Course title: Computer simulation and animation	

Teacher(s): Vlade D. Urošević

Course status: elective

Number: 10

Condition: None

Course objectives
Introduction to the process and advanced techniques of modeling and simulation. Training for independent modeling and simulation of processes or functions in continuity with previous knowledge in the teaching of computer science.

Learning outcomes
The student should develop theoretical and practical knowledge on how to model, analyze and simulate a problem from a real environment or some of the problems within computer science. Students also need to gain knowledge on how to create a user interface and a virtual reality scene.

Contents
Theoretical lectures
Introduction and historical overview of the development of simulation problems from the real environment. Computer simulation. Types of simulations: Simulation of continuous and discrete systems. Simulation of deterministic, stochastic and mixed systems. Principles of creating a user interface; historical overview of virtual reality; virtual environments - paradigms; applications; input and output devices; Real-time 3D computer graphics. Augmented reality.

Practical lectures
Simulation software. Applications of virtual reality in simulation, experiment. Creating virtual reality scenes, simulations, implementation tools (Virtual reality).

Recommended literature

[1] Laplante, P.A. *Real-time Systems Designs and Analysis,* 2nd editions, IEEE Compute Society, 1997. [2] R Sherman, A Craig, *Understanding Virtual Reality Interface, Aplication, and Design*, The Morgan Kaufmann Series, 2002.
[3] B.P. Zeigler, T. G.Kim, H. Praehofer, *Theory of Modeling and Simulation*, Academic Press, A Harcourt Science and Technology Company, San Diego, 2000
[4] T. Boardman, *3ds max 6 kroz primere*, Микро књига, 2004.
[5] G. Lewis, J. Lammers, *Maya 5 kroz primere*, Микро књига, 2004.
[6] G Burdea, P Coiffet, *Virtual Realty technology,* 2nd.ed. Wiley, New York, 2003.

Number of active classes 10	Theoretical classes: 5	Practical classes: 5

Teaching methods
Mentoring, project assignment development; study research work, seminar paper, individual work.

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Evaluation (maximum number of points 100)

Homework - 15

Seminar paper - 35

Oral part of the exam - 50

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