AGU Graduate School of Engineering and Science …….. Program

COURSE RECORD

Code	**AMN 580**
Name	Advanced Food Chemistry
Hour per week	3 (3 + 0)
Credit	3
ECTS	4
Level/Year	Graduate
Semester	Fall/Spring
Type	Elective
Location	TBA
Prerequisites	NA
Special Conditions	NA
Coordinator(s)	Assist. Prof. Kevser Kahraman
Webpage	NA
Content	This course offers students an overview of the chemical and physical properties of the major and minor food components and their changes during processing, handling and storage. This course will also provide deep information on the relationship between the chemical structure of the food components and the reactions occurring in food in those stages.
Objectives	1. Gain an understanding of the relationship between chemistry of main food components (water, carbohydrate, lipid, and protein) and the changes occur in food processing 2. Gain an understanding of the fundamental chemical concepts behind the functionality of food materials 3. To comprehend the chemical interactions and reactions of food components and their effect on sensory, nutritional, and functional properties of foods 4. Understand the effects of processing conditions on the sensory, nutritive and functional properties of foods
Learning Outcomes	LO1. To understand the causes of the major changes in color, flavor, texture and nutritive value during food processing, handling and storage LO2. To classify the structure of food components and understand the relationship of the structure and function with respect to food quality, nutrition, safety, processing, etc. and judge how to adjust these conditions to improve or minimize chemical and biochemical deterioration of food systems. LO3. To understand the relationship between the chemical changes in food systems and the environmental factors such as temperature, pH, ionic characteristic and strength, bonding, light, etc. to minimize chemical and biochemical deterioration of food systems. LO4. To demonstrate written and oral communication skills to effectively communicate scientific ideas related to food chemistry LO5. To critically read and discuss research papers in the food chemistry literature.
Requirements	-
Reading List	• Damodaran, S., Parkin, K. L., & Fennema, O. R. (2008). Fennema's food chemistry. Boca Raton: CRC Press/Taylor & Francis. • Assigned notes and journal readings (via Canvas)
Ethical Rules and Course Policy	Students are required to do all assigned work independently unless the assignment is defined as a group project. The assignments are required to be submitted to Turnitin.com for a review of textual similarity and detection of possible plagiarism. Proper citation of your reference source, including web sites, reviews and original research literature is essential.

LEARNING ACTIVITIES

Activities	**Number**	**Weight (%)**
Lecture	14	40%
Student Presentations	2-4	30%
Critique of research paper	6	30%
	Total	100

ASSESSMENT

Evaluation Criteria	**Weight** (%)
Assignments	20%
Presentations	20%
Attendance/Participation	10%
Final Exam	50%
Total	100%

For a detailed description of grading policy and scale, please refer to the website https://goo.gl/HbPM2y section 28.

COURSE LOAD

Activity	**Duration** (hour)	**Quantity**	**Work Load** (hour)
Course length	3	14	42
Out-of-class Study Time (Pre-study, practice)	2	14	28
Research (web, library)	1	14	14
Pre-work for Presentation	4	2	8
Final Exam	10	1	10
		General Sum	**102**

ECTS: 4 (Work Load/25)

CONTRIBUTION TO PROGRAMME OUTCOMES*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14
LO1	5	5	5	5	4	5	5	4	5	5	5	5	5	5
LO2	5	4	5	5	4	5	5	4	5	5	5	4	5	5
LO3	5	5	5	5	4	5	5	4	4	5	4	4	5	5
LO4	5	4	5	5	5	4	5	5	4	5	4	5	5	5
LO5	5	4	5	5	5	4	5	5	5	5	5	5	5	5

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

WEEKLY SCHEDULE

W	**Topic**	**Outcomes**
1	Introduction to Food Chemistry	LO1-5
2	Basics of Food Chemistry	LO1-5
3	Physical and Chemical Properties of Water	LO1-5
4	Carbohydrates (Simple sugars, sugar derivatives, oligosaccharides)	LO1-5
5	Carbohydrates (Polysaccharides)	LO1-5
6	Carbohydrates (Dietary fiber: components, properties, analysis)	LO1-5
7	Proteins (Physical properties of proteins in relation to protein structure)	LO1-5
8	Proteins (Functional properties)	LO1-5
9	Proteins (Effects of food processing: changes occurring in chemical, functional & nutritional properties of proteins)	LO1-5
10	Lipids	LO1-5
11	Enzymes	LO1-5
12	Food Quality	LO1-5
13	Food Flavor	LO1-5
14	Food Additives	LO1-5