UNIVERSITY OF TUZLA · UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

Application of Engineering Software Packages

2. Code:

RI206

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course:

◉ Mandatory   ○ Elective

6. Prerequisites:

[RI101] Introduction to Programming

7. Class restrictions:

8. Duration / semester:

1   4

9. Weekly contact hours:

9.1. Lectures: 3

9.2. Seminars: 1

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Electrical Engineering

11. Department/study program:

Electrical Engineering and Computer Science

12. Lecturer:

PhD Emir Skejić, associate professor

13. Lecturer's e-mail:

emir.skejic@untz.ba

14. Web site:

www.fet.ba; https://sites.google.com/site/pisp

15. Course aims:

The course objective is to introduce students to some of the available software packages to analyze and solve engineering problems. Upon completion of the course, students will be trained to apply a specific engineering software package for solving problems from various engineering areas.

16. Learning outcomes:

- Acquire basic knowledge from engineering, modeling and evaluation of engineering systems;
- Improve Programming Skills;
- Have the ability to independently analyze and model the less-complex dynamic engineering systems;
- To gain insight into the problem of programming simpler dynamical engineering systems.

17. Course content:

Overview of Software Package (ESP): Matlab, Octave, Scilab. Basics of ESPs: variables, functions, scripts, program flow control, operators. Vectors, matrices, cells, structures and vectorized operations. Application of ESP: Symbolic Account, 2D and 3D Graphics, Creating a Graphical User Interface, Numerical Methods in Solving Linear and Nonlinear Equations, Simulation of Dynamic Systems, Numerical and Symbolic Solving Electrical Circuits. External Interface / API.

18. Learning methods:

- lectures with the use of multimedia resources;
- auditory exercises;
- laboratory exercises;
- Independent solving of Matlab / Octave programming assignments.

19. Assessment methods:

After half of the semester, students take a written test (the first colloquium) that covers previously discussed lectures and exercises. The student can score up to 20 points in the first midterm exam. After completing the semester, the students write a written test (second colloquium) that covers the topic covered by the lectures and exercises from the second part of the semester. The student on the second midterm exam can score up to 25 points. Both tests put all the students on the subject at the same time, thereby achieving the level of knowledge that is being tested and the conditions under which the student takes the exam. Also, for a continuous activity on lectures and exercises throughout the semester, the student can achieve 0 to 5 points.

The final exam is in written form. The exam can be passed if the student successfully solves 50% of the tasks the exam consists of. The maximum number of points a student can get from a final exam is 50.

Checks on all forms of knowledge are recognized as a cumulative test if the result is positive after each individual check and is at least 50% of the total of the predicted and / or required knowledge and skills.

In order for a student to pass the subject must have at least 54 cumulative points, of which at least 25 points on the final exam.

20. Assessment components:

The assessment of the exam is based on the total number of points the student has obtained by fulfilling the prerequisites and passing the exam according to the quality of the acquired knowledge and skills, and it contains a maximum of 100 points and is determined according to the following scale:

Student Obligations	Points
- exercise activity	max. 5
- colloquia / midterm exams	max. 45
- final exam	max. 50

21. Required reading list:

1. William J. Palm III, Introduction to MATLAB 7 for Engineers, McGraw-Hill, 2005.
2. A. Quarteroni and F. Saleri, "Scientific Computing with MATLAB and Octave", 2nd Ed., Springer, 2006.

22. Web sources:

http://www.mathworks.com/
https://www.coursera.org/learn/matlab
https://www.gnu.org/software/octave/

23. Applicable starting from the academic year:

2016/2017

24. Adopted in the Faculty/Academy session:

04.04.2016