MAHISHADAL RAJ COLLEGE
(Govt. Sponsored)
NAAC Accredited 'A' Grade College
DST (FIST) Govt. Of India approved College, NSDC Training Partner
Estd. : 1946
Mahishadal : Purba Medinipur Phone STD 03224 No. 240220

Ref. No..... Date:

Online ADD ON COURSE 2020-21

Organised by Department Zoology & Nutrition

Topic: FOOD PRESERVATION AND PROCESSING.

Add on course summary:

REPORT:

Name of the course- FOOD PRESERVATION AND PROCESSING

Course coordinator: *Dr. Shubhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

Date of commencement: 22.11.2020

Date of completion: - 15.12.2020

Number of participant enrolled: 30

Total duration day: 15

Total duration hour: 30

Evaluation method:- Paper pen Descriptive, MCQ and practical work (online)

RESULT DETAILS:-

Number of student participate in this program: 30

Number of student completes this program: 27

Number of student got certificate in this program: 27

Name of the course: FOOD PRESERVATION AND PROCESSING

Course coordinator: *Dr. Shubhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

FOOD PRESERVATION AND PROCESSING

Introduction

This programme was designed to make students skilled in the field of food preservation and processing. The main aim of food preservation is to minimize the growth of microorganisms during the storage period, thus promoting longer shelf life and reduced hazard from eating the food. Fruit and vegetables are an important supplement to the human diet ass they provide the essential minerals and vitamins and fibre required for maintaining health. For various reasons, this abundance of production is not fully utilized and about 25-30% of it is wasted due to spoilage. Two approaches are possible for solving this problem. One is the creation/expansion of cold storage facilities in the fruit and vegetable producing regions themselves, as also in the major urban consumption centres, to ensure supply of fresh fruits and vegetables throughout the year. Another approach is to process the fruits and vegetables into various products that could be preserved for a long time, and add to the value of the product. With increasing urbanization, rise in middleclass purchasing power, change in food habits and the dying out of the practice of making preserve in individual homes, i.e. dehydrated foods, pickles etc. in the domestic market. Moreover, there is considerable demand for some of these products in foreign markets e.g. Mangoes both fresh and canned, fruit juices, salted cashew and good foreign exchanges. After successful completion of this course, the students will acquire basic concept and application food preservation.

- **About the course:**

The programme will enhance knowledge on basic concept and application of food preservation. Students will be made skilled via providing hands on training on various preservation techniques. Course also include presentation programme where in students will be provided a platform to express their ideas and work done related to food preservation and processing. Final assessment of students will be done through written practical examination followed by oral presentation. Career Opportunities include:

1. 1. Wage Employment

- As a Technical Specialist in Food Industry
- Pickling Unit
- Bottling

2. Self Employment

- Establishing a home scale unit of Food Preservation
- Cottage Industry
- Small Scale Industry
- Large Scale Industry

- **Learning outcomes:**

Students will gain the knowledge of methods of food classification and food processing. Students will able to know the fundamentals of nutrition. Students will know the role of various nutrients present in the food. Students will gain the knowledge regarding the techniques in food Microbiology. Students will able to know the instigation methods of food adulterants. Students will gain knowledge about food preservation technique. Describe different processing and food preservation techniques based on different food materials like low temperature processing, high temperature processing, irradiation, preservation by chemicals and high concentration.

- List different food processing techniques, various methods used to preserve foods and factors influencing the shelf-life of the food products.
- Identify different packaging techniques used for food packaging and also effects of different processing techniques on palatability and nutritive value of food.
- Write down the basic principles of different preservation methods.
- List down the chemicals used in food preservation and its limitations.

- **Target audience:**

Any branch of life sciences students (UG and PG), research scholars, and faculties who have interest in fishery and industrial fishery. Fish farmers who have very much interest may join the programme.

- **Course content overview:**

Induced breeding is a technique where by ripe fish breeders are stimulated by pituitary hormone or any other synthetic hormone introduction to breed in captive condition. Then the carps being excited lay eggs in the pond water and the process is called inducedbreeding.This process of breeding is also known as hypophysation. Major carps are most important species from the point of view of their high food and nutritive values. Hence they have kept attention of scientists and aqua farmers. They have peculiar habit of breeding in running waters of rivers and streams where they have large space for movement. The breeding technique in which the breeders use hormones to ripe the fish artificially is known as induced breeding. This leads to the release of eggs and sperms from the fish at a specific time interval. As induced breeding is an artificial technique it is also known as artificial breeding. The hormone used during induced breeding is gonadotrophin. Gonadotrophin comprises that follicle-stimulating hormone (FSH) which induces early gametogenesis in fish.

Realizing the need and importance of the programme the following objectives have been proposed:

1. 1. To impart knowledge on the technical skills in various aspects of food processing and preservation with respect to fruits and vegetables.

2. 2. To inculcate the students to work in a hygienic way and maintain sanitation.

3. 3. To provide an employment potential in food processing and preservation /self-employment.

- Programme description

Food processing is done by the application of techniques and methods to transform the raw ingredients into food that is fit for consumption. There is a great scope of the processing of fruits and vegetables. The lack of knowledge and understanding of food processing and preservation is a major challenge faced by our economy. The chief reason to apply

preservation techniques to food is to increase its shelf life, reduce wastage and enhance the rate of production that quality food be available for all. The food processing and preservation is required to be taken seriously to maintain the marketing quality of the Indian food products.

Thus realizing the need for trained and skilled individuals and application of latest techniques for food processing, we have brought this course to develop individuals to meet the challenges of the present and future.

- **Schedule:** Total 30 hours

DAY	SCHEDULE
Day 1	Low temperature processing and storage - Chilling, cryogenic chilling, chill storage, freezing (T+P) (2 hours)
Day 2	Cryogenic freezing, frozen food storage (T) (2 hours)
Day 3	Freeze drying, changes in food during freezing, various types of freezers (T+P) (2 hours)
Day 4	High temperature processing - Drying , dehydration (T+P) (2 hours)
Day 5	Solar drying, mechanical driers, heat processing using hot oil (frying, shallow frying, deep fat frying). (T+P) (2 hours)
Day 6	Heat sterilization, pasteurization and its types and advantages. (T+P) (2 hours)
Day 7	Heat processing using hot air, baking (P) (2 hours)
Day 8	Effect of heat on foods (texture, flavor, aroma, colour and nutritive value). (P) (2 hours)
Day 9	Preservation by chemicals and high concentration - Types and mode of action of organic and inorganic preservatives (T+P) (2 hours)
Day 10	Sugar concentrates- general principles and methods of preparation of jam, jellies and marmalade, crystallized and glazed fruits, preserves, squashes and syrups.(T)) (2 hours)
Day 11	Theory of gel formation..(T) (2 hours)
Day 12	Salt concentrates- general principle, role of ingredients (P) (2 hours)
Day 13	Irradiation - Irradiation of foods, types and sources of irradiation (2 hours)
Day 14	Packaging material, application of irradiation on foods. (2 hours)
Day 15	Discussions & Evaluation. (2 hours)

- **Detail Work Schedule**

Date	Day	Contents	Time	Duration	Experts	Designation
22.11.20	1	Low temperature processing and storage - Chilling, cryogenic chilling, chill storage, freezing (T+P)	12 to 2pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY
23.11.20	2	Cryogenic freezing, frozen food storage (T)	1 to 3 pm	2	Dr. Subhamoy Das	HOD DEP. of ZOOLOGY

24.11.20	3	Freeze drying, changes in food during freezing, various types of freezers (T+P)	3 to 5pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
25.11.20	4	High temperature processing - Drying , dehydration (T+P)	03 to 05pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
26.11.20	5	Solar drying, mechanical driers, heat processing using hot oil (frying, shallow frying, deep fat frying)	02 to 04pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
27.11.20	6	Heat sterilization, pasteurization and its types and advantages.	01 to 03pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
29.11.20	7	Heat processing using hot air, baking (P)	03 to 05pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
30.11.20	8	Effect of heat on foods (texture, flavor, aroma, colour and nutritive value). (P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
01.12.20	9	Preservation by chemicals and high concentration - Types and mode of action of organic and inorganic preservatives (T+P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
02.12.20	10	Sugar concentrates- general principles and methods of preparation of jam, jellies and marmalade, crystallized and glazed fruits, preserves, squashes and syrups.(T)	01 to 03pm	2	Prof. Manik Das	SACT Mahishadal Raj College
03.12.20	11	Theory of gel formation.	02 to 04pm	2	Prof. Moumita Jana	SACT Mahishadal Raj College
04.12.20	12	Salt concentrates- general principle, role of ingredients (P)	02 to 04pm	2	Dr Rajkumar Guchhait	SACT Mahishadal Raj College
06.12.20	13	Irradiation - Irradiation of foods, types and sources of irradiation	01 to 03pm	2	Prof. Sagnik Manadal	SACT Mahishadal Raj College
07.12.20	14	Packaging material, application of irradiation on foods	01 to 03pm	2	Prof. Saheli Maiti	SACT Mahishadal Raj College
08.12.20	15	Discussions, Evaluation, valediction, feedback	12 to 2 pm	2	Dr. Subhamoy Day, Dr. Rajkumar Guchhait, Prof. Sagnik	HOD & SACT., Zoology; Principal,

					Manadal, Prof. Manik Das and Prof. Moumita Jana.	
				30 hours		

- **Course structure and examination scheme:**

Course name	Theory classes (hr.)	Practical classes (hr.)	Continuous assessment		Total marks
			Theory	Practical	
FOOD PRESERVATION AND PROCESSING	12	18	40	10	50

Student Enrolment List

Sl. No.	Name	Roll NO.	University Regd.
1	SOLANKI SINHA	2220002	VU221261308
2	PUJA RANI MANDAL	2220006	VU221261309
3	PRIYAM DAS	2220008	VU221261305
4	PRATIKSHA DAS	2220009	VU221261300
5	PRIYANSU MANNA	2220011	VU221261307
6	SAYAN MANDAL	2220013	VU221261351
7	BABI MANDAL	2220016	VU221261643
8	ANANYA BHARASA	2220017	VU221261174
9	TRISHA MAITI	2220018	VU221261472
10	SRIJITA DAS	2220019	VU221261675
11	AYAN DAS	2220023	vu221261532
12	SURAJIT KHATUA	2220024	VU221261458
13	ARPITA MAITY	2220026	VU221261641
14	SAHEBA BANU	2220028	VU221261662
15	SUBHAM KR GHORAI	2220030	VU221261420
16	DIPANWITA DOLAI	2220031	
17	SK RAMJAN HOSSEN	2220035	VU221261374
18	RAJA BARMAN	2220051	VU221261313
19	SUMAN DAS ADHIKARY	2220054	VU221261442
20	SAJAL MONDAL	2220059	

21	SOMA BARMAN	2220065	VU221261384
22	MADHUMITA SAHOO	2220076	VU221261263
23	ARPITA MALLICK	2220077	VU221261206
24	SHYAMALI MURMU	2220078	VU221261366
25	SK SAMIR	2220079	
26	ADITI PARAMANIK	2220088	VU221261165
27	SOUVIK PATRA	2220089	VU221261405
28	BANDANA MAITY	2220093	VU221261645
29	ASRAF MALLIK	2220095	VU221261212
30	SOMNATH GHOSH	2220099	VU221261671

Sample Question of Examination

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Risk assessment?
2. Define Food safety.
3. Define food borne diseases.
4. Write a short note on the process of fermentation.
5. Give four examples of beneficial microorganisms used in food indu
6. Define – Food standards.
7. Give examples of food laws implemented to ensure food safety.
8. Write a brief note on Food spoilage.
9. What is Genetically Modified Foods? Give any two examples.
10. Write a short note on BSE.

11. (a) Elucidate the role of drying and low temperature in the process of food preservation with the suitable examples.

Or

(b) Describe the different types of food contaminants and the preventive measures to be taken in order to reduce food contaminations.

12. (a) Give details about the etiology and the preventive measures to control Botulism, Salmonellosis.

Or

(b) Explain the uses of microorganisms in food industries with the suitable examples.

- ***SAMPLE CERTIFICATE OF COURSE COMPLETION***