BSE 4604 – Food Process Engineering

Credit / contact hours: 3 credits, 3 contact hours

Course instructor: Justin Barone

Textbook / materials:

Catalog description:
Analysis and design of food processing operations including thermal pasteurization and sterilization, freezing, extrusion, texturization, and mechanical separation.

Co-requisites: NA

Pre-requisites: BSE 3504 Transport Processes in Biological Systems, BSE 3524 Unit Operations in Biological Systems Engineering

Course type: elective in the program

Specific outcomes of instruction:
Upon successful completion of this course, the student will be able to:

1. Be better able to effectively analyze and design food processing systems,
2. Have a better understanding of the physical and function properties of food and their impact on designing food processes.
3. Be better able to effectively interact with food scientists and technologists,
4. Understand the health and economic hazards of improperly processed food and their effect on design.

Student outcomes addressed by course:

Outcome 1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

Outcome 7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies

List of topics covered:

- Basic food molecular components, Measuring food properties
- Food structure: water and fats
- Food structure: proteins and carbohydrates
- Food structure: whole foods (chocolate, pasta, etc.)
- Microwave cooking
- Preservation processes
- Refrigeration
- Freezing
- Evaporation
- Membrane separation
- Dehydration
- Supplemental processes
- Extrusion
- Packaging concepts
- Case studies (yogurt, liquor distillation, corn syrup)