University of Kerala

Discipline	**BOTANY**				
Course Code	**UK4SECBOT201**				
Course Title	**MUSHROOM CULTIVATION**				
Type of Course	**SEC**				
Semester	**IV**				
Academic Level	**200 - 299**				
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 about structure of fungi.				
Course Summary	This SEC provides detailed tools and techniques about mushroom cultivation, its nutritional profile, various levels of management and its marketing so that students can earn through this acquired knowledge and skill.				

Detailed Syllabus:

Module	Unit	Content	Hrs
I		**Introduction to Mushrooms**	03
	1	General characters and morphology of mushrooms	
	2	Scope and significance of mushroom cultivation	
	3	Identification of mushrooms - edible and poisonous.	
	4	Distinguishing characters of different types of Mushrooms such as button, oyster and milky mushrooms.	
II		**Nutritional Value of Mushrooms**	04
	5	Nutritional profile of mushrooms - Carbohydrates, proteins, amino acids, vitamins, minerals, fats and fibre.	
	6	Health benefits of Mushrooms-anti-tumour, antiviral and antibacterial effect, in therapeutic diet (brief study)	
	7	Common Indian mushrooms.	
III		**Cultivation Methods of Mushrooms**	07
	8	Pre requisites for Mushroom cultivation.	
	9	Preparation of Spawn - requirements, substrate selection, isolation of pure culture and nutrient media for pure culture. Maintenance and storage of spawn.	
	10	Cultivation of Oyster Mushroom (*Pleurotus sps*.) Specify	
	11	Cultivation of Milky Mushroom (*Calocybe indica*)	
IV		**Pest and disease Management in Mushroom Culture**	04
	12	Common pests and pest management in	
	13	Commonly identified Diseases and its management	
	14	Disease prevention and control measures	
V		**Value Addition in Mushroom Culturing**	12

	15	Post-harvest processing of mushrooms- refrigeration / instant packing, freeze drying, dehydration, canning	
	16	Value-added products from mushrooms – soup powder, biscuits, chutney powder, pickles.	
	17	Marketing strategies for mushroom products	
	18	Major problems in mushroom cultivation and solutions. self-employment schemes, Government aids	

Practicals		
	1. Hands-on training on mushroom mother spawn preparation 2. Hands on training on Bedding and Bagging 3. Training in Oyster mushroom cultivation 4. Visit to a mushroom cultivation unit/house	**30**

Suggested Reedings:

1. Gupta S., Summuna B., Gupta M., Annepu S.K. (2018). Edible Mushrooms: Cultivation, Bioactive Molecules, and Health Benefits. In: Mérillon J M., Ramawat K. (eds) Bioactive Molecules in Food. Reference Series in Phytochemistry. Springer, Cham. https://doi.org/10.1007/978-3-319-54528-8_86-1
2. John T Fletcher and Richard H. Gaze (2007). Mushroom Pest and Disease Control-A colour Hand Book, CRC PRESS.
3. Kaul T.N. (2002). Biology and conservation of mushrooms. Oxford and IBH publishing co. pvt. Ltd. New Delhi. ISBN 81-204-1513-2.
4. Kratika Sharma (2015). Mushroom: Cultivation and Processing. International Journal of Food Processing Technology, 5:9-12
5. Marimuthu, T. Krishnamoorthy, A.S. Sivaprakasam, K. and Jayarajan. R. (1991). Oyster Mushroom. Department of Plant Pathology. Tamil Nadu, Agricultural University, Coimbatore.

References

1. Nita Bhal. (2000). Handbook of Mushrooms. 2nd ed. Vol. I and II. Oxford and IBH publishing Co. Pvt. Ltd., New Delhi.
2. Pandey R.K, S.K Ghosh, (1996). A Hand Book on Mushroom Cultivation. Emkey publications.
3. Pathak, V.N. and Yadav, N. (1998). Mushroom Production and Processing Technology. Agrobios, Jodhpur.
4. Singh DP, Prabha R. (2017). Bioconversion of Agricultural Wastes into High Value Biocompost: A Route to Livelihood Generation for Farmers. Adv Recycling Waste Manag. 2: 1-5.
5. Stamets P and Chilton J. S. (1985). The mushroom cultivator, Richmond publishing company. U.K. ISBN 096-1079-80-0.
6. Tiwari Pankaj Kapoor, S.C. (1998). Mushroom cultivation. Mittal Publication, New Delhi.
7. Tripathy D.P. (2005). Mushroom cultivation. Oxford and IBH publishing co. pvt.Ltd.New Delhi. ISBN 8120416449

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Differentiate among various mushrooms such as edible, poisonous etc.	U	PSO-1, 7
CO-2	Evaluate nutritional content of different mushrooms	An	PSO-1, 9
CO-3	Categories various methods for mushroom culture	Ap	PSO-11
CO-4	Examine various pest and disease that attacks mushrooms	An	PSO-9
CO-5	Formulate a project proposal for large scale production of Mushrooms	C	PSO-11

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

Name of the Course: Mushroom Cultivation

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	PSO-1	U	F, C	L	
CO-2	2	PSO-1	An	F,C	L	
CO-3	3	PSO-12	Ap	P	L	P
CO-4	4	PSO-9	An	F, C	L	P
CO-5	5	PSO-13	C	P	T	

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				✓
CO 5		✓		✓