SYLLABUS

1. Course title:

Computer Vision

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course:

○ Mandatory ◉ Elective

6. Prerequisites:

(max. 110 characters)

7. Class restrictions:

(max. 150 characters)

8. Duration / semester:

1 | 8

9. Weekly contact hours:

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

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Production engineering

12. Lecturer:

dr.sc. Elvedin Trakić, doc.

13. Lecturer's e-mail:

elvedin.trakic@untz.ba

14. Web site:

www.mf.untz.ba

15. Course aims:

Acquiring theoretical and practical knowledge in the field of machine vision and application of the same

16. Learning outcomes:

At the end of the semester, successful students who continued to perform their duties throughout the teaching period will be able to independently design, develop, implement and use contemporary machine vision systems in various areas of practical application.

17. Course content:

1. Introduction, vision system - artificial vision, computer and machine vision.
2. Connections of vision system with other areas, advantages and disadvantages of machine vision system.
3. Typical tasks of vision system.
4. Components of the machine vision system, vision sensors and their characteristics.
5. Sensors of ultrasonic vision. Electronic camera.
6. 3D water sensors. Special vision sensors.
7. Image processing, filters. Segmentation of the image. Classification of Characters. Scene Analysis. Determining position of characters.
8. Examples of machine vision, robotics, quality control, safety.

18. Learning methods:

Lectures, laboratory exercises, seminars, consultations.
Test theory (in written form) and computer exercises on a computer. Possibility to choose a topic for seminar work that can replace test theory. Evaluation is formed as a compilation based on theories of theory and computer exercises

19. Assessment methods:

- Designing and defending the seminar/ graphic works - student defends his / her work in front of the professor / assistant - answers questions asked
- Written exam (from the theoretical part) - student solves questions / tasks in a given time period related to the subject of study

- Report on laboratory exercises - submission of reports on the activities related to the realization of certain laboratory exercises, answering questions asked by the assistant
- Final exam - oral answer to the questions asked by professors
- Correctional exam (written) - Solving questions / tasks over a period of time related to the subject of the study
- Correctional exam (oral) - Oral answering questions

20. Assessment components:

- Tests with questions from theory (eg 2 tests x 20 points = 40 points)
- Independent tasks (eg 1 seminar work x 40 points = 40 points)
- Final exam 20 points

40+ (40) + (20) = 100 points

21. Required reading list:

1. R. Jain, R. Kasturi, B. Schunck: Machine vision, McGraw-Hill, 2005.
2. C. Demant, B. Streicher, A. P. Waszkewitz, M. Strick, G. Schmidt: Industrial Image Processing: Visual Quality Control in Manufacturing, 2005.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015