

Maharashtra State Board of Vocational Examination, Mumbai 400 051

1	Name of Course	Diploma Course in Mushroom Cultivation										
2	Course Code	305418										
3	Max no. of Students	25										
4	Duration	2 year										
5	Course Type	Full Time										
6	No. of Days per week	6 days										
7	No. of hours per day	7 Hrs										
8	Space require	Theory Class Room – 200 sqft Practical Lab – 2000 sqft										
9	Entry qualification	S.S.C. Pass										
10	Objective of syllabus	To develop Agricultural skills in the students. To maximise production of mushrooms and their products. Students can be able to proceed further education in science and agricultural courses										
11	Employment opportunities	Trainees can develop his own mushroom farm as self employment and could be employee. Trainees will be eligible for job in seed, pesticide, spawn producing companies. or with working experience will be in a position to start his own independent Business.										
12	Teachers Qualification	1) For Vocational subject - M.S.C. (Agri) 2) For Non Vocational Subject - Master Degree in Concern subject										
13	Teaching Scheme –											
	Sr.	Subject	Subject Code	Clock Hours / Week				Total				
				Theory	Practical							
	1	English (Communication Skill)	90000001	2 Hrs	1 Hrs			3 Hrs				
	2	Elective – I		2 Hrs	1 Hrs			3 Hrs				
	3	Elective – II		2 Hrs	1 Hrs			3 Hrs				
	4	Mushroom Cultivation	30540006	3 Hrs	8 Hrs			11 Hrs				
	5	Mushroom Product Composition	30540023	3 Hrs	8 Hrs			11 Hrs				
	6	Mushroom Aesthetic Value	30540050	3 Hrs	8 Hrs			11 Hrs				
	Total							42 Hrs				
14	Internship	Two Months Summer Internship from 1 st May to 30 th June is Compulsory.										
15	Examination Scheme – Final Examination will be based on syllabus of both years.											
	Paper	Subject	Subject Code	Theory			Practical		Total			
				Duration	Max	Min	Duration	Max	Min	Max	Min	
	1	English (Communication Skill)	90000001	3 Hrs	70	25	3 Hrs	30	15	100	40	
	2	Elective – I		3 Hrs	70	25	3 Hrs	30	15	100	40	
	3	Elective – II		3 Hrs	70	25	3 Hrs	30	15	100	40	
	4	Mushroom Cultivation	30540006	3 Hrs	100	35	3 Hrs	100	50	200	85	
	5	Mushroom Product Composition	30540023	3 Hrs	100	35	3 Hrs	100	50	200	85	
	6	Mushroom Aesthetic Value	30540050	3 Hrs	100	35	3 Hrs	100	50	200	85	
										900	375	
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16	Teachers – Three Teachers per batch for vocational component. For English, Elective-I & II guest faculty on clock hour basis.											
17	a) For Elective I – Student can choose any one subject						b) For Elective II – Student can choose any one subject					
	Code	Subject Name					Code	Subject Name				
	90000011	Applied Mathematics					90000021	Applied Sciences (Physics & Chemistry)				
	90000012	Business Economics					90000022	Computer Application				
	90000013	Physical Biology (Botany & Zoology)					90000023	Business Mathematics				
	90000014	Entrepreneurship										
	90000015	Psychology										

Mushroom Cultivation – Ist Year

Subject Code : 30540006

1. **Principle of Mushroom Cultivation and Production-** Mushroom Cultivation- Both a Science and an Art, World Mushroom Production, Differences in Mushroom, Production Patterns, World Mushroom Market, Development of World Mushroom Movements (Organizations).
2. **Cultivation practices-** step of mushroom cultivation, step-composting, spawning, casing, harvesting.
3. **Care management-** sterilization of media, preparation of beds, sowing of spawn , after care.
4. **Cultivable species-** button mushroom, paddy straw mushroom, oyster mushroom (dhingri).
5. **Button mushroom-** important factor for cultivation, compost decomposting method, tray filling, and sterilization, sowing of spawn, casting, after care and harvesting of mushroom.

Mushroom Cultivation – IInd Year

Subject Code : 30540006

1. **Mushroom farms-** Farm layout, Farm hygiene.
2. **Growing oyster mushrooms on pasteurized or ‘sterilized’ substrates-** Preparation of the substrate, Heat treatments. Spawning pasteurized substrate, Spawning sterilized bags, Spawn run, Fruiting/cropping, Harvesting, Case description: Ahmedabad, India, Case description- Bogor, Indonesia, Contents, Junciao Technology turns grass into mushrooms.
3. **Techniques** -Major Phases of Mushroom Cultivation, Selection of an acceptable Mushroom species/strains, Secreting a good quality of fruiting culture, Development of robust spawn.
4. **MUSHROOM CULTIVATION TECHNOLOGY** -Preparation of Selective Substrate/Compost, Care of Mycelial (Spawn) Running, Management of Fruiting/Mushroom Development, Harvesting Mushrooms Carefully, Mushroom Diseases, Post-Harvest Handling.
5. **Cultivation of several selected mushrooms-** Agaricus bisporus (Champignon, Button mushroom), Lentinula edodes (Xiang-gu, Shiitake, Oak mushroom), Pleurotus sajor-caju (Grey oyster mushroom, Phoenix-tail mushroom, Indian oyster), Volvariella volvacea (Patty straw mushroom, Chinese mushroom), Agaricus brasiliensis (Royal Sun Agaricus, Himematsutake), Ganoderma lucidum (Ling Zhi, Reishi).

Mushroom Product Composition – Ist Year

Subject Code : 30540023

1. **Introduction-** definition and meaning, importance and scope, nutritive value of mushroom, types of mushroom- poisonous/ non edible, non poisonous/ edible.
2. **Harvesting-** harvesting of mushroom, cleaning , drying, canning, pickling, packing and storage- short term storage, long term storage , marketing.
3. **Mushroom products-** mushroom recipes, mushroom soup (vegetarian) and preparation for six persons, cream mushroom soup and preparation for six persons, mushroom sauce and its preparation, mushroom pulao and its preparation, baked tomatoes with mushroom and its preparation,
4. **Biology of mushrooms-** Fungi, Fungus ecology, Life cycle of fungi, Temperature ranges of cultivated mushrooms.
5. **Spawn production-** The starter culture, The sterilization process, Clean environments, Cultures, Preparation of media, Preparation of slants, Mother spawn, Preparation of the final spawn.

Mushroom Product Composition – IInd Year

Subject Code : 30540023

1. **Shiitake cultivation on plastic bags-** Substrate preparation, Filling and heat , treatment, Spawning, Spawn run and mycelial development, Fruiting, Harvesting, Pests and diseases.
2. **Wood ear mushrooms on 'sterilized' substrate-** Substrate preparation, Heat treatment, Spawning and spawn run, Fruiting, Case description- the Philippines.
3. **Post harvest handling-** Fresh Market, Drying.
4. **Overview of the Mushroom Industry -** Mushrooms and Mushroom Biology, Mushroom Hunting, Ecological Classification of Mushrooms, Magnitude of Mushroom Species, Concept of Mushroom Biology, Applied Mushroom Biology.
5. **Mushroom Science -** Food Supply through Mushroom Themselves, Mushroom Biotechnology -Enhance Human Health through Mushroom Derivatives, Mushroom Bioremediation-Benefit the Environment through Mushroom Mycelia.

Mushroom Aesthetic Value – Ist Year

Subject Code : 30540050

1. **Mushroom genetics and breeding**- Discovery of sexuality by kniep and bensaude, sexuality in the edible mushrooms, mating systems (patterns of sexuality) in fungi, life cycle, strain improvement (breeding program).
2. **Mushroom Nutritional and Medicinal Properties**-Nutritional Value of Mushrooms, Medicinal Properties of Mushrooms, Mushroom Nutraceuticals.
3. **Environmental impact** -Reducing Environmental pollution by bioconversion of vast quantities of organic wastes into mushrooms, recycling of vast quantity of organic wastes into mushrooms, biofertilizer and biogas, restoration of damaged environment by mushroom mycelia.
4. **Annex. recommendations for follow-up activities** - Problems for Cultivation of Mushrooms in Some Countries in the Region, The Strategies for Developing Mushroom Industries in the Asian and Pacific Region.
5. **Appropriate Training**- Appropriate Training for Regional Mushroom Scientists and Mushroom Farmers, Consideration on the Formation of a Regional Network on Mushroom Development.

Mushroom Aesthetic Value – IInd Year

Subject Code : 30540050

1. **Production Economics**- meaning, definition, nature and scope. Basic concepts and terms, Production- factors of production, meaning and characteristics, Natural Resources- meaning and classification, Production functions- meaning and types, Factor-Product relationship; Laws of returns- increasing, constant and decreasing, Determination of optimum input and output, Factor-factor relationship, Product-product relationship, Types of enterprise relationships. Returns to scale- meaning and importance.
2. **Business management**- meaning, definition, nature and scope. Economic principles applied to the industrial business. Types and systems of business. business planning and budgeting, Risk and uncertainty.
3. **Price policy**- concept and meaning, objectives of price policy, relation between prices and production in agriculture, minimum prices, selling prices, stabilization of prices. Price policy in agriculture- agricultural prices, objective of price policy in India, minimum support price, procurement price, issue price, price stabilization, fluctuation in agricultural prices, advantages of price stabilization ,hedging, risk, agriculture price commission, buffer stock operation.
4. **International Marketing Strategy**-Rules for successful exporting. International Market Segment Preliminaries for starting Export Business. Registration of Exporters. Sending/Exporting Samples. Appointing Overseas Agents obtaining a License (Export License).
5. **International Agriculture Business**- Meaning, Scope, Importance. Impact of international agri business on Indian Economy Comparative study of Indian Agro products with other countries Agro products. Strategic Advantage to Indian agro products (Environmental advantage & Governmental advantage).