

Resolution No. AC/II/(22-23).3.RUS4

**S. P. Mandali's**  
**Ramnarain Ruia Autonomous College**  
*(Affiliated to University of Mumbai)*



**Syllabus for**  
**SKILL ENHANCEMENT COURSE**

(As per the guidelines of National Education Policy 2020  
Academic year 2023-24)

(Choice based Credit System)

**COURSE OUTLINE**  
**SKILL ENHANCEMENT COURSE**  
**Course Code: RUSSECBOT.O101**  
**Course Title: Mushroom cultivation**  
**Academic year 2023-24**

SEMESTER	COURSE CODE/ Unit	COURSE TITLE	CREDITS
I	RUSSECBOT.O101	Mushroom Cultivation	02
	Unit- I	Culture Techniques & Post harvest handling	01
	RUSSECBOTP.O101	Practicals based on RUSSECBOT.O101	01

## SKILL ENHANCEMENT COURSE

Course Code : RUSSECBOT.O101

Course Title: Mushroom cultivation

Academic year 2023-24

### COURSE OUTCOMES:

COURSE OUTCOMES	DESCRIPTION A student completing this course will be able to:
CO 1	Identify various cultivable species of mushrooms, distinguish between edible and non-edible mushrooms, and classify them.
CO 2	Perform the culture techniques of edible mushrooms and evaluate and explore the economic viability of mushrooms
CO 3	Experiment the cultivation procedures, design new culture technique and address the pest problem and factors affecting growth of mushroom.
CO 4	Develop technologies for harvesting & packaging of mushrooms and to avail loan from banks
CO 5	Create new mushroom recipes for marketing.

### DETAILED SYLLABUS

Course Code	Unit	MUSHROOM CULTIVATION	Credits/ Hours
RUSSECBOT. O101	I	<ul style="list-style-type: none"> <li>➤ Introduction, Classification-Edible and Poisonous. Tests for identification - Nutritive value</li> <li>➤ Market size of mushrooms- global &amp; Indian</li> <li>➤ Life cycle of a common mushroom-<i>Agaricus</i>)</li> </ul> Culture Techniques – Preparation of spawn, preparation of compost – Spawn running –Harvesting and Marketing ( <i>Pleurotus/ Volvariella/ Calocybe indica</i> -(Milky mushroom)/ <i>Agaricus</i> ) <ul style="list-style-type: none"> <li>➤ Post-harvest handling and value added products</li> <li>➤ Diseases and pest management</li> <li>➤ Delicious recipes of mushroom</li> <li>➤ Economic importance of mushrooms</li> <li>➤ Finances and profitability in mushroom cultivation</li> </ul>	Credit-1 Hours-15

		> Economics of spawn and mushroom production Hydroponic cultivation of mushrooms	
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PRACTICAL		
RUSSECBOTP. O101	MUSHROOM CULTIVATION	Credit – 1
1	Study of stages in the life cycle of <i>Agaricus</i> from fresh/ preserved material and permanent slides.	
2	Identification of edible and poisonous mushrooms.	
3	Preparation of spawn	
4	Cultivation of mushroom – <i>Pleurotus</i> / Milky mushroom	
5	Postharvest handling of mushrooms	
6	Mushroom recipes	
7	Waste management	

### References:

- Awasthi, L. P, Ojha, M. D., Enespa, Awadhesh Kumar Tiwari, Kalyani Publishers, Mushroom cultivation and culture, ISBN13: 9789353596361
- Dubey, RC. (2001) A Textbook of Biotechnology, S.Chand & Co. Ltd.
- Kaul T.N. 2002. Biology and conservation of mushrooms. Oxford and IBH publishing co.pvt.Ltd. New Delhi. ISBN 81-204-1513-2.
- Nita Bahl (1984). Handbook on Mushrooms, Oxford and IBH Publishing Company
- Stamets P and Chilton J. S 1983. The mushroom cultivator, Agarikan press.Homstet Book corporation. ISBN096-1079-80-0.
- Subrata Biswas, M Datta And S V Ngachan, 2012, Mushrooms : A Manual For Cultivation, ISBN :9788120344945, Publisher: PHI learning, e book available
- Tripathy D.P 2005. Mushroom cultivation. Oxford and IBH publishing co. pvt.Ltd.New Delhi.
- EIRI board Handbook of Mushroom Cultivation Processing Preservation Book Publisher: Engineers India Research Institute
- Handbook on Mushroom Cultivation and Processing (with Dehydration, Preservation and Canning) 2011, Author: NIIR Board of Consultants and Engineers ISBN: 9788178330341
- Ryan Debra 2022, Introduction Guide To Hydroponic Mushrooms Growing System, ISBN-13 : 979-8404045888, Kindle edition and Paper back available.
- Sarah Stones, 2021, Hydroponic Mushroom Cultivation; A Profound Guide For Amateur And Professional Mycologists: A Step By Step Guide To Produce Mushroom From Farm To End (Paperback) ISBN: 9798592839634



- Tradd Cotter, 2014, Organic Mushroom Farming and Mycoremediation, Publisher : Chelsea Green Publishing (August 18, 2014) ISBN-10 : 1603584552, ISBN-13 : 78-1603584555

### Hindi Books

- Shukla, Chandra Prakash Mashrook Utpadan Taknik (Hindi) 2019, (Mushroom production technology) Mispah Books, ISBN 13: 9788194116493  
Khumbi Utpadan Krishi Book (Hindi Edition) 2020 Kindle Edition Hindi Edition by Virender Singh (Author)

### Marathi books

- अळींबी: शेतकरी व स्वयंसहायता गटास पूरक व्यावसाय (Marathi Edition) Kindle Edition Marathi Edition by पी. निकोडे (Author)
- Alambi Lagawad (Marathi) Dr. Pramod Borkar, 2022, Publisher: Sakal Media Pvt. Ltd Available on Flipcart

### Online resources:

- Annepu S K, Sharma V P, Kumar S & Barh A. 2019. Cultivation Techniques of Shiitake (A Medicinal Mushroom with Culinary Delight). [https://www.researchgate.net/publication/352837214\\_Cultivation\\_Techniques\\_of\\_Shiitake\\_A\\_Medicinal\\_Mushroom\\_with\\_Culinary\\_Delight](https://www.researchgate.net/publication/352837214_Cultivation_Techniques_of_Shiitake_A_Medicinal_Mushroom_with_Culinary_Delight)
- Ahlawat O P & Arora B. 2016. Paddy Straw Mushroom (*Volvariella volvacea*) Cultivation. [https://www.researchgate.net/publication/343499927\\_Paddy\\_Straw\\_Mushroom\\_Volvarella\\_volvacea\\_Cultivation](https://www.researchgate.net/publication/343499927_Paddy_Straw_Mushroom_Volvarella_volvacea_Cultivation)
- Cultivation of Winter Mushroom (*Flammulina velutipes*) [https://dmrsolan.icar.gov.in/Folder\\_Flammulina\\_Mushroom\\_English\\_.pdf](https://dmrsolan.icar.gov.in/Folder_Flammulina_Mushroom_English_.pdf)
- Munshi N A, Dar G H, Ghani M Y, Kauser S & Mughal N. (2010). Button Mushroom Cultivation. [https://www.researchgate.net/publication/236011864\\_Button\\_Mushroom\\_Cultivation](https://www.researchgate.net/publication/236011864_Button_Mushroom_Cultivation)
- Maurya A K, John V & Rathor U S. 2020. Cultivation Techniques of Oyster Mushroom (*Pleurotus* sp.). 10.22271/ed.book.905. [https://www.researchgate.net/publication/344176332\\_Cultivation\\_Techniques\\_of\\_Oyster\\_Mushroom\\_Pleurotus\\_sp](https://www.researchgate.net/publication/344176332_Cultivation_Techniques_of_Oyster_Mushroom_Pleurotus_sp)
- Maurya A K, Murmu R, John V, Srivastava D K & Pant H. 2020. An introduction about milky mushroom: Their cultivation and disease management. [https://www.researchgate.net/publication/345603860\\_AN\\_INTRODUCTION\\_ABOUT\\_MILKY\\_MUSHROOM\\_THEIR\\_CULTIVATION\\_AND\\_DISEASE\\_MANAGEMENT](https://www.researchgate.net/publication/345603860_AN_INTRODUCTION_ABOUT_MILKY_MUSHROOM_THEIR_CULTIVATION_AND_DISEASE_MANAGEMENT)

## Modality of Assessment Skill Enhancement Course (2 credits)

### A) Internal Assessment (Theory)- 40%- 10 Marks

Sr No	Evaluation type	Marks
1	Class Test/Assignment/Open Book Test	10
	<b>TOTAL</b>	<b>10</b>

### B) External Examination (Semester End)- 60%- 15 Marks

#### Semester End Theory Examination:

1. Duration – The duration for these examinations shall be of **30 min**
2. Theory question paper pattern:

#### Paper Pattern:

Question	Options	Marks	Questions Based on
Q.1	Attempt ANY 1 out of 3	5	Unit I
Q.2	Attempt ANY 1 out of 3	5	Unit I
Q. 3	Attempt ANY 1 out of 3	5	Unit I
	<b>TOTAL</b>	<b>15</b>	

### Practical Examination Pattern: Total Marks 50

#### A) Internal Examination - 40%- 20 Marks

#### B) External Examination (Semester End)- 60%- 30 Marks

<b>INTERNAL EXAMINATION</b>	
Particulars	Practical Marks
Field study/ Assignment	10
Journal	05
Practical participation	05
Total	<b>20</b>
<b>SEMESTER END EXAMINATION</b>	
Laboratory work	30
Total	<b>30</b>
Total	<b>50</b>



## PRACTICAL JOURNAL

The students are required to present **a duly certified journal** for appearing at the practical examination, failing which they will not be allowed to appear for the examination.

In case of loss of Journal and/ or Report, a Lost Certificate should be obtained from Head/ Co-ordinator / Incharge of the department; failing which the student will not be allowed to appear for the practical examination.

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