| Study program: Electrical and Computer Enginering – Module: Remote Control |
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| Type and level of studies: Master studies (second level of studies) |
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**Course unit: Simulation and Process Modeling**

**Teacher in charge: Urosevic Vlade**

Language of instruction: English

ECTS: **6**

Prerequisites: -

Semester: Winter

**Course unit objective**
- understanding human-engine interaction and basic principles of creating user interface and virtual reality
- skills in implementation 3D computer graphics in real time

**Learning outcomes of Course unit**

After completing this course the students are able to develop theoretical and experimental knowledge of virtual reality in the simulations, experiments, education and games. They understand the human-engine interaction and basic principles of creating user interface and virtual reality. They are familiar with tools and services for implementation 3D computer graphics in real time. Also they know how to create user interface and a virtual reality scene.

**Course unit contents**

*Theoretical classes*

The students are introduced to the basics of the modeling, simulation and animation, as well as on how to plan, analyze and do experiments. They are also introduced to software tools and services for monitoring and measurements in physical and technical experiments.
The primary focus of this course is to develop theoretical and experimental knowledge of virtual reality in the simulations, experiments, education and games. Students will be introduced to the following topics:
Human-engine interaction; The principles of creating user interface; Historical overview of virtual reality; Factors of humans' perceptions and technology; Input and output devices; 3D computer graphics in real time; Creation scene of virtual reality, simulation, tools and services for implementation.

*Practical classes*

Laboratory and computer sessions, web discussions via forum and e-mail, case study

**Literature**

1. Seila, A. F., V. Ceric, and P. Tadikamalla. 2003. Applied simulation modeling. Belmont, California: Brooks-Cole. Winston, W. L. 1996
2. Laplante, P.A., Real-Time Systems Design and Analysis, 2nd edition, IEEE Computer Society, 1997. ISBN 0-7803-3400-0

**Number of active teaching hours**

| Lectures: 2 | *Practice:2* | *Other forms of classes:* Mentoring system | *Independent work:* Case study | **Other classes** |
|---|---|---|---|---|

**Teaching methods:** consultations, independent individual work

| Examination methods ( maximum 100 points) | | | |
|---|---|---|---|
| **Exam prerequisites** | **No. of points:** | **Final exam** | **No. of points:** |
| Student's activity during lectures | | oral examination | **50** |
| Practical classes | | written examination | |
| Seminars/homework | **50** | .......... | |
| Project | | | |

| Grading system | | |
|---|---|---|
| **Grade** | **No. of points** | **Description** |
| **10** | **91-100** | Excellent |
| **9** | **81-90** | Exceptionally good |
| **8** | **71-80** | Very good |
| **7** | **61-70** | Good |
| **6** | **51-60** | Passing |
| **5** | **less than 50** | Failing |