University of Kerala

Discipline	**BOTANY**				
Course Code	**UK2MDCBOT101**				
Course Title	**PLANTS AND HUMAN WELFARE**				
Type of Course	**MDC**				
Semester	**II**				
Academic Level	**100 - 199**				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	03	02 Hours	-	02 Hours	04 Hours
Pre-requisites	Basic understanding of plant biology at the high/secondary school level.				
Course Summary	This course explores the relationship between plants and human society, covering topics such as medicinal plants, food crops, and economic significance, as well as their importance in maintaining biodiversity and ecosystem services.				

Detailed Syllabus:

Module	Unit	Content	Hrs
I		**Plant relation to humans**	**02**
	1	Origin of Cultivated Plants: Vavilov's Concept of Centers of Origin of cultivated crop plants -Introduction, Domestication, the evolution of new crop varieties of rice, wheat, and potato.	
	2	Role of plants: Air purifier (Photosynthesis); plants used in rituals/festivals; pollution removal (Phytoremediation and its types), pollution indicator (lichens), and nutrient source (litter manure).	
II		**Food crops**	**08**
	3	Cereals: Wheat & Rice (With special reference to indigenous rice varieties- Pokkali, Navara and Jeerakasala rice) a. Millets: Ragi, Jowar, and Bajra-(Brief account of nutritional importance) b. Legumes: Chick pea, Pigeon pea. c. Vegetable Crops: Cabbage, Brinjal, Carrot. d. Fruits: Apple, Orange. e. Narcotics: Poppy, Cannabis. f. Masticatory: Areca nut, Tobacco.	
	4	**Cash crops -** Beverages- Tea (Morphology uses and processing). Natural Rubber - (Morphology, Tapping and processing)	

	5	**Plants in Medicine**- Plant-based medicinal systems – Ayurveda, Siddha, unani and folk medicine (brief account). **Herbal basket**: Following plants to be studied for botanical source, part of the plant used, and medicinal uses: *Ocimum sanctum, Adhatoda, Ginger, Curcuma longa, Aloe, Andrographis Coleus, Acorus, Boerhavia and Oldenlandia* **Nature of active principles** of *Rauwolfia, Cinchona,* and *Vinca.*	
III	**Lower plants in Economic Botany**		
	6	Algae- Ulva, Codium Food, Chondrus (Carrageenan- gelling agent) Fungi- Agaricus, Lycoperdon, Morchella. Lichen- Parmelia (spice), Peltigera (food).	**04**
IV	7	**Plants Role in Human Prospects** Biofuel from Starchy crops- (Tapioca/Sweet potato)-Starch to sugars, sugar to alcohol and product recovery) Brief description only)	**04**
V	**Management of Plant Biodiversity**		
	8	Conservation of Plants in Protected Areas, *In situ* and *Ex-situ* Plant Conservation: Principles and practices- Conventional methods and Biotechnological methods. Concept of RET plants, Organizations associated with biodiversity-IUCN, UNEP, UNESCO, WWF, NBPGR, PBR: Biodiversity legislation and conservations, Biodiversity information management and communication.	**12**

Practicals		
	1. Collect and properly preserve the economically used plants or plant products. 2. Study of exotic species- Identification and morphological characteristics. 3. Homestead Biodiversity documentation. 4. Submission of geotagged photos of plants of RET. 5. Identification of common plants used in daily life, including herbs, vegetables, and ornamentals. 6. Visit to local ecosystem to study the plants. 7. Visit to plantation crop research institute.	**30**

Suggested Reading

1. Hill A.F (1952) Economic Botany, Tata-Mc-Graw Hill, New Delhi
2. Kochhar S.L.(1998). Economic Botany of Tropics, Macmillan India Publishers. New Delhi
3. Susil Kumar Mukharjee(2004). College Botany Vol-III. New Central Book agency, London
4. Vasanth Kumar P. (2014). Economic Botany. Sonali Publications New Delhi.

Reference

1. Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity - Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi
2. Daubenmire, R.F. : Plants & Environment (2nd Edn.,) John Wiley & Sons., New York 22
3. Billings, W.B. (1965): Plants and the Ecosystem Wadsworth Publishing Co., Inc., Belmont.
4. Misra, R. (1968): The Ecology work Book Oxford & INH Publishing Co., Calcutta
5. S.K .Jain1995. Manual of Ethnobotany. Scientific publishers.
6. S. Sundar Rajan-2007. College Botany Vol-V, Part 1:Taxonomy and Economic Botany Himalaya Publishing House.
7. Erach Bharucha, 1998. Environmental Studies for UG Students. Universities Press, New Delhi.

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Understand the role and scope of Plant Diversity for human welfare	U	PSO-1,2
CO-2	Apply the methods of conservation of Biodiversity	R, U, Ap	PSO-1,6
CO-3	Understand the role of plants in providing food, medicine and other resources essential for human survival	R,U	PSO-1,2
CO-4	Creates awareness on economic importance of various plant groups	U,C	PSO-1

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: Plants and Human welfare.

Credits: 2:0:1 (Lecture:Tutorial:Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
CO-1	1		U	F	L	
CO-2	2		R, U, Ap	C	L	P
CO-3	3		R,U	C	L	
CO-4	4		U, C	P	L	P

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics :

	Internal Exam	**Assignment**	**Project Evaluation**	**End Semester Examinations**
CO 1	✓			✓
CO 2	✓			✓
CO 3	✓			✓
CO 4		✓		✓