Addis Ababa University
Addis Ababa Institute of Technology
School of Chemical and BioEngineering
Course outline

Course Name	Design and Development of Food products and Equipment
Target group	1st year MSc. Students (Food Engineering)
Course code	ChEg 7233
ECTS Credits	6
Contact Hours	3 (lecture hours)/week
Pre requisite	Food Process Technology 1
Instructor	Kumsa Delessa (PhD)

Course objective

The general objective of this course is to give students a profound understanding on methodologies for optimal design and development food products and equipment.

Learning Outcomes

Upon successful completion of this course, students should be able to*:*

- Comprehend design and development of animal and plant food products
- Perform equipment selection for optimal food production process
- Exercise individual assignments on preliminary design of food production process

Course Contents

Chapter 1: Introduction

Chapter 2: Process Equipment Design

- 2.1 Heat exchanger design
- 2.2 Fermenter/bioreactor design
- 2.3 Pump design

Chapter 3: Production Process Optimization

Chapter 4: Material Selection for Process Equipment Construction

Chapter 5: Impact of Microbiology, Sanitation, and Nutrition on Product Development

Chapter 6: Assessment of Alternatives for Food Products

- 6.1 Low fat
- 6.2 Low calorie
- 6.3 Substitute ingredients

Assessments and exam

1. Individual Food Engineering project	**(40%)**
1.1 Problem definition and justification	10 %
1.2 Progress report	10 %
1.3 Final report (with presentation)	20 %
2. Final Exam	**(60%)**

Requirement

At least 75 % of the classes should be attended.

References

1) Saravacos GD, Athanasios EK (2002), Handbook of Food Processing Equipment. Kluwer/ Plenum Publishers, New York.

2) Coulson JM, Richardson JF (2005), Chemical Engineering Design. Elsevier, Oxford.

3) Peters MS, Timmerhaus KD (1991) Plant design and Economics for Chemical Engineers. McGraw- Hill, Inc., New york.

4) Seider W.D., Seader J.D., Lewin D.R.(2003) Product & Process Design Princples: synthesis,analysis, and evaluation. John Wiley and Sons, Inc. and

5) Other related books.