Studying course: ***Forestry and Natural Resources Management***

Subject: Digital modeling and visualization

Professor/professors: Dr. Biljana Jović, assistant professor

Status of the subject: elective

ECTS number: 5

Condition: -

Goal of the subject:
Developing a higher level of ability for computer visualization and optimal graphic expression, identification and interpretation of various 3D geometric forms and their relations. Introduction to the principles of photorealistic representation of 3D objects in characteristic projections and defining their geometric properties.

Result of the subject:
The student is able to use different techniques for displaying 3D model objects for the purpose of final presentation, in order to get their real-life appearance in different scenes. Techniques of this display are used as a substitute for currently inaccessible technologies that make prototype 3D model objects.

Content of the subject
Theoretical part:
Perspective and restitution of perspective picture. Photography and fitting 2D images. 3D model and set design. Types and methods of digital visualization of 3D models.
Lighting and shade: parallel and central lighting. Sources of light.
Augmented Reality (AR). Virtual reality - Virtual reality (VR).
Practical part:
Materializing 3D models, textures, mapping and rendering models.
Visualization of 3D space: Generated image - rendering (photorealistic image).
Processing and preparing print images (digital printing). Computer animation of 3D models.
Preparation of 3D models for 3D printing.

References:
Чучаковић, А., Теофиловић, Н., Јовић, Б., *Геометријска едукација применом принципа и алата 3Д анимације*, мултимедијални *DVD*, Архитектонски факултет Универзитета у Београду, Београд, 2013.
Baker, R. *Designing the Future – The Computer Transformation of Reality*, Thames and Hudson, Hong Kong, 1993.
George Omura, Brian C. Benton: Mastering AutoCAD 2013 and AutoCAD LT 2013, AutoDesk, Official Training Guide, Indianapolis, Canada, 2012.

Number of active teaching lessons: 90	**Theoretical part of teaching: 2**	**Practical part of teaching: 3**

Methods of giving lectures:
Teaching is carried out through lectures and classes that involve students' individual work in a computer lab in the preparation of seminar work.

Knowledge evaluation (max 100 points)

Before exam obligations:	points	**Final exam:**	points
activity during lectures	**10**	**written exam**	*30*
practical teaching	**30**	**oral exam**	
colloquium(s)		.....	
seminar(s)	**30**		