

Business Math I

Course code: MTH 111/2

Semester and year: Fall 2021

Day and time: Mondays 18:30 - 21:15

Instructor: Ing. Hana Prosdócimo Hajova, Ph.D., MBA

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Consultation hours: Mondays 17:30–18:30 or by appointment

Credits US/ECTS	3/6	Level	Introductory
Length	15 weeks	Pre-requisite	Elementary math*
Contact hours	42 hours	Course type	BachelorRequired

*Students need to take an introductory test and score at least 14 out of 20 points. This requirement is waived for students that passed the Elementary Math course and it might be waived by the dean in other cases.

1. Course Description

This course covers basic algebra and arithmetic (basics of theory of sets and logic, algebraic expressions and their simplification, linear, quadratic, irrational equations, inequalities, simultaneous equations, matrices, calculating loans and savings) and basics of analytical geometry (points, lines, distance, circles, parabolas). Furthermore it brings key concepts of calculating and plotting of functions including exponential and logarithmic functions. The aim of this course is also to prepare students for the Business Mathematics 2 course.

2. Student Learning Outcomes

Upon successful completion of this course, the student will be able to:

- apply logic to visually represent and then mathematically formulate and solve the linear group of proportioning (“mixing”) and rate problems
- correctly use the basic arithmetical operations of addition, subtraction, multiplication, and division of numbers and algebraic expressions
- solve linear equations in one variable, quadratic equations in one variable, linear inequalities in one variable, and simple exponential and logarithmic equations,
- classify a problem as linear, quadratic, or exponential – and demonstrate the solutions of the unknown variable in these categories. graph linear and quadratic functions,
- understand basic operations of functions, such as composition and inverses
- re-express basic word problems in abstract mathematical language,

- apply their knowledge to real world problems such as compound interest, supply and demand functions, cost and revenue.

3. Reading Material

Required Materials

- Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen: College Algebra, Sixth edition, McGraw Hill. 1999. (Accompanied by Student's Solutions Manual.)

4. Teaching methodology

The methodology will encourage active students' participation in the learning process in order to develop an interactive partnership between students and instructor. Teaching methods and agenda are designed to help students develop their analytical skills through a combination of lectures, group work and discussion

5. Course Schedule

Date	Class Agenda
Week 1 Monday Sep 6	Course organization & introductory test Sets, numbers, intervals Absolute value Basic arithmetic operations and their order Word problems covering the topics
Week 2 Monday Sep 13	Basic arithmetic operations and their order Fractions Natural, integer, and rational exponents, scientific notation Word problems covering the topics
Week 3 Monday Sep 20	Percentages, percentage changes, percentage points Problems covering previous topics Business Case covering previous topics

<p>Week 4</p> <p>Monday Sep 27</p>	<p>Test 1</p> <p>Polynomials</p> <p>Variables and functions, graphs</p> <p>Range and Domain of function</p> <p>Basic types of functions</p> <p>Linear functions</p> <p>Quadratic functions</p> <p>Word problems</p>
<p>Week 5</p> <p>Monday Oct 4</p>	<p>Basic types of functions</p> <p>The greatest integer function</p> <p>Absolute value function</p> <p>Word problems</p>
<p>Week 6</p> <p>Monday Oct 11</p>	<p>Basic types of functions</p> <p>The greatest integer function</p> <p>Absolute value function</p> <p>Word problems</p>
<p>Week 7</p> <p>Monday Oct 18</p>	<p>Test 2</p> <p>Linear functions, equations, and inequalities, systems of equations</p> <p>Word Problems</p>
<p>Week 8</p>	<p><i>Midterm break</i></p>

<p>Week 9</p> <p>Monday</p> <p>Nov 1</p>	<p>Word problems covering previous topics</p> <p>Business Case</p> <p>Linear equations and inequalities</p> <p>Quadratic equations and inequalities</p> <p>Word problems</p>
<p>Week 10</p> <p>Monday</p> <p>Nov 8</p>	<p>Quadratic functions, equations, and inequalities</p> <p>Word Problems covering previous topics</p>
<p>Week 11</p> <p>Monday</p> <p>Nov 15</p>	<p>Test 3</p> <p>Word problems covering previous topics, solving with help of calculator and math book</p> <p>Exponential functions</p> <p>Logarithmic functions</p>
<p>Week 12</p> <p>Monday</p> <p>Nov 22</p>	<p>Exponential functions</p> <p>Logarithmic functions</p> <p>Word problems</p>
<p>Week 13</p> <p>Monday</p> <p>Nov 29</p>	<p>Test 4</p> <p>Group work</p> <p>Exponential functions and Logarithmic functions - Word problems</p> <p>Business Case</p>

Week 14 Monday Dec 6	Word problems covering previous topics
Week 15 Monday Dec 13	Final Exam

Timing of topics might be slightly adjusted based on the needs of a particular group of students.

6. Course Requirements and Assessment (with estimated workloads)

Assignment	Workload (average)	Weight in Final Grade	Evaluated Course Specific Learning Outcomes	Evaluated Institutional Learning Outcomes*
Course participation	42			1,2,3
Tests	60	60%		1,2,3
Business Cases	18	Up to 30% of extra credit		1,2,3
Final Exam	30	30%		1,2,3
TOTAL	150	100%		

*1 = Critical Thinking; 2 = Effective Communication; 3 = Effective and Responsible Action

7. Detailed description of the assignments

Business Cases

There are three homework assignments – Business Cases, Each homework assignment accounts for up to 10 points of extra credit. Extra credits mean that students are not required to work on and to deliver the Business Cases. It is up to the students if they choose to work on one, two, three Business Cases or no one. It is highly recommended to work on them because the Business Case is very effective tool how to gather new knowledge, skills and improve teamwork and as well how to get better overall grade.

Please, keep in mind if there is no Business Case delivered the maximum percentage of the overall grade is 90%.

Tests

There are four tests throughout the semester. Each test takes 60 minutes and contains questions based on a specified part of the problem set. No calculators or other aids are allowed. The maximum score for each test is 15% (weight in final grade). If a student arrives after a test starts, he or she will be allowed to take it, but the time available will be correspondingly shorter.

Final exam

The final exam takes 120 minutes and covers the whole semester. It consists of all topics studied. The exam is open book, so students can use calculators, their notes, textbooks, and so on, but no devices that can connect to the internet. The maximum score for the final exam is 30% (weight in final grade).

8. General Requirements and School Policies

General requirements

All coursework is governed by AAU's academic rules. Students are expected to be familiar with the academic rules available in the Codex and Student Handbook and to maintain the highest standards of honesty and academic integrity in their work.

Electronic communication and submission

The university and instructors shall only use students' university email address or the NEO LMS messaging system for communication. Messages sent through the NEO LMS messaging system are automatically forwarded to AAUNI emails, so both modes of communication are considered to be equivalent.

Attendance

Attendance is required. Students who are absent 35 percent of classes will be failed (or administratively withdrawn from the course if most absences are excused). Students might also be marked absent if they miss a significant part of a class (by arriving late or leaving early) as specified in the syllabus.

Absence excuse and make-up options

Should a student be absent from classes for relevant reasons (illness, serious family matters), s/he must submit to the Dean of Students an Absence Excuse Request Form supplemented with documents providing reasons for the absence. The form and documents must be submitted within one week of the absence. If possible, it is recommended the instructor be informed of the absence in advance. Should a student be absent during the add/drop period due to a change in registration this will be an excused absence if s/he submits an Absence Excuse Request Form along with the finalized add/drop form.

Assignments missed due to unexcused absences cannot be made up which may result in a decreased or failing grade as specified in the syllabus.

Students whose absence has been excused by the Dean of Students are entitled to make up assignments and exams provided their nature allows for a make-up. Students are responsible for contacting their instructor within one week of the date the absence was excused to arrange for make-up options.

Late work: No late submissions will be accepted – please follow the deadlines.

Electronic devices

Any electronic devices (phones, tablets, laptops...) may be used only for class-related activities (taking notes, looking up related information...).

Eating is not allowed during classes.

Cheating and disruptive behavior

If a student engages in disruptive or other conduct unsuitable for a classroom environment of an institution of learning, the instructor may require the student to withdraw from the room for the duration of the activity or for the day and shall report the behavior to the Dean.

Students engaging in behavior which is suggestive of cheating (e.g. whispering or passing notes) will, at a minimum, be warned. In the case of continued misbehavior the student will be expelled from the exam and the exam will be marked as failed.

Plagiarism and Academic Tutoring Center

Plagiarism is “the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one’s own original work.” (Random House Unabridged Dictionary, 2nd Edition, Random House, New York, 1993)

Turnitin’s White Paper ‘The Plagiarism Spectrum’ (available at <http://go.turnitin.com/paper/plagiarism-spectrum>) identifies 10 types of plagiarism ordered from most to least severe:

1. CLONE: An act of submitting another’s work, word-for-word, as one’s own.
2. CTRL-C: A written piece that contains significant portions of text from a single source without alterations.
3. FIND-REPLACE: The act of changing key words and phrases but retaining the essential content of the source in a paper.
4. REMIX: An act of paraphrasing from other sources and making the content fit together seamlessly.
5. RECYCLE: The act of borrowing generously from one’s own previous work without citation; To self plagiarize.
6. HYBRID: The act of combining perfectly cited sources with copied passages—without citation—in one paper.
7. MASHUP: A paper that represents a mix of copied material from several different sources without proper citation.

8. 404 ERROR: A written piece that includes citations to non-existent or inaccurate information about sources
9. AGGREGATOR: The "Aggregator" includes proper citation, but the paper contains almost no original work.
10. RE-TWEET: This paper includes proper citation, but relies too closely on the text's original wording and/or structure.

As the minimum policy the types of plagiarism from 1 through 8 results in the failing grade from the assignment and must be reported to the Dean. The Dean may initiate a disciplinary procedure pursuant to the Academic Codex. Allegations of bought papers and intention consistent plagiarism always entail disciplinary hearing and may result in expulsion from AAU.

If unsure about technical aspects of writing, students are encouraged to consult their papers with the tutors of the AAU Academic Tutoring Center. For more information and/or to book a tutor, please contact the ATC at: <http://atc.simplybook.me/scheduler/manage/event/1/>.

Students with disabilities

Students with disabilities are asked to contact their instructor as soon as possible to discuss reasonable accommodation.

9. Grading Scale

Letter Grade	Percentage*	Description
A	95 – 100	Excellent performance. The student has shown originality and displayed an exceptional grasp of the material and a deep analytical understanding of the subject.
A-	90 – 94	
B+	87 – 89	Good performance. The student has mastered the material, understands the subject well and has shown some originality of thought and/or considerable effort.
B	83 – 86	
B-	80 – 82	
C+	77 – 79	Fair performance. The student has acquired an acceptable understanding of the material and essential subject matter of the course, but has not succeeded in translating this understanding into consistently creative or original work.
C	73 – 76	
C-	70 – 72	
D+	65 – 69	Poor. The student has shown some understanding of the material and subject matter covered during the course. The student's work, however, has not shown enough effort or understanding to allow for a passing grade in School Required Courses. It does qualify as a passing mark for the General College Courses and Electives.
D	60 – 64	
F	0 – 59	Fail. The student has not succeeded in mastering the subject matter covered in the course.

* Decimals should be rounded to the nearest whole number.

Prepared by and when: Hana Prosdócimo Hajová 2nd July, 2021

Approved by: Ing. Hana Prosdócimo Hajová, PhD, MBA, Chair of Mathematics and Computer Science Department, 2nd July, 2021

Jan Vašenda, Ph.D., Dean, School of Business Administration, 29th August 2021.