AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Transport Phenomena in Food Engineering								
Course Code	GMP512		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The aim of this course is the usage of the microscopic and macroscopic balances for momentum, energy and mass transport in food engineering and to solve equations with process examples.								
Course Content	The course covers modern analytic methods for the solution of fluid mechanics and heat and mass transfer problems, focusing on approximations based on scaling and asymptotic methods, beginning with the derivation of basic equations and boundary conditions and concluding with linear stability theory.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Quiz	2	20

Recommended or Required Reading	
1	Advanced Transport Phenomena, L. Gary Leal, 2007, Cambridge University Press

Week	Weekly Detailed Course Contents	
1	Theoretical	The basic principles
2	Theoretical	Conservation of mass and the continuity equation
3	Theoretical	Newton’s laws of mechanics
4	Theoretical	Conservation of energy and the entropy inequality
5	Theoretical	The constitutive equation for the heat flux vector – Fourier’s law,
6	Theoretical	Constitutive equations for a flowing fluid – the Newtonian fluid
7	Theoretical	The Navier–Stokes equation
8	Theoretical	Constitutive equations for non-Newtonian fluids
9	Theoretical	One-dimensional flow and heat transfer problems
10	Theoretical	An introduction to asymptotic approximations
11	Theoretical	Creeping flows (Two-dimensional and aisymmetric problems)
12	Theoretical	Boundary-layer theory for laminar flows
13	Theoretical	Heat and mass transfer at turbulant flows
14	Theoretical	Overview

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Quiz	2	15	1	32
Midterm Examination	1	29	1	30
Final Examination	1	39	1	40
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	
2	

3	
4	
5	

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
P1	2	2	2	2	1
P2	2	2	2	2	
P3	4	4	4	4	
P4	1				
P5	1				