

IZMIR UNIVERSITY OF ECONOMICS

Faculty of Engineering and Computer Science Computer Engineering

MATH 154 - Calculus II

COURSE INTRODUCTION AND APPLICATION INFORMATION

Course Name	Code	Semester	emester Theory Application/Laboratory		Local	ECTS
			(hour/week)	(hour/week)	Credits	
Calculus II	MATH 154	Spring	2	2		6

Prerequisites	MATH 153 To attend the classes (To enrol for the course and get a grade other than NA or
	W)

Course Language	English				
Course Type	Required				
Course Level	First Cycle				
Course Coordinator	* <u>Yrd. Doç. Dr. Sevin GÜMGÜM</u>				
Course Lecturer(s)	* <u>Yrd. Doç. Dr. Sevin GÜMGÜM</u>				
	* <u>Doç. Dr. Ebru ÖZBİLGE KAHVECİ</u>				
	* <u>Öğr. Gör. Dr. Cemal Murat ÖZKUT</u>				
	* <u>Doç. Tahsin ÖNER</u>				
	* <u>Doç. Dr. Burak ORDİN</u>				
Course Assistants	* <u>Araş. Gör. Halis Can KOYUNCUOĞLU</u>				
	* Araş. Gör. Burçin KÜLAHÇIOĞLU				
Course Objectives	This course is continuation of Calculus I and it aims to provide more insight to advanced				
	mathematical techniques in engineering.				
Course Learning Outcomes	The students who succeeded in this course;				
	* Will be able to use convergence tests for positive series				
	* Will be able to use the applications of Taylor and Maclaurin series effectively				
	* Will be able to define the concepts of limits and continuity in the functions of several				
	variables				
	* Will be able to do partial and directional derivatives calculations				

	* Will be able to solve extreme value problems				
	* Will be able to compute double integrals in cartesian and polar coordinates				
	* Will be able to compute triple integrals				
	* Will be able to use the concepts of the classification of differential equations and				
	Solutions of first order differential equations effectively				
Course Content	Calculus II provides important tools in understanding functions of several variables and has				
	led to the development of new areas of mathematics.				

WEEKLY SUBJECTS AND RELATED PREPARATION STUDIES

Week	Subjects	Related Preparation
1	Sequences and Convergence, Infinite Series.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 9.1, 9.2.
2	Convergence Tests for Positive Series.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 9.3.
3	Absolute and Conditional Convergence, Power Series.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 9.4, 9.5.
4	Linear approximations, Taylor polynomials.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 4.9, 4.10.
5	Taylor and Maclaurin Series, Applications of Taylor and Maclaurin Series.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 9.6, 9.7.
6	Review of Midterm 1. Midterm Exam 1.	
7	Functions of Several Variables, Limits and continuity.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 12.1, 12.2.
8	Partial Derivatives, Gradients and Directional Derivatives.	Calculus: A Complete Course by Robert
		A. Adams, Christopher Essex, Eight
		Edition. 12.3, 12.7.

9	Extreme Values, Extreme Values of Functions Defined on Restricted Domains.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition. 13.1, 13.2.		
10	Lagrange Multipliers.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition. 13.1, 13.2.		
11	Iteration of Double Integrals in Cartesian Coordinates.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition. 14.2.		
12	Review of Miderm 2. Midterm Exam 2.			
13	Double integrals in Polar Coordinates.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition. 14.4.		
14	Triple Integrals. Change of Variables in Triple Integrals.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition.14.5, 14.6.		
15	Classifying Differential Equations. Solving FirstOrder Equations.	Calculus: A Complete Course by Robert		
		A. Adams, Christopher Essex, Eight		
		Edition. 18.1, 18.2.		
16	Review of the Semester			

SOURCES

Course Notes / Textbooks	Calculus: A Complete Course by Robert A. Adams, Christopher Essex, Eight Edition.		
References	James Stewart, Calculus, Early Transcendentals 7E		

EVALUATION SYSTEM

Semester Requirements	Number	Percentage of Grade
Attendance/Participation	-	-
Laboratory	-	-
Application	-	-
Field Work	-	-
Special Course Internship (Work Placement)	-	-
Quizzes/Studio Critics	3	5
Homework Assignments	-	-
Presentation/Jury	-	-
Project	-	-
Seminar/Workshop	-	-
Midterms/Oral Exams	2	60
Final/Oral Exam	1	35
Total	6	100

PERCENTAGE OF SEMESTER WORK	5	65
PERCENTAGE OF FINAL WORK	1	35
Total	6	100

COURSE CATEGORY

Course Category	Core Courses	
	Major Area Courses	
	Supportive Courses	Х
	Media and Managment Skills Courses	
	Transferable Skill Courses	

THE RELATIONSHIP BETWEEN COURSE LEARNING OUTCOMES AND PROGRAM QUALIFICATIONS

#	Program Qualifications / Outcomes	* Level of Contribution		n		
		1	2	3	4	5
1	<p>Adequate knowledge in Mathematics, Science and Computer Engineering; ability to use</p>					
	theoretical and applied information in these areas to model and solve Computer Engineering					Х
	problems					
2	Ability to identify, define, formulate, and solve complex Computer Engineering problems; ability				×	
	to select and apply proper analysis and modeling methods for this purpose				^	
3	Ability to design a complex computer based system, process, device or product under realistic					
	constraints and conditions, in such a way as to meet the desired result; ability to apply modern					
	design methods for this purpose					
4	Ability to devise, select, and use modern techniques and tools needed for Computer					
	Engineering practice					
5	Ability to design and conduct experiments, gather data, analyze and interpret results for				v	
	investigating Computer Engineering problems				^	
6	Ability to work efficiently in Computer Engineering disciplinary and multi-disciplinary teams;					
	ability to work individually					
7	Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum					
	of two foreign languages					
8	Recognition of the need for lifelong learning; ability to access information, to follow					
	developments in science and technology, and to continue to educate him/herself					
9	Awareness of professional and ethical responsibility					
10	Information about business life practices such as project management, risk management, and					
	change management; awareness of entrepreneurship, innovation, and sustainable development					
11	Knowledge about contemporary issues and the global and societal effects of engineering					
	practices on health, environment, and safety; awareness of the legal consequences of					
	Computer Engineering solutions					

*1 Lowest, 2 Low, 3 Average, 4 High, 5 Highest

ECTS / WORKLOAD TABLE

Activities		Duration (Hours)	Total Workload
Course Hours (Including Exam Week: 16 x Total Hours) 1		4	64
Laboratory	-	-	-
Application	-	-	-
Special Course Internship (Work Placement)	-	-	-
Field Work	-	-	-
Study Hours Out of Class		4	64
Presentations / Seminar		-	-
Project	-	-	-
Homework Assignments		-	-
Quizzes		4	12
Midterms / Oral Exams		13	26
Final / Oral Exam	1	14	14
		Total Workload	180