AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Rheological Properties of Foods								
Course Code	GMP529		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The main aim of this course was to explain the rheological properties of foods and measurement techniques, to inform about the importance of these properties on momentum and heat transfer								
Course Content	Classification of rheological properties of foods; Newtonian and NonNewtonian foods. Measurement techniques. The importance of rheological properties in momentum and heat transfer for foods. Dimensional analysis in momentum and heat transfer for NonNewtonian foods. The prediction of velocity profiles and pressure losses for Newtonian and NonNewtonian food in flow systems. The detailed momentum and heat transfer analysis of liquid foods in heat exchangers and agitated vessel, and the change of rheological properties during nonthermal processes as example systems								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Experiment, Discussion, Case Study, Individual Study								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	50
Assignment	1	20

Recommended or Required Reading	
1	Steffe, J.F.S., 1996. “Rheological Methods in Food Process Engineering”
2	Heldman, D.R., Lund, D.B., Sabliov, C., 2007. “Handbook of Food Engineering”

Week	Weekly Detailed Course Contents	
1	Theoretical	Classification of rheological properties of foods; Newtonian and NonNewtonian foods, viscoelastic and elastic foods
2	Theoretical	Newtonian and NonNewtonian foods, viscoelastic and elastic foods-continue
3	Theoretical	Effects of structure and composition on rheological properties of foods
4	Theoretical	Measurement methods of rheological properties
5	Theoretical	Importance of rheological properties on momentum and heat transfer
6	Theoretical	Dimensionless analysis in momentum and heat transfer
7	Theoretical	Determination of velocity profiles and pressure drop relations in piping systems for fluid foods having different rheological properties
8	Intermediate Exam	Midterm
9	Theoretical	Case study-1; momentum and heat transfer analyses in heat exhangers
10	Theoretical	Case study-2; momentum and heat transfer analyses in agitated vessel
11	Theoretical	Change of rheological properties by nonthermal processes
12	Theoretical	Principles of measurement instruments for rheological properties; Texture analysis in solid food (Practice)
13	Theoretical	Principles of measurement instruments for rheological properties; Viscosity measurment in fluids (Practice)
14	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	8	3	154
Assignment	1	10	2	12
Midterm Examination	1	15	2	17

Final Examination	1	15	2	17
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
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Programme Outcomes *(Food Engineering Master)*	
1	To provide further training and research opportunities to food engineers to meet the needs of the food industry
2	To develop and deepen the current and advanced knowledge in the field of food engineering with original thought and / or research at the level of expertise, based on the qualifications of the master
3	To identify, define, formulate and solve problems in applications related to Food Engineering and gain the ability to select and apply appropriate analytical methods and modeling techniques
4	To gain the ability to evaluate the accuracy of the data obtained from food analysis
5	To educate students having research, entrepreneur qualifications

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5	L6	L7
P1					5	5	5
P2				5	5	5	5
P3	5	5	5	5	5	5	
P4	1						
P5						5	