

## Mathematics for Business and Economics II Spring 2016

MAT 234 • 6 Credits

**Professor:** Syrgak Kydyraliev [kydyraliev\\_s@auca.kg](mailto:kydyraliev_s@auca.kg)

**Office:** Room 415

**Office Hours:** F from 12:10 till 12:40 or by arrangement

### I. Course Description

This course will introduce the basic tools of mathematical analysis with applications to natural and social sciences, business. The course consists of the following topics: limit of function; basics of differential calculus and its applications; basics of integral calculus and its applications; differential calculus of functions of several variables.

### II. Course Objectives

In this course, you will

- develop abstract and logical (probative) thinking;
- understand the relationship between a question that arises in the natural, computer, economic, and social sciences and the data required to provide an answer to the question;
- go into basic study of mathematical analysis and calculus techniques;
- use the tools of calculus for the real-life problems solving.

### III. Core Sources

1. <http://e-course.auca.kg>

Applied Mathematics and Informatics >Spring 2016 >Mathematical Analysis

2. Mizrahi A. Sullivan M. Mathematics for business and social sciences. – John Wiley&Sons. 1988.

3. Lial M., Miller C. Finite Mathematics and Calculus with application. – Scott, Foresman and Company. 1989.

### IV. Supplementary Sources

4. Grossman S.I. Calculus of one variable. – Academic Press. Inc. 1986.

5. Larson R.E., Hosteller R.P. Brief Calculus with applications. – D.C. Heath and Company. 1987.

### V. Course Requirements and Grading

#### a. Grading scale

$F \leq 40 < D \leq 45 < C- \leq 50 < C \leq 60 < C+ \leq 65 < B- \leq 70 < B \leq 80 < B+ \leq 85 < A- \leq 90 < A \leq 100$

#### b. Grade components

Quiz 1	10 points
Midterm Exam	30 points
Quiz 2	10 points
Final Exam	40 points
Home works, class activity	10 points

#### c. Make-up Exams

- If the reason for missing the midterm exam is valid, the student's final exam will be worth up to 60 points.
- If the reason for missing a quiz is valid, the quiz can be written at another time and will be worth 5 points.

- If the reason for missing the Final Exam is valid, the student can apply for the grade of “I”.
- If a student misses both exams, he/she will not be attested for the course.
- If the reason for missing any graded activity is not valid, then the grade 0 will be given for the missing work.

## VI. Course Protocol

- Always bring your notebook to class.
- Turn off and put away your mobile in the classroom.
- Avoid disrupting class by going in and out.
- If you miss a class, you are responsible for finding out what instructions or assignments you missed and making up all work, as needed.
- Follow academic honesty code. All types of cheating (plagiarism etc.) are strictly prohibited. If a student fails to observe this requirement, instructor may give from an “F” for the work up to an “F” for the whole course depending on the type of assignment and other circumstances.

## VIII. Course Schedule and Content

Weeks	Topic	Source: pages
1-2	Graphs (sketches) of primary functions	
3-4	Limit of a function. Calculating limits. Calculating one-sided limits. Continuous functions. Limit at infinity. Special limits.	[2]: 453 – 471; [3]: 509 – 520 [3]: 588 – 593 [2]: 585; [2]: 642 – 645
5-6	Definition of derivative. Rules of differentiation. Chain rule. Derivatives of higher order. L'Hopital's rule. Increasing and decreasing functions. Concavity. Applications of derivatives in economics.	[2]: 453 – 523; [2]: 585, 642 – 645; [3]: 509 – 593, 605 – 628 [3]: 638 – 653 [2]: 604 – 610
7-8	Asymptotes. Graphing functions using investigation. Review: Midterm Exam preparation.	[2]: 585 – 590
9-11	Functions of several variables. Partial derivatives. Relative extrema. Conditional extrema. Applications of extrema in economics.	[2]: 664 – 687; [3]: 909 – 946
12-13	Antiderivatives. Indefinite integral. Integration by substitution. Integration by parts.	[2]: 693 – 710; [3]: 782 – 799; [3]: 844 – 849
14	Definite integral. Application of definite integral: calculating areas. Application of definite integral in economics.	[2]: 721 – 738, 752 – 757; [3]: 801 – 834
15	Course review: Final Exam preparation.	