**Computer animation (ECTS credits: 6)**

Language: the course is offered in Serbian and Hungarian.

Contact person: Dr. Lívia Szedmina (slivia@vts.su.ac.rs)

**Course description:**

The course covers introduction to the basics of computer graphics, with the history and theory of classical and computer animation. The course emphasis is on mastering the complete process of making computer animation.

This course covers the following theoretical topics:

1. History of classical and computer animation
2. Human vision, inertia of sight
3. Color theory, spaces and color coding
4. Calculation in color representation spaces
5. Computer aided and generated animation
6. Elements of animation. Animation and time, movie time.
7. Graphic system architecture. The structure of classical and computer animation.
8. The process of making computer animation
9. Production and post-production
10. Modeling space in vector graphics. 2D and 3D vector primitives
11. Coordinate systems. Conversion between coordinate systems
12. Transformations: translating, rotating and scaling.
13. Matrix calculus transformation.

Course covers the following exercises:

1. Blender: graphical application environment, setting animation parameters
2. Navigation in 3D model space, orthogonal and perspective view
3. Basic transformations (translation, rotation and scaling) of 3D objects
4. Animating the change in the location of 3D object primitives
5. "Graph editor": animate the speed and acceleration of a change in property
6. Camera. Tracking one or more objects. Using one or more cameras.
7. Binding motion to path, animating path. "Gimbal lock".
8. Modeling: editing - vertex, edge and surface.
9. Modeling: selection, transformation, extrusion, addition of elements.
10. Blender render materials: material properties.
11. UV textures: import, assignment, connection with the material of the object
12. Cycles render materials: material properties, procedurally generated materials
13. Types of light sources, backgrounds and stage lighting.
14. Animation rendering and post-production.

**Aims:**

Students will gain knowledge of methods and technologies of the entire process in computer animation. After the course the student is competent to independently create a short 3D animation.