SYLLABUS

1. Course title:

Mathematics for Economists

2. Code:

VG

3. Cycle of study:

1

4. ECTS credits:

8

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

-

7. Class restrictions:

-

8. Duration / semester:

1 1

9. Weekly contact hours:

9.1. Lectures:	4
9.2. Seminars:	3
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of Economics

11. Department/study program:

Economics

12. Lecturer:

Mehmed Nurkanović i Vedad Pašić

13. Lecturer's e-mail:

mehmed.nurkanovic@untz.ba vedad.pasic@u

14. Web site:

http://www.vedad.frontslobode.org/ekon/

15. Course aims:

The main aim of this course is for the students to obtain the basic knowledge from higher mathematics, in order to be better prepared for other courses which are directly or indirectly related to mathematics. Besides this, on the the very important goals is to demonstrate to students the practical models in economics for whose examination we use the knowledge gained in this module.
Other goals:
• Enabling students for solving optimisation problems
• Enabling students for dynamic anaylsis (economic dynamics and integral calculus, market price dynamics, continuous models (differential equations) and disrete models (difference equations).

16. Learning outcomes:

The students will be:

• Enabled for successfully solving problems from linear models and matrix algebra;
• Enabled for solving optimisation problems in the field of economics;
• Mastering various methods and techniques in applying differential and difference equations to continuous and discrete models in economics;
• Able to understand the role and the importance of matehamtical models in economics;
• Adopting more easily and quickly in subjects - modules which are completely or partially based on mathematics.

17. Course content:

Matrix calculus and systems of linear algebraic equations: the notion of the determinant, inverse matrices, matrix rank; methods for solving general systems of linear algebraic equations, applications in economics: model of market equilibrium, model of national income, multisector analysis.
Functions of one real variable: notion and properties, elementary functions, application of functions in economics (functions of supply, demand, total costs, total income, total gain), arithmetic and geometric sequences, limits of sequences, application of sequences in economics (intrest calculation)
Differential calculus of functions of one variable: limits of functions and application in economics, the notion and interpretation of derivative, derivative of compound functions, differential and application in economics, derivatives and differentials of higher order, L'Hospital's rule, application of differential calculus in economics: optimum problems, global and local extrema, curves of indifference, marginal functions, function elasticity, price flexibility.
Differential calculus of functions of several variables: partial derivatives, extrema, partial elasticity.
Integral calculus: indefinite integral, integration methods, integration of rational functions, definite integral and applications in economics. Differential equations: separation of variable, linear equation, application in economics.
Discrete dynamic models: first order difference equations, applications in economics.

18. Learning methods:

The following activities are planned as the part of successful learning: concrete experience, observation and thinking, creating abstract concepts. The styles of teaching are: visual, logical-mathematical and personal.
The most important methods of learning are:
- lectures, techniques of active learning with active participation and student discussion.
- exercise classes.

19. Assessment methods:

Pre-exam obligations consist of two tests with problems taken during the semester which carry 25% each of the total mark awarded. The first test is done in the middle of the semester, while the second is done at the end of the semester.

Tests are in written form and consist of five problems each from the areas of study covered in lectures and exercise classes up to that point.

Final exam: the final exam aims to check knowledge from the entirety of the course and carries 50% of the final mark awarded. The exam is done in written form.

The condition for successfully passing the exam is to obtain a minimum of 15 points in the final exam obligations, while the student must obtain a minimum of 54 points for a passing grade (6).

20. Assessment components:

Pre-exam obligations:
First test 25%;
Second test 25%.
Final exam: 50%.
The following is the grading scale, showing the points, numerical grade, descriptive grade and letter grade:
0-53 5 (five) fail F
54-63 6 (six) satisfactory E
64-73 7 (seven) good D
74-83 8 (eight) very good C
84-93 9 (nine) excellent B
94-100 10 (ten) outstanding A

21. Required reading list:

1. M. Nurkanović, O. Kurtanović, Matematika za ekonomiste, PrintCom, Tuzla, 2013.
2. L. Smajlović, Matematika za ekonomiste, Univerzitet u Sarajevu – Ekonomski fakultet, Sarajevo, 2010.
3. Alpha, C. Chiang, Osnovne metode matematičke ekonomije, MATE, d.o.o., Zagreb, 1994.
4. M. Nurkanović, Diferentne jednadžbe – Teorija i primjene, Denfas, Tuzla, 2008.

22. Web sources:

http://www.vedad.frontslobode.org/ekon/

23. Applicable starting from the academic year:

2016/17

24. Adopted in the Faculty/Academy session: