Master of Science (Biotechnology)
M.Sc. (Biotechnology) Semester (I)

Course Code	PS01EBIT51	Title of the Course	Phytoresource utilization and conservation
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	By the end of this course students will have: 1. Clear understanding on extant of diversified local, regional and global phytoresources available for mankind. 2. Fair understanding about various kinds of little known phytoresources 3. Greater concern towards the exploration and utilization of traditional or local varieties of crop plants. 4. 4. Greater concern to recognize and appreciate the knowledge of tribal and traditional societies on phytoresources, and conservation of such knowledge.

Course Content		
Unit	Description	Weightage* (%)
1.	Concept and extant of plant diversity in wild and cultivation. Innovations meeting for world food demands. Origin and history of plant of domestication and agriculture; centers of crop plant origin and diversity; geographical distribution of crops of Indian origin. Plant genetic resources, their importance in crop improvement, collection and managing genetic resources. Role of biotechnology in germplasm conservation.	25
2.	A brief account on the following major and minor crops of Indian origin, their products and uses. (i) food grains (ii) oil yielding crops (iii) medicinal and aromatic plants. A brief account on the sources, active principles and uses of (i) alcoholic and non-alcoholic beverages (ii) coloring agents (iii) spices (vi) sweetening agents (iv) petrocrops and biofuels.	25
3.	Ethnomedicobotany: Scope and potential applications; collection methods of ethnomedicobotanical data; field methods and scrutiny of Herbarium specimens and folklore; verification of data; collection of materials for voucher specimen and for phytochemical screening; Avenue trees: concept, role, site specific selection criteria for urban habitations, industrial zones, and highways.	25

	Indoor plants: different kinds of indoor plants and their significance; site specific selection and care of indoor plants.	
4.	Forest products: Important timber yielding plants, timber identification/diagnostic features. Non-timber forest products: bamboos, rattans, gums, resins, tannins. Plants as sources of drugs and pharmaceuticals. Drugs of botanical origin: Structure and physical properties; chemistry of secondary metabolites: phenols, phenolic glycosides, saponins, steroids, alkaloids, vitamins and hormones and natural antibiotics.	25

Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.

Evaluation Pattern

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to

1.	Appreciate the extant and significance of different wild and domesticated plants.
2.	Recognize the extant of traditional knowledge and importance of documenting such knowledge.
3.	Develop the spirit of exploring uses unconventional plants and unconventional uses of popular plants.

Suggested References:

Sr. No.	References
1.	Arora, R., K., Nayar, E., R.,(1984). Wild Relatives of Crop Plants in India. National Bureau of Plant Genetic Resources Science Monograph, New Delhi
2.	Bole, P., V., Vaghani, Y., (1986). Field Guide to Common Indian Trees. Oxford University Press, Mumbai.
3.	Chandel, K., P., S., Shukla, G., Sharma, N., (1986). Biodiversity in Medicinal and Aromatic Plants in India: Conservation and Utilization. National Bureau of Plant Genetic Resources, New Delhi.
4.	Ambasta, S., P., (1986). Council of Scientific & Industrial Research. The Useful Plants of India. Publications and Information Directorate, CSIR, New Delhi.
5.	Jain, S., K., (2004). A Manual of Ethnobotany. 2nd Edn. Scientific Publishers Journals Department, Jodhpur.
6.	Jain, S., K., Sinha, B., K., Gupta, R., C., (1991). Notable plants in Ethnomedicine of India. Deep Publications, New Delhi.
7.	Jain, S., K., (2015). Dictionary of Indian Folk medicine and Ethnobotany. S K Jain Publications, New Delhi.

On-line resources to be used if available as reference material
On-line Resources
Relevant review articles/research papers/handouts of latest development in the subject

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