St Aloysius College (Autonomous), Mangaluru - 575003

ESTD : 1880

Re-accredited by NAAC with 'A++' Grade with CGPA 3.67/4 (IV Cycle)
Ranked 80 in College Category – 2023 under NIRF, Ministry of Education, Government of India
Recognised as Centre for Research Capacity Building under UGC-STRIDE Scheme
Recognised under the DBT – BUILDER Scheme, Government of India
College with "STAR STATUS" conferred by DBT, Government of India
Recognised by UGC as "College with Potential for Excellence"

Department of Postgraduate Studies & Research in Food Science

Offers Certificate Course in

Processing Technology of Mushroom

Course Starts from November 2023

Fee: 1250/-

Course Highlights:

- **A 30 hour Course Program**
- **Onsite Hands-on Training**
- **Interaction with Industrial expert**
- **Field Visits**
- **Mushroom Analysis & Quality Control**
- **Value-added Products & Processing**
- **Certificate on Course Completion**

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Proposal for Certificate Program

on

Processing Technology of Mushrooms

To,

The Principal

&

Coordinator certificate programs

St Aloysius College (Autonomous), Mangaluru

Proposed by

Department of Postgraduate studies and Research in Food science

Certificate program Co-ordinators

Ms Claret Shalini D'Souza

Ms Jovita Carrol Soans

Preamble

A certificate course on "Processing Technology of Mushrooms," is a knowledge expedition into the art and science of harnessing the potential of these extraordinary fungi. In this course, we embark on a journey that unravels the diverse dimensions of mushrooms, exploring their cultivation, preservation, and transformation into an array of delectable and valuable products.

In pursuit of economic growth and social progress, it is imperative to cultivate a workforce that possesses a potent blend of skills and knowledge. Beyond conventional academic programs, there exists a compelling necessity to introduce career-focused courses. These specialized educational pathways are designed to empower students with practical skills and knowledge, preparing them for diverse opportunities in the service, industrial, and entrepreneurial sectors. By aligning education more closely with the demands of the job market, these courses bridge the gap between theory and practice, equipping graduates with the readiness and adaptability required for success in a dynamic and evolving economy.

This course serves as a comprehensive platform for students to acquire essential knowledge and skills in mushroom cultivation techniques. It equips them to grasp the fundamental principles, potentials, and limitations of these practices, providing a strong foundation for their application. Beyond agriculture, the course delves into the utilization of active compounds from mushrooms for innovative healthcare solutions. Moreover, it empowers students with practical abilities in mushroom cultivation, enabling them to explore entrepreneurial opportunities. Lastly, the course fosters an appreciation for the techniques and practices involved in the eco-friendly disposal of solid waste, emphasizing sustainability and responsible resource management.

Overview of the Course

What is the purpose of this course?

This course aims to enhance the student's capacity with knowledge and skills to cultivate mushrooms for sustainable agriculture and entrepreneurship while emphasizing the nutritional and medicinal benefits of mushrooms.

Who is the target audience for this course?

This course was tailored for the passionate individuals who are interested in entrepreneurship in the field of mushroom technology, food science, biological sciences and allied sciences.

What are the core concepts of this course?

Mushroom cultivation, analysis and value-added product course is to provide a comprehensive education on all aspects of mushroom cultivation and analysis. This includes understanding mushroom biology and taxonomy, mastering cultivation techniques, regulatory standards pertaining to mushroom and their products, preservation techniques and value-added products. Additionally, the course covers analysis methods, quality control and food safety. The aim is to empower students with necessary knowledge and skills needed for successful mushroom cultivation while addressing entrepreneurship and business aspects. This course emphasises on Hands-on training, field visit and interaction with industry expert.

What are the highlights of this course?

- 30 hours of learning with Q&A facilitated by subject experts, industrial experts, hands on training and field visits through offline mode.
- Understand the fundamental biology and taxonomy of mushrooms.
- Identify and select suitable mushroom species for cultivation.
- Prepare and maintain the necessary substrates for mushroom growth.
- Implement different cultivation methods (e.g., indoor, outdoor, and commercial) for various mushroom species.
- Harvest, process, and store mushrooms for consumption or sale.
- Analysis and quality control test of cultivated mushrooms.
- Knowledge on regulatory aspects of mushrooms.
- Production value added mushroom products.
- Hands on training on mushroom cultivation and analysis.

Course objectives:

- To establish and promote sustainable mushroom cultivation program for food security while fostering innovation and research.
- To provide technical knowhow of mushroom cultivation and analysis.
- To refine their knowledge on preservation techniques for mushrooms.
- By end of this course student will be able to gain confidence and personal skills for the self-employment on mushroom cultivation.

Prerequisites: Individuals who are interested in or passionate about entrepreneurship in the field of mushroom technology, food science, biological sciences and allied sciences.

Duration of the Course: 30 Hours

*Weekly Three classes i.e., Tuesday, Friday and Saturday. Mode of Classes - Offline

Course Fee: Rs. 2000/-

Career opportunities: Candidates completing this course are well positioned for a range of career opportunities, including mushroom farming, agricultural extension, research and quality control/ analysis roles, entrepreneurship and product development.

Syllabus

UNIT I: Introduction to mushrooms:

Mushrooms -Historical and cultural significance of mushrooms; Fungal biology and taxonomy; Current status and SWOT analysis of mushroom industry, Mushroom Identification; Mushrooms-Vegetative characters.

UNIT II: Types of mushrooms:

Common Edible Mushrooms: Agaricus bisporus (Button mushroom). Pleurotus spp. (Oyster mushrooms), Lentinula edodes (Shiitake mushroom). Medicinal and Exotic Mushrooms: Ganoderma lucidum (Reishi), Cordyceps sinensis (Cordyceps), Truffle species (e.g., Tuber melanosporum). Toxic and Inedible Mushrooms: Amanita phalloides (Death cap mushroom), Gyromitra spp. (False morels), Recognizing and avoiding poisonous mushrooms.

UNIT III: Principles of mushroom cultivation:

Structure and construction of mushroom house. Steps in mushroom cultivation: Selection of substrate, substrate treatment, Spawn production - culture media preparation- spawn and spore culture, inoculation methods, spawn production techniques. Composting technology, mushroom bed preparation. Spawning, spawn running, Post harvest physiological and bio chemical changes, Storage of fresh mushrooms.

UNIT IV: Regulatory aspects of mushroom:

Mushroom grades and standards, Problems in cultivation - diseases, pests and nematodes, weed moulds and their management strategies. Waste management of mushroom cultivation, Value Addition of mushrooms, Quality assurance, shelf life, different types of packaging and market opportunities.

UNIT V: Practical

Step by step mushroom cultivation, Proximate analysis, Preservation Techniques and Preparation of value-added products

Added benefits: Training/ Workshop/ Field visit

Plan of Action

Sl. No.	Topic	Description	Faculty In-charge	Teaching hours
1.	**Introduction to mushrooms**	Mushrooms -Historical and cultural significance of mushrooms; Fungal biology and taxonomy.		01
2.	**Current trends**	Current status and SWOT analysis of mushroom industry		01
3.	**Difference between edible and poisonous mushrooms**	Edible and Poisonous mushrooms; Mushrooms-Vegetative characters.		02
4.	**Mushroom Cultivation 1**	Structure and construction of mushroom house. Steps in mushroom cultivation: Selection of substrate, substrate treatment		03
5.	**Mushroom Cultivation 2**	Spawn production - culture media preparation-spawn and spore culture, inoculation methods, spawn production techniques.		03
6.	**Mushroom Cultivation 3**	Composting technology, mushroom bed preparation.		01
7.	**Types of mushrooms**	Button mushroom (*Agaricus bisporus*), Milky mushroom (*Calocybe indica*), Oyster mushroom (*Pleurotus sajorcaju*) and paddy straw mushroom (*Volvariella volvcea*).		02
8.	**Mushrooms composition**	Nutritional composition, health benefits. Value Added products.		03
9.	**Regulatory aspects of mushroom**	Mushroom grades and standards, Problems in cultivation - diseases, pests and nematodes, weed moulds and their management strategies.		02
10.	**Waste management & Packaging**	Waste management of mushroom cultivation, Value Addition of mushrooms, Quality		02

		assurance, shelf life, different types of packaging and market opportunities.		
11.	**Practical 1**	Step by step mushroom cultivation,		10
12.	**Practical 2**	Proximate analysis		
13.	**Practical 3**	Preservation Techniques		
14.	**Practical 4**	Preparation of value-added products		
15.	**Practical 5**	Field Visit		
	Total hours of online teaching			30

Scheme of examination and Assessment

Internal Assessment	
Assignments	**Tests** (2 tests-Multiple choice / Theory)
3 (25 marks each)	**25 marks each**
Total: 150 Marks	

Final Assessment

Course completion test
Duration of exam: **1hr**
No. of questions: 50 MCQs and 5 descriptive, **Total marks: 100**

Grades will be awarded based on the marks obtained by the candidates in both internal and final assessment. (150+100 = 250 Marks)

Mode of teaching: Offline