TED University

Basic Sciences Unit

MATH 111 Introduction to Calculus of One Variable

2016-2017 Spring

Credit Hours: **(3+2+0) 4 TEDU Credits, 7 ECTS Credits**

Pre-requisites: **None**

Course Description

Functions and their graphs. Combining functions. Trigonometry. Concept of limit. Limit theorems. Continuity. Limits of sequences. Exponential and logarithmic functions. Derivative. Rules for differentiation. Chain rule. Implicit differentiation. Differentials. The mean value theorem. Maxima and minima of functions. Graphing. L'Hopital's Rule. Anti-differentiation. Integration. Rules for integration. The Fundamental theorem of calculus. Techniques of integration.

Instructors

Section 1
Türker BIYIKOĞLU
Basic Sciences Unit
Office: A420
Phone:
E-mail:

Lectures:	09:00-10:50	Monday	G103
	10:00-11:50	Wednesday	G105
Practice Hours:	10:00-10:50	Friday	GB07
Office Hours:	TBA		

Section 2
Yıldırım AKBAL
Basic Sciences Unit
Office: A420
Phone:
E-mail: yildirim.akbal@tedu.edu.tr

Lectures:	13:00-14:50	Monday	G010
	10:00-11:50	Wednesday	G212
Practice Hours:	09:00-09:50	Friday	GB07
Office Hours:	TBA		

Section 3
Yıldırım AKBAL
Basic Sciences Unit
Office: A420
Phone:
E-mail: yildirim.akbal@tedu.edu.tr

Lectures:	09:00-10:50	Thursday	G113
	11:00-12:50	Friday	G003
Practice Hours:	09:00-09:50	Wednesday	A316-L
Office Hours:	TBA		

Section 4
Adalet ÇENGEL
Basic Sciences Unit
Office: A420
Phone:
E-mail:

Lectures:	13:00-14:50	Tuesday	G006
	16:00-17:50	Wednesday	G205
Practice Hours:	11:00-11:50	Friday	A316-L
Office Hours:	TBA		

Section 5
Adalet ÇENGEL
Basic Sciences Unit
Office: A420
Phone:
E-mail:

Lectures:	14:00-15:50	Wednesday	G205
	09:00-10:50	Friday	G205
Practice Hours:	11:00-11:50	Tuesday	A316-L
Office Hours:	TBA		

Section 6
Ruşen KAYA
Basic Sciences Unit
Office: A420
Phone:
E-mail:

Lectures:	14:00-15:50	Wednesday	G105
	13:00-14:50	Friday	G105
Practice Hours:	14:00-14:50	Tuesday	A316-L
Office Hours:	TBA		

Section 7
Ruşen KAYA
Basic Sciences Unit
Office: A420
Phone:
E-mail:

Lectures:	12:00-13:50	Tuesday	G105
	16:00-17:50	Friday	G105
Practice Hours:	16:00-16:50	Wednesday	A316-L
Office Hours:	TBA		

Section 8
Mehmet Onur FEN
Basic Sciences Unit
Office: A227
Phone: (312) 585 0217
E-mail: onur.fen@tedu.edu.tr

Lectures:	12:00-13:50	Monday	G103
	15:00-16:50	Tuesday	G103
Practice Hours:	16:00-16:50	Thursday	A316-L
Office Hours:	10:00-10:50	Tuesday	A227
	13:00-13:50	Thursday	A227

Course Outline

The course outline is given below. This outline is tentative and it will be adapted to the pace of the class in agreement with the students. Any changes will be announced either in the classroom or via e-mail.

Week	Topic
1	Basics: 1.1 Number Systems. 1.2 Planar Coordinates and Graphing in the Plane. 1.3 Lines and Their Slopes
2	Basics: 1.4 Functions and Their Graphs. 1.5 Combining Functions. 1.6 Trigonometry
3	Limits: 2.1 The Concept of Limit. 2.2 Limit Theorems. 2.3 Continuity
4	Limits: 2.4 Infinite Limits and Asymptotes. 2.5 Limits of Sequences. 2.6 Exponential Functions and Logarithms
5	The Derivative: 3.1 Rates of Change and Tangent Lines. 3.2 The Derivative. 3.3 Rules for Differentiation. 3.4 Differentiation of Some Basic Functions **Midterm I**
6	The Derivative: 3.5 The Chain Rule. 3.7 Higher Derivatives 4.2 The Mean Value Theorem.
7	4.3 Maxima and Minima of Functions. 4.5 Concavity. 4.6 Graphing Functions.
8	4.7 l'Hôpital's Rule. The Integral: 5.1 Introduction to Integration - The Area Problem.
9	5.2 The Riemann Integral. **Midterm II**
10	5.3 Rules for Integration. 5.4 The Fundamental Theorem of Calculus
11	5.5 A Calculus Approach to the Logarithm and Exponential Functions. 5.6 Integration by Substitution.
12	5.7 More on the Calculation of Area. Techniques of Integration: 6.1 Integration by Parts.
13	6.2 Powers and Products of Trigonometric Functions. 6.3 Trigonometric Substitution
14	Techniques of Integration: 6.4 Partial Fractions-Linear Factors. 6.5 Partial Fractions-Irreducible Quadratic Factors

Text Book

Calculus, Single and Multivariable, 2nd Edition by B. E.Blank & S. G.Krantz (John Wiley)

Supplementary Books

- Calculus, A Complete Course, 7th Ed. by Adams & Essex.
- Calculus, 7th Ed. by James Stewart
- Calculus, 12th Ed. by George B. Thomas

Grading

Quizzes and Active Learning Exercises: 10%
Practice Hours: 10%
Midterm Exam I: 25%
Midterm Exam II: 25%
Final Exam: 30%

Learning Outcomes

Upon successful completion of this course, a student will be able to:
1. Recall fundamental definitions, notations, conventions and basic principles of mathematical writing,
2. Recognize elementary and transcendental functions and their properties,
3. Explain the concepts of limit, continuity and continuity implications such as the Intermediate and Extreme Value Theorems,
4. Calculate limits, derivatives and definite integrals algebraically, graphically and numerically,
5. Use the Mean Value Theorem (MVT) and implications of the MVT on limits, monotonocity, concavity and extrema,
6. Solve problems concerning related rates, optimization, and approximation, etc.,
7. Relate indefinite integral and definite integral via the Fundamental Theorem of Calculus.

Student Workload

Lectures **+** Practice Hours: 70 hrs
Study Hours Out of Class: 84 hrs
Midterm Exam I: 7 hrs
Midterm Exam II: 7 hrs
Final Exam: 7 hrs

Make-up Policy

A make-up exam will be given only for medical excuses documented by medical reports that are approved by the Student Health Center or other documented excuses approved by the university's executive branches. The make-up exam will be given at or after the end of the semester. No make-ups will be given for active learning exercises, quizzes and practice hours.

Attendance

Attendance is recommended but not mandatory in this course. Classes start on the hour. Please be respectful of your classmates by being on time. Cell phones should be turned off and kept out of sight. Please do not use your computers during class time.

Active Learning Exercises

Throughout the semester you will have a number of (unannounced) active learning exercises in-class. These exercises will help you learn the course material in an active and collaborative manner. All attendees contributing to the collaborative learning environment will receive at least one point; and the students who complete their work satisfactorily will receive an additional point.

Tutors

In addition to office hours, there will be tutoring hours offered by appointment to get help from a fellow student who has already taken this course previously. The location, exact dates and hours of tutoring will be announced.

Calculator Policy

You may use a graphing calculator or software that does symbolic calculations. But you will NOT be allowed to use a calculator during active learning exercises, quizzes and exams.

Cheating

Cheating has a very broad description which can be summarized as "acting dishonestly". Some of the things that can be considered as cheating are the following: copying answers on exams, homework and lab works, using prohibited material on exams, lying to gain any type of advantage in class, providing false, modified or forged data in a report, plagiarizing, modifying graded material to be re-graded, causing harm to colleagues by distributing false information about an exam, homework or lab. Cheating is a very serious offense and will be penalized accordingly by the university disciplinary committee.

Plagiarism

All of the following are considered plagiarism:
- Turning in someone else's work as your own
- Copying words or ideas from someone else without giving credit
- Failing to put a quotation in quotation marks
- Giving incorrect information about the source of a quotation
- Changing words but copying the sentence structure of a source without giving credit
- Copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not

Plagiarism is a very serious offense and will be penalized accordingly by the university disciplinary committee. The best way to avoid accidentally plagiarizing is to work on your own before you ask for the help of other resources