1.1.2

BOT 503

BIOPROSPECTING AND PLANT RESOURCE UTILIZATION

Unit I: Bioprospecting: Definition, Introduction, Current practices in Bioprospecting for conservation of Biodiversity and Genetic resources.

Bioprospecting Act: Introduction, Phases of Bioprospecting, Exemption to Act. Fields of Bioprospecting.

Unit II: Medicinal Plants Bioprospecting/ Pharmaceutical Bioprospecting: for new drugs, assays in Bioprospecting. Antioxidant assay– NO free radical scavenging assay, Antigenotoxicity assay– MTT assay, Antiviral activities of plants–SRB assay.

Unit III: Marine Bioprospecting: Sources of marine planktons and their Bioprospecting, Isolation and cultivation of Marine bioresources, Isolation of Marine Yeast and its industrial applications, Bioactive chemicals from Seaweeds and their applications.

Unit IV: Microbial Bioprospecting: Isolation of Microbial metabolites and their bio-activity. Endophytic microbial products as Antibiotics.

Unit V: Origin, evolution, botany, cultivation and uses of Food, Fodder, Fibers, Oil yielding crops, wood and timber, Non-wood forest products (NWFPS): Bamboos, Gums, Dyes, Resins, Fruits etc.

Unit VI: Botany, Chemistry, Properties and uses of Medicinal and Aromatic plants.

Unit VII: Separation of secondary metabolites, Pharmacognostic procedures,

Laboratory exercise:

1. Food Crops: Morphology, anatomy, micro-chemical test for stored material: Wheat, rice, maize, chickpea, potato, sweet potato, sugarcane,
2. Study of any five important crops used for fodder / forage purpose: Jowar, Bajra, lucerne, Maize etc.
3. Plant fibers: Cotton, jute, sun hemp, coir, silk cotton: Morphology microscopic study anatomy of whole fibers, using appropriate staining methods.
4. Medicinal and aromatic plants: At least 5 medicinal and 5 aromatic plants and their morphology, anatomy, phyto-chemistry.
5. Oil yielding crops: Mustard, groundnut, soybean, coconut, sunflower, castor: Morphology, microscopy of oil yielding tissue, test for oil, acid, Iodine numbers.
6. Gum, resin, tannin, dye yielding plants.
7. Fire wood and timber yielding plants.
8. Antioxidant assay–NO free radical scavenging assay.

1.1.2
1.2.1

SEM.	Course	Course No.	Title	Credits	No. of Hrs./ Semester	Exam Hours	Theory Marks Int.	Theory Marks Ext.	Practical Marks	Total
III	Core Course	BOT 501	Biology and Diversity of Bryophytes, Pteridophytes and Gymnosperms	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Core Course	BOT 502	Ecology and Conservation	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Elective Course	BOT 521 A BOT 521 B BOT 521 C BOT 521 D	Crop Genetics and Plant Breeding - I Plant Pathology-I Taxonomy of Angiosperms - I Advanced Plant Physiology and Biochem. - I	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Elective Course	BOT 522 A BOT 522 B BOT 522 C BOT 522 D	Crop Genetics and Plant Breeding - II Plant Pathology-II Taxonomy of Angiosperms - II Advanced Plant Physiology and Biochem. II	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Service Course			3T	45	3T	20	80	---	100
			TOTAL	**19T + 8P = 27**	**285+ 240 = 525**	**15T 20P**	**100**	**400**	**200**	**700**
IV	Core Course	BOT 503	Bioprospecting and Plant Resource Utilization	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Core Course	BOT 504	Genetic Engineering and Bioinformatics	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Elective Course	BOT 523 A BOT 523 B BOT 523 C BOT 523 D	Advanced Genetics & Molecular Biology – I Plant Pathology – III Taxonomy of Angiosperms – III Plant Physiology – III	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Elective Course	BOT 524 A BOT 524 B BOT 524 C BOT 524 D	Advanced Genetics & Molecular Biology – II Plant Pathology – IV Taxonomy of Angiosperms – IV Advanced Plant Physiology -IV	4T + 2P	60+ 60	3T 5P	20	80	50 **Project Presentation**	150
	Research Component	BOT 505	Research Methodology - II	3T	45	3T	20	80	---	100
			TOTAL	**19T + 8P = 27**	**285+ 240 = 525**	**15T 20P**	**100**	**400**	**200**	**700**
			GRAND TOTAL	**107**	**2940**	**60T 80P**	**400**	**1600**	**800**	**2800**

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M. Sc. Botany

SEM.	Course	Course No.	Title	Credits	No. of Hrs./ Semester	Exam Hours	Theory Marks Internal	Theory Marks External	Practical Marks	Total
I	Core Course	BOT 401	Cell Biology	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 402	Molecular Biologogy	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 403	Biology and diversity of algae, fungi and Microbes	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 404	Taxonomy of Angiosperms	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Compulsory Course	BOT 405	Indian Constitution	2T	30	3T --	20	80	---	100
			TOTAL	**18T + 8P = 26**	**270+ 240 =510**	**15T 20P**	**100**	**400**	**200**	**700**
II	Core Course	BOT 406	Cytology and Genetics	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 407	Plant development and reproduction	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 408	Biotechnology	4T + 2P	60+ 60	3T 5P	20	80	50	150
		BOT 409	Plant Physiology and Metabolism	4T + 2P	60+ 60	3T 5P	20	80	50	150
	Research Component	BOT 410	Research Methodology - I	3T	45	3T --	20	80	---	100
			TOTAL	**19T + 8P = 27**	**285+ 240 = 525**	**15T 20P**	**100**	**400**	**200**	**700**

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Received copy
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27.06.16