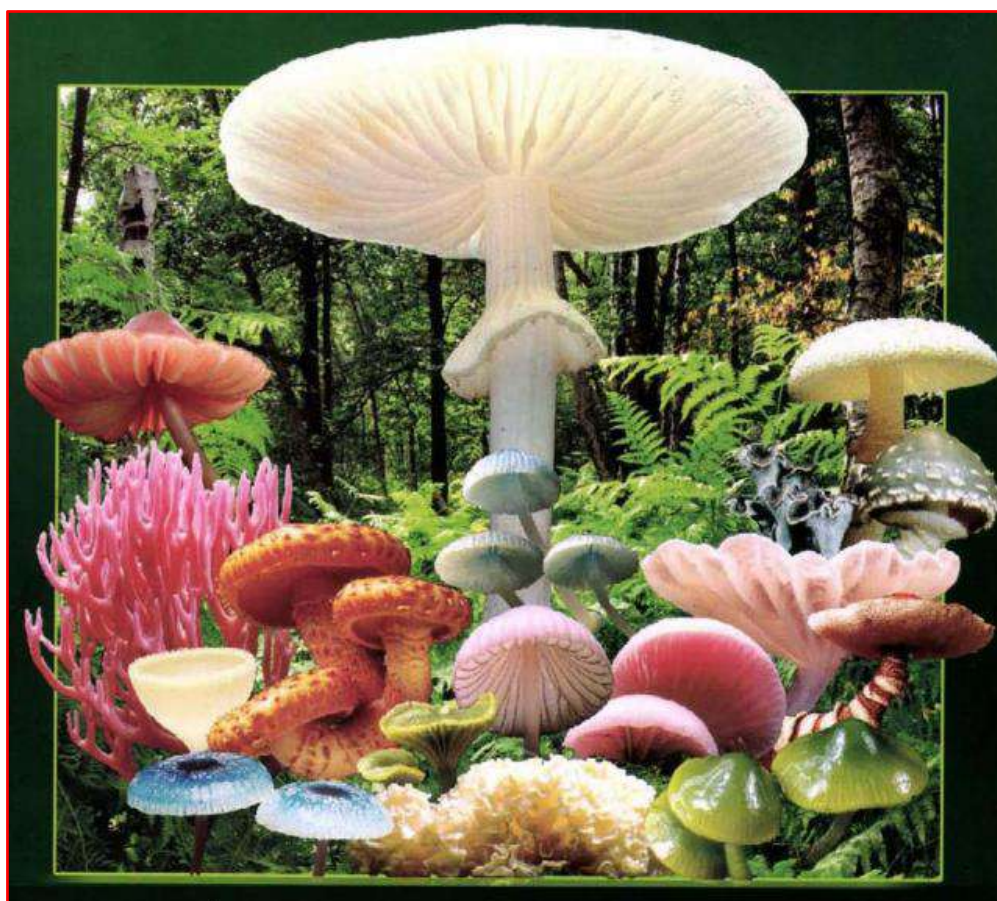


MUSHROOM CULTIVATION

CERTIFICATE COURSE

DURING THE ACADEMIC YEAR 2018-2019



Organized by

DEPARTMENT OF BOTANY

GOVT. DEGREE COLLEGE

MAHABUBABAD -506101.

CONTENT

Sl.No	Topics	Periods of Covered
1	Introduction	Two periods
2	General Information & Course Structure	One period
3	Job Roles	One period
4	General Training Plan, Examination & Pass Regulation	Three periods
5	Syllabus Content with Time Structure	Two periods
6	Infrastructure	Two periods
7	Assessment Standard	One periods
8	List of Tools & Equipment	One period
9	Final exam and Certificate Distribution	One period

INTRODUCTION

- The Ministry of Skill Development and Entrepreneurship is an apex organization for the development and coordination of the vocational training including vocational training for women in our country.
- The Ministry conducts the training programmes through the Craftsmen Training Scheme (CTS), Apprenticeship Training Scheme (ATS), Modular Employable Scheme (MES) under the Skill Development Initiative (SDI) Scheme, and Craftsmen Instructor Training Scheme (CITS) to cater to the needs of different segments of the Labour market.
- The National Council for Vocational Training (NCVT) acts as a central agency to advise Government of India in framing the training policy and coordinating vocational training throughout India.
- A majority of Indian workforce does not possess marketable skills which is an obstacle in getting decent employment and improving their economic condition.
- A large number of College drop outs do not have access to skill development for improving their employability.
- The key features of the Modular Employable Skills (MES) are:
 - Short-term training programmes designed in consultation with the Industry.
 - Identification of “minimum skills set” sufficient to get employment.
- ❖ These five domains are (1) Process, (2) Professional knowledge, (3) Professional skill, (4) Core skill, and (5) Responsibility.

2. JOB ROLES

BRIEF DESCRIPTION OF JOB ROLES

- ❖ This course is meant for the candidates who aspire to become a Mushroom Cultivator and get employment accordingly.

GENERAL INFORMATION AND COURSE STRUCTURE

1 Qualification: **MUSHROOM CULTIVATION**

2 Code No. :

3 NSQF Level: Level 3

4 Duration of Modular Training: **Two Weeks.**

5 Entry Qualification: Inter Passed

6 Trainees per unit: 20

DISTRIBUTION OF TRAINING ON HOURLY BASIS

Sl.No	Broad Practical components to be covered	Duration (in Hrs.)	Dates of Covering
1	Mushrooms Introduction	02	
2	Benefits & Cultivation	02	
3	Procedure for Mushroom cultivation	06	
4	Post Harvesting	06	
5	Cares and precautions	02	
6	Assessment Test	02	
7	Grand Test	01	
	Total	21	

5. General Training Plan, Assessment & Certificate

General Training Plan

- The skills stated in assessment outcome are to be imparted in accordance with the instructions contained within Section in respect of the content and time structure of the Certificate Course (General Training Plan).
- Assessment (Course Team) will appoint assessing bodies to assess the competencies of the trained persons.
- The assessing body will be (Senior Faculty), which will not be involved in conducting the training programmes.
- This, in turn, will ensure quality of training and credibility of the scheme.
- Keeping in view the target of providing training/testing of one million persons throughout the country and to avoid monopoly, more than one assessing bodies will be appointed for a sector or an area. Candidates are to demonstrate that they are able to

1. Plan and organize work processes, identify necessary materials and tools;
2. Perform task with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
3. Apply professional knowledge and soft skills& entrepreneurship while performing the task.
4. Check the job for accuracy, identify and rectify errors in job.
5. The details of the assessment standard are as per section.

Certificate

Successful persons will be awarded certificates issued by Department of Botany Head, Principal and Senior Faculty

SYLLABUS CONTENT WITH TIME STRUCTURE

8.1 FOR THE MODULE OF MUSHROOM CULTIVATION

Duration: 21 hrs.

Terminal Competency After successful completion of training, the person will be able to: -

- To produce different kind of mushrooms

Detailed Syllabus:

Practical	Theory
Selection and Processing of straw for bed preparation	<ul style="list-style-type: none"> • Knowledge of General Safety, health and hygiene Importance of Mushroom, scope, past, present status & future prospects. • Pros & cons in Mushroom cultivation: why the Mushroom cultivation? Problems in mushroom cultivation & its remedies. • Mushroom for health: ingredients in mushroom, i.e. Protein, Carbohydrate, Fiber, Fat, Vitamins, and Minerals etc. • Types of Mushroom. • Poisonous Mushroom. • Cultivation of Paddy Straw Mushroom and ingredients used • Oyster Mushroom Cultivation and ingredients used. • Milky Mushroom Cultivation and ingredients used. • Button Mushroom cultivation and ingredients used
Sterilization process practice	
Preparation of beds for cultivation of various mushrooms and its maintenance	
Growing and Identification of viable Spawn	
Post Harvesting care and processing Visit to Mushroom farms	
Post Harvesting care and processing Visit to Mushroom farms	Preservation of Mushroom. Economics of Mushroom cultivation.

7. INFRASTRUCTURE

1. Instructors' Qualification	a) NAC in the trade with three years' experience in the relevant field. OR b) Diploma in Agriculture field with two years' experience in the relevant field.
2. Desirable qualification	Preference will be given to candidates with First Grade in Previous course.
3. Space Norms	a) Work shop: 26 Sq. Meter b) Class Room: 20 Sq. Mete
4. Power Norms	4 kW
5.Tools, Equipment & General Machinery	(As per Annexure I

Annexure – 1

I List of Tools & Equipment for module:

MUSHROOM CULTIVATION

For a batch of 20 trainees + 1 Instructor

Sl. No	Item	Quantity	Remarks
1	Measuring tape	05 no	
2	Mushroom Grow Rooms	02	
3	Exhaust Fan	01	
4	Desert cooler	01	
5	Thermometers	02	
6	Hygrometers	02	
7	Luxmeter	02	
8	Box for Mushroom Transportation	01	
9	Straw immersion tank	10	
10	Tulu Pump set	01	
11	. Sprayer	01	
12	Chaff Cutter	01	
13	Bamboo for platform as required	01	
14	Polythene as required	01	
15	Paddy straw as required	01	
16	Chemicals for sterilization and processing as require	01	

8. ASSESSMENT STANDARD

ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment.

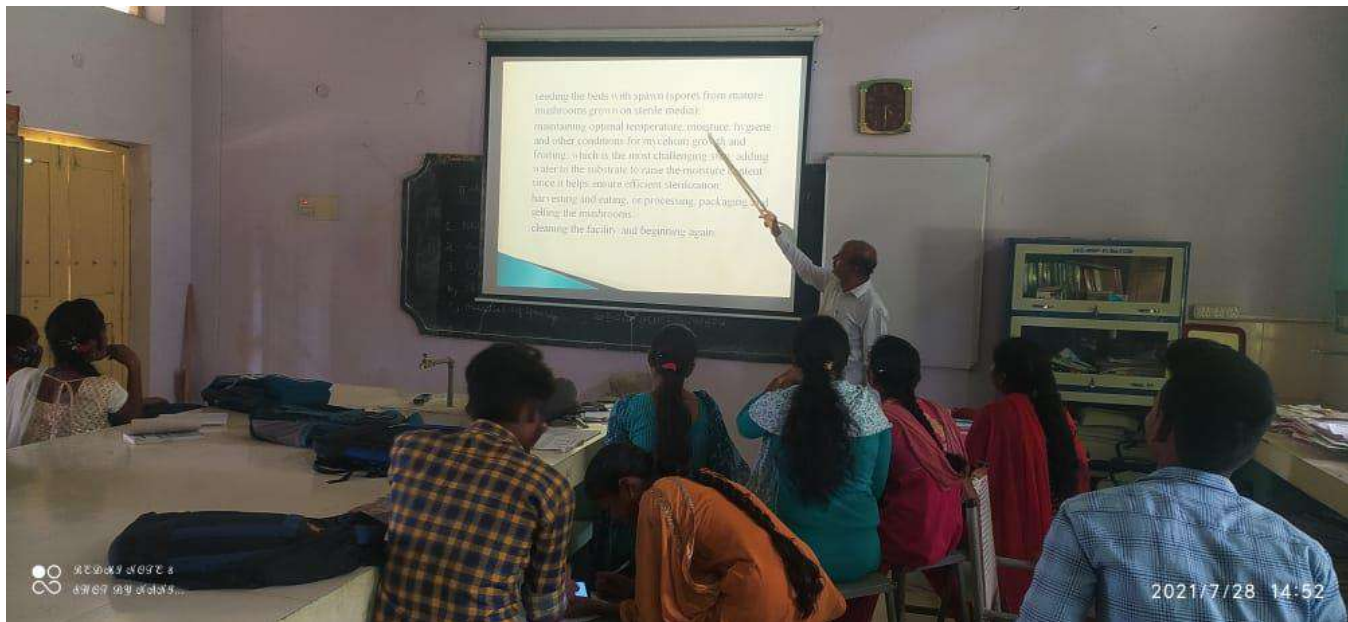
The nature of special needs should be taken into account while undertaking the assessment. Due consideration shall be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scarp/wastage as per procedure, behavioral attitude, sensitive to environment and regularity in training. The sensitivity towards OSHE and self-learning attitude shall be considered while assessing competency.

Assessment will be evidence based comprising the following:

- 1) Job carried out in labs/workshop
- 2) Record book/ daily diary
- 3) Answer sheet for assessment
- 4) Viva-voce
- 5) Progress Chart
- 6) Attendance and punctuality
- 7) Assignment
- 8) Project work Evidence of internal assessment should be preserved for an appropriate period of time for audit and verification by examination body.







- Edible Mushroom Research shows which will botenic acid will create an hallucinogenic effect in human beings, at doses as small as 50mg.
- The onset of all these effects may be rapid or maybe quite slow, ranging from 30 minutes to 2-3 working hours, depending on body type, vulnerability, habituation, and the circumstances for ingestion.
- The amanita muscaria themselves, bright red through white spots, usually are gathered for habit use in these traditions during the hottest a few months of the year - July plus August - when they are nearly all infused with the element of fire and the breath of air of the sun/Sky Father. The strongest mushrooms, in fact, are said to help dry themselves, prepared to be picked with regards to communion with man.
- These are considered considerably stronger than those picked quick and dried artificially. Smaller mushrooms are also told have much greater strength than larger varieties, and it seems most likely, from modern trial and error, that their narcotic effects are certainly more extreme during the early thriving phase.
- In the place of worship of Plain courault Abbey in Indre, Germany is a fresco painted with 1291 A.D. involving Adam and Eve running on either side of the forest of knowledge of good along with evil. A serpent is entwined around the pine, which looks unmistakably like a cluster of Amanita Muscaria mushrooms.

- Might it be true that the apple mackintosh from the Garden from Eden may actually have been some sort of hallucinogenic mushroom
 - Traditionally, the act of hunting for these species may be passed from down the family forcing young ones to grow able to differentiate this poisonous and nonpoisonous species.
 - Nevertheless this method is not a assure that everything will likely be OK.
 - An passable species on one vicinity could be poison in other people. Knowledge and experience is the best guarantee. Only an expert should be trusted in. People flourish on soils, wood and in favorable surfaces not as plants but as fungus infection.
1. It is very important to wash palms immediately after touching a dangerous species type. Be sure the right cooking way for you to avoid poisoning. Pay attention to your children for most belonging to the cases they are the subjects. Do not eat it untamed species just because you can see it look delicious. Most deaths appear due to mixed i.d. It seems that there is also a symbiotic relationship between the fly-agaric mushrooms additionally, the birch tree the mushrooms raise in the shade with the tree which would are the cause of the sacred birch practice in European shamanism. In her book, *Ploughing the Atmosphere*, however, Peter Lamborn Wilson proposes convincing lythat fly-agaric it not just the sacred Soma referenced in the Rg Veda, but which it was used in many The European countries and was also central to the Irish Keltic tradition of shamanism, which still keeps in its basic style, today.
 2. For non-ritual usage, the mushrooms are used with much the same way as coca results in in the Peruvian Andes, to create a soft shift in consciousness, in conjunction with mild euphoria along with increased energy.
 3. In such usage, the mushrooms are just rolled into a soccer ball and swallowed complete, without chewing. Just one larger mushroom (3-4cm) or 2-3 modest ones is enough.
 4. Inside German language, site mushroom was thought to be a powerful insecticide, when it is found in combination with milk. Within 1256 Albertus Magnus was cited designed for his comment; "It is known as the mushroom of flies, because crushed with milk it destroy flies. The names of funguses, dates back on the year 175During this time, Linnaeus as well as Lamarck were responsible for naming the mushroom amanita muscaria.
 5. One mycologist (one that studies fungus) claimed that bug agaric ended up being an ancient name, along with the mushroom was used in freeing bugs in Sweden, and in England. Amanita



Types of Mushrooms



Oyster Mushroom



Straw Mushroom



Reishi Mushroom



Enokitake Mushroom



Shitake Mushroom



Wood Ear Mushroom

Types of Mushrooms

White button

The most popular mushroom, white buttons represent about 90 percent of mushrooms consumed in the United States.



Crimini

Also known as baby 'bellas or browns, criminis are similar in appearance to whites, but have a light-tan to rich-brown cap and a firmer texture.



Portabella

A larger relative of criminis, Portabellas have tan or brown caps and measure up to 6 inches in diameter.



Shiitake

Shiitakes are tan to dark brown and have broad, umbrella-shaped caps, wide open veils, tan gills and curved stems that should be removed.



Oyster

Oysters can be gray, pale yellow or even blue, with a velvety texture.



Enoki

Enoki have tiny, button-shaped caps and long, spindly stems.



Beech

Beech mushrooms are petite with either all-white or light-brown caps.



Maitake

Maitake appear rippling and fan-shaped, without caps. They are also called "Hen of the Woods."



What Is the Nutritional Value of Mushrooms?

❖ Mushrooms are low in calories, high in fiber, and contain many important vitamins and minerals. Some also have medicinal properties such as complex carbohydrates that strengthen the

They are an excellent source of protein, in some regions they are known as vegetable meat for their high protein content. They contain all the essential amino acids needed for your body.

The percentage of protein in dry mushrooms could be between 10% and 30% of the total mushroom weight.



They have a high concentration of carbohydrates at 57% and 14% raw fiber. Most of those carbohydrates are complex sugars that will help you regulate insulin and sugar levels because they are low-glycemic sugars.

Nutritional Value of Mushrooms

- ❖ **Protein** - Most mushrooms have a high protein content, usually around 20-30% by dry weight.
- ❖ **Fiber** - Helps lower cholesterol and is important for the digestive system.
- ❖ **Vitamin D** - Essential for the absorption of calcium.
- ❖ **Copper** - Aids in helping the body absorb oxygen and create red blood cells.
- ❖ **Selenium** - An antioxidant that helps neutralize free radicals, thus preventing cell damage and reducing the risk of cancer and other diseases. Mushrooms contain more selenium than any other form of produce.
- ❖ **Potassium** - An extremely important mineral that regulates blood pressure and keeps cells functioning properly
- ❖ **Other important minerals** - Such as phosphorous, zinc, and magnesium.
- ❖ **Low levels of fat, calories, and sodium**
- ❖ **No cholesterol**

Edible Mushroom

- ❖ Edible mushrooms are consumed by humans for their nutritional value and they are occasionally consumed for their supposed medicinal value.
- ❖ Edibility may be defined by criteria that include absence of poisonous effects on humans and desirable taste and aroma .
- ❖ Edible mushrooms include many fungal species that are either harvested wild or cultivated



Agaricus bisporus :

- ❖ Also known as 'the white cultivated mushroom'. *Agaricus bisporus* is grown on composted cereal straw and animal manure.
- ❖ *Agaricus bisporus* is the most extensively cultivated mushroom in the world, accounting for 38% of the world production of cultivated mushrooms.

Volvariella volvacea :

- ❖ The 'Chinese' or 'paddy straw' mushroom. *Volvariella volvacea* is a high temperature mushroom grown largely in tropical and subtropical regions of Asia e.g. China, India.
- ❖ This mushroom can be grown on a variety of agricultural wastes. *Volvariella* mushrooms account for 16% of total production of cultivated mushrooms in the world.

Poisonous Mushrooms

❖ Poisonous Mushrooms look like edible mushroom in their morphology and lifecycle. However They can be distinguished by following features:

- ❖ Brightly coloured fruit bodies.
- ❖ Greenish tinge on gills and Yellow-Green spores.
- ❖ Pink coloured spores in gills.
- ❖ Presence of Vulva and Annulus on the Stalk.
- ❖ Oozing of milky or coloured latex at damaged portions
- ❖ Unpleasant odour

E.g. *Amanita phalloides*
Tricholoma muscarium



