Ectocarpus, Polysiphonia.

UNIT- II Fungi, Albugo, Yeast, Peneillium, Polyporus. Elementary Knowledge of Virus and Bacteria.**UNIT-III** Bryophytes, Pteridophytes and Gymnosperms. MOSS. Lycopodium, Adiantum, Cycas.**UNIT-IV PLANT PHYSIOLOGY:**

Absorption of Water and Salts, Role of Mineral Elements. Transpiration and Factors Affecting it, Growth Hormones.

UNIT-V Photosynthesis – path of Carbon – Protein Synthesis Nitrogen Cycle: Respiration – Aerobic – Kreb’s Cycle – Elementary and Anserobic – Fermentation.**RECOMMENDED TEXT BOOK:**

1.

References:

Fuller, HJ & Tipppo, 0 1949, Colloge Botany –Henry, Holt&co.

Gangully, A.K. – General Botany, the New Book Stall, Calcutta, Vol.I, 7th Edn. (1971) Vol.II, 6th Edn. 1975.

K.N. Rao, K.Krishnamurthy and G.S. Rao. 1979. Ancillary Botany, S. Viswanathan.

Nathawat, G.S.P.D. Sharma and R.K. Shani 1977. A Text Book of botany, Ramesh Book Depot, Jaipur.