

Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Genetics and Bioengineering Department
 2026-2027 Fall Semester

Syllabus

Code/Name	SEC 301.5 Functional Foods
Type	Required
Credit/ECTS	5/5
Hour per Week	3
Level/Year	Undergraduate/3
Semester	Fall
Classroom	D306
Content	This course introduces the fundamental concepts of functional foods, bioactive food compounds, and their molecular mechanisms of action. Students will explore the roles of nutrigenomics, gut microbiota, probiotics, prebiotics, and postbiotics in human health, with particular emphasis on cardiometabolic, cardiovascular, and brain health, as well as aging and cellular senescence. The course also covers food biotechnology and functional food production, the bioavailability and delivery of functional ingredients, and the principles of functional food product development. Finally, students will evaluate scientific evidence, regulatory considerations, and emerging trends shaping the future of functional foods.
Prerequisites	-
Textbooks	
Objectives	• To introduce the fundamental concepts of functional foods, bioactive compounds, and their molecular mechanisms of action • To develop students' understanding of the relationships between functional foods, nutrition, gut microbiota, and human health • To familiarize students with functional food production, bioavailability, delivery systems, and product development • To develop students' ability to critically evaluate scientific evidence, health claims, regulatory aspects, and future developments in functional foods
Course Outcomes	At the end of this course, students will be able to: 1. Identify major functional food categories, bioactive compounds, and their biological functions. 2. Explain the molecular mechanisms through which functional foods and their components influence human health. 3. Evaluate scientific evidence related to functional foods, including their bioavailability, health effects, product development, and regulatory aspects.

Weekly Schedule of Topics

W	Topics	Laboratory-Experiments-Discussions
1.	Introduction to Functional Foods	
2.	Bioactive Compounds in Foods	
3.	Molecular Mechanisms of Functional Foods	
4.	Nutrigenomics	
5.	Gut Microbiota and Functional Foods	
6.	Probiotics, Prebiotics and Postbiotics	
7.	Functional Foods and Cardiometabolic Health	
8.	Functional Foods and Cardiovascular Health	
9.	Functional Foods and Brain Health	
10.	Functional Foods, Aging and Cellular Senescence	
11.	Food Biotechnology and Functional Food Production	

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12. Bioavailability and Delivery of Functional Ingredients
13. Functional Food Product Development
14. Evidence, Regulation and Future of Functional Foods

Professional Contribution

To apply knowledge of functional foods and bioactive compounds in professional and scientific contexts.

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	0	0	0	0	0	5	0	0	5	0	0
CO2	0	0	0	0	0	5	0	0	5	0	0
CO3	0	0	0	0	0	5	0	0	5	0	0
CO4	0	0	0	0	0	5	0	0	5	0	0
CO5	0	0	0	0	0	5	0	0	5	0	0

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions

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Requirements

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Course Policy

- Be in class on time.
- English should be used to communicate with each other. If there is difficulty in making sentences in English, a dictionary can be used.
- Cell phones must be turned off and put away during class.

Cheating & Plagiarism

- Copying or letting someone copy anyone's work on exams, assignments, or reports is cheating.
- Cutting and pasting text, figures, and tables from web sources, ChatGPT, or any other electronic source is plagiarism.
- The consequence of academic dishonesty is to receive a grade of FF for the course.

Evaluation

The evaluation breakdown is as follows:

Presentation-10%

Midterm Exam – 40%

Final Exam – 50%

Rubric

A rubric will be announced by the instructor before the exams are given.

Instructor

Name/Surname	Esmahan Durmaz	Email	esmahane.durmaz@alanya.edu.tr
Room	329	Office Hours	The office visit time for students is every Monday and Tuesday.

Prepared by Esmahan Durmaz on September 28th, 2026