Sher-e-Bangla Agricultural University
Dhaka, Bangladesh

Course Layout

Department of Agricultural Engineering
Faculty of Agriculture
Course Title: Food Technology
Course Code: AGEN 275 (Theory) / AGEN 276 (Practical)

Food Technology, AGEN 275 (Theory)
Credit Hour: 2, Level 2 Semester 2
Bachelor of Science in Agricultural Economics (Honors) / B.Sc. Ag. Econ. (Hons.)

Rationale:

This course is designed to develop student's knowledge on important technologies used in the field of Food Processing system.

Course Learning Outcomes:

- Acquire knowledge about modern techniques of food preservation
- Enrich knowledge about the current status, needs and opportunities in food processing industries
- Develop knowledge on quality assessment of food
- Gather knowledge on post-harvest losses, storage, processing and preservation techniques of food products

Assessment and Grading Procedures:

Attendance	: 10
Two Quizzes	: 10
Two Class Tests	: 30
Final (Quiz and Written)	: 20+30

Numerical Grade	Letter Grade	Grade Point	Numerical Grade	Letter Grade	Grade Point
80% or above	A+	4.00	55 to < 60%	B-	2.75
75 to < 80%	A	3.75	50 to < 55%	C+	2.50
70 to < 75%	A-	3.50	45 to < 50%	C	2.25
65 to < 70%	B+	3.25	40 to < 45%	D	2.00
60 to < 65%	B	3.00	Less than 40%	F	0.00

Intended Learning Outcomes (ILOs) The students will be able to-	**Course Content**	**Teaching-Learning Strategies**	**Assessment Strategies**
• Categorize and criticize the food science and food technology related issues.	**Introduction to Food Science and Technology** Definition of Foods; Food composition and their functions; Classification of foods based on origin, functions, PH/acidity and perishability; Calorific value of food stuffs, Causes of spoilage; of foods; Objectives of commercial food preservation; Principles and methods of food preservation. Areas of food science and technology, roles of food scientists and food technologists.	Lecture Visual presentation Discussion	QUIZ/MCQ Short answer Essay type answer
• Describe the type of microorganisms •Describe the relationship between microbes and food • Explain the effects of microbes in human health	**Food and Microorganism** Importance of Microorganisms in Foods; Bacterial growth curve; Combined effects of factors (pH, water activity, temperature, etc.) affecting microbial growth; Food poisonings, infections, intoxications and food-borne diseases.	Lecture Visual presentation Discussion Assignment	Quiz/MCQ Short answer Essay type answer Report
• Explain the techniques of food preservations •Illustrate different thermal treatments • Describe the problems related to long term preservation	**Thermal processing and preservation of food** Principle of sterilization, Pasteurization, Irradiation and Blanching operations and their methods; Principle of Chilling, Refrigeration, Freezing and Thawing operations and their methods; Canning of Foods; Various types of Dryers and Evaporators and their functions; Problems on Food drying.	Lecture Visual presentation Discussion Assignment	Quiz/MCQ Short answer Essay type answer Report
• Compare between different processing technologies • Design a structural layout of a food processing line • Describe the manufacturing process of different foods • Able to calculate cost and profit with linear programming	**Food Storage and Manufacturing Technology** Postharvest handling, storage and processing of various perishable crops, Manufacturing and processing of soft drinks, baked products, fermented foods, tea-coffee and chocolate products; Site selection and layout of food plant, Productivity and profitability, cost analysis.	Lecture Visual presentation Interactive discussion Assignment	Quiz/MCQ Short answer Essay type answer Report

•Describe the methods of food packaging • Develop knowledge about packaging materials	**Packaging of Food Products** Function of Packages, Types of packaging materials, Criteria for selecting a packaging material; Principles of Aseptic packaging.	Lecture Visual presentation Discussion Assignment	Quiz/MCQ Short answer Essay type answer Report
• Select and evaluate the quality parameters of food • Develop knowledge about adulteration and misbranding • Determine the critical control point in food processing line	**Quality Control of Foods** Definition of quality, Quality control, Quality assurance; Food adulteration and misbranding,Quality attributes of food products; Hazard Analysis and Critical Control Points (HACCP), Determination of CCPS, Food regulation and compliance	Lecture Visual presentation Discussion Assignment	Quiz/MCQ Short answer Essay type answer Report

Book Reference:

1. *AmalenduChakraverty, Arun S. Mujumdar, Hosahalli S. Ramaswamy. Handbook of Postharvest Technology: Cereals, Fruits, Vegetables, Tea, and Spices. 2003, Publishedby CRC Press. England.*
2. *Potter, Norman N., Hotchkiss, Joseph .Food Science. 5th Ed.1998, Aspen Publishers, Inc. Gaithersburg, Maryland.*
3. *R. Paul Singh., Dennis R. Heldman. Introduction to Food Engineering. 5th Ed.2014, Academic Press, ELSEVIER Inc.*
4. *William C Frazier., Dennis C Westhoff. Food Microbiology. 4th Ed.1978, Tata McGraw-Hill Publishing Company, New Delhi. India.*
5. *Heldman, Dennis R. and R. Paul Singh. Food Process Engineering, 2nd Ed.1981, AVI Publishers Co., New York. USA*

Food Technology, AGEN 276 (Practical)
Credit Hour: 1, Level 2 Semester 2
Bachelor of Science in Agricultural Economics (Honors) / B.Sc. Ag. Econ. (Hons.)

Rationale:

This course is designed to provide students the practical experience of using available machinery or to provide a closer overview of important technologies used in the domain of food preservation and processing operations.

Course Learning Outcomes:

- Acquire knowledge on selection of best suited technique in food processing
- Enrich skill on the technique and methods of food preservation

Assessment and Grading Procedures:

Attendance	: 10
First Practical Exam	: 45
Final Practical Exam	: 45

[45 Mark Distribution: Practical Note Book-05, Identification-05, Job/Expt.-05, Written-15, Viva-voce-15]

Intended Learning Outcomes (ILOs) The students will be able to-	**Course Content**	**Teaching-Learning Strategies**	**Assessment Strategies**
• Identify and use common processing machines	Orientation with various machineries and equipment used in processing, preservation and analysis	Lecture Discussion Demonstration Group work	Quiz Short answer Identification Demonstration performance Viva-voce Practical note book
• Analyze the compositional elements of food	Proximate analysis of foods	Lecture Discussion Demonstration Group work	Quiz Short answer Identification Viva-voce Practical note book Demonstration performance
• Apply and explain the technique of drying and freezing	Preservation of fruits and vegetables by drying and freezing	Practical session Discussion Visual presentation	Quiz Short answer Viva-voce Practical note book

• Apply and explain the technique of Canning	Canning of fruits, vegetates and fish	Practical session Discussion Demonstration Group work	Demonstration performance
• Explain the processing technique of Jelly, Marmalade, Cordial and Squash	Preparation of Jelly, Marmalade, Cordial and Squash from different fruits	Practical session Discussion Visual presentation	Quiz Short answer Identification Viva-voce Practical note book
• Apply and explain the technique of Chutney and pickles processing	Preparation of Chutney and pickles processing from different vegetables and spices	Lecture Discussion Visual presentation	Quiz Short answer Identification Viva-voce Practical note book
• Prepare Ketchup and Sauce	Preparation of Ketchup and Sauce from different fruits	Lecture Demonstration Group work	Demonstration performance
• Show and explain the technique of Baking	Manufacturing of Bakery products: Biscuits and Cakes	Lecture Demonstration Group work	Demonstration performance
• Show and explain the technique of Candy and Chanachur preparation	Preparation of Candy and Chanachur preparation	Lecture Demonstration Group work	Demonstration performance
• Justify the scope of food processing • Observe modern food processing industries	Visit to Food Industries and Research Organizations (BARI, BRRI and BADC etc.)	Visiting the related organization	Report

Book References:

1. *Amalendu Chakraverty, Arun S. Mujumdar, Hosahalli S. Ramaswamy. Handbook of Postharvest Technology: Cereals, Fruits, Vegetables, Tea, and Spices. 2003, Published by CRC Press. England.*
2. *Potter, Norman N., Hotchkiss, Joseph .Food Science. 5th Ed.1998, Aspen Publishers, Inc. Gaithersburg, Maryland.*
3. *R. Paul Singh., Dennis R. Heldman. Introduction to Food Engineering. 5th Ed.2014, Academic Press, ELSEVIER Inc.*
4. *Study guide, lecture sheet and leaflets.*