SYLLABUS

1. Course title:

Mathematics I

2. Code:

MAT1

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

7. Class restrictions:

8. Duration / semester:

1 1

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	2
9.3. Laboratory/Practice classes:	0

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

Mirela Garić-Demirović, Amra Rekić-Vuković

13. Lecturer's e-mail:

mirela.garic@untz.ba,amra.rekic@untz.ba

14. Web site:

15. Course aims:

After the highschool candidates come with the knowledge which is largely covered by this modulus. The aim of this course is to refsresh those konwledge and to expand them. By that we mean to learn how to apply their konwledge to some concrete practial problems.

16. Learning outcomes:

At the end of the semestar succesfull students who continuously fulfiled their obligations will :
• know and understand elementary functions and their graphs, aspecially functions with apsolute value and learn how those intuitive concepts can be translated into precise mathematical language using definition of limit of a function, definition of continuous function etc.
• learn and understand some criteria for checking convergence in different limit processes. They will learn different ways of calculating limit of a function.
• master techniques of differential calculus of the one real variable function
• be able to feel a potential of a differential calculus used in solving concrete problems, through the mathematical, physical examples and some examples of natural and social sciences.
• master techniques of finding indefinite integrals;
• be able to aplly integral calculus for solving typical problems in the geometry, physics and other sciences.

17. Course content:

Propositional logic. Field of real numbers. Some subsets of the set of real numbers. The principal of mathematical induction. Complex numbers, definition. Algebraic, trigonometric Eulers form of complex number. Operatins in the set of complex numbers. Elements of linear algebra: matrix algebra, matrix equations, determinants, sistems of linear equations, the rank of a matrix, Kronecker-Capelliev theorem. Elements of vector algebra, vectors, scalars and operations. Vector space. Analytic geometry in the vector space. The line and the plane. Real function of one variable: boundness, monotonicity, and periodicity of the function. Limit of the real function of real variable. The operations with limits. The existence of the limit of the composition of two functions. The continuity of the function. Continuous functions on the segment. Differential calculus of the real variable. Derivations: rools for derivations. Geometrically and physically interpretation of the derivation. Differentials and derivations of higer order. Basic theorems of differential calculus. L'Hospital rooles. Checking functions by using derivations. Integral calculus of the functions of the real variable. Indefinite integral. Basic methods of the integration. Integration of the rational functions. Integration of the irational functions. Integration of the trigonometric functions. Definition of definite integral. Conection between definite and indefinite integrals. Improper integral. Applications.

18. Learning methods:

Concrete experience, observation and thinking, making some abstract concepts are activities of successufull learning are planned. We prefer these styles of learning: logically-mathematical and independent style.

The most important methods of learning are:
- Lectures, technique of active learning with active participation and discussion with students
- Exercise classes
- Individual working on some selected examples in the form of homework.

19. Assessment methods:

Tests during the course: 50
The final exam: 50
Totally: 100

20. Assessment components:

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. Dragan Jukić, Rudolf Scitowski, Mathematics I, Tuzla, 1997.
2. Sabahet Drpljanin, Mathematics, Tuzla, 2000.
3. D.Mihajlovic, R.Janic, Elements of mathematical analysis I, Naucna knjiga, Beograd, 1978.
4. F. Dedagić, Uvod u Višu matematiku Tuzla 2004.
5. F. Dedagić, Matematička analiza (drugi dio), Tuzla 2005. Ramiz Vugdalić, Matematika 1, Tuzla, 2014.
6. P.Milicic, M.Ušcumlic, Zbirka zadataka iz Matematike I i II, Gradevinska knjiga, Beograd, 1972.
7. B.Demidovic, Zadaci i riješeni zadaci iz više matematike s primjenom na tehnicke nauke, Tehnicka knjiga, Zagreb, 1986.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2016/17

24. Adopted in the Faculty/Academy session:

04.04.2016