| Faculty of Electrical Engineering          |  |  |                   |                   |               |          |   |                        |               |  |  |  |
|--|--|--|-------------------|-------------------|---------------|----------|---|------------------------|---------------|--|--|--|
| Field of study                             | Electrical and Electronics Engineering   |  |                   |                   |               |          | Degree level<br>and programme<br>type                           | bachelor's degree      |               |  |  |  |
| Specialization/<br>diploma path            | - Study profile  |  |                   |                   |               |          |   |                        |               |  |  |  |
| Course name                                | 3D – Modelling and Computer Animation  |  |                   |                   |               |          |   | Course code            | IS-FEE-10068S |  |  |  |
|  |  |  |                   |                   |               |          |   | Course type            | elective      |  |  |  |
| Forms and<br>number of hours<br>of tuition | L  | С  | LC                | Ρ                 | SW            | FW       | S   | Semester               | summer        |  |  |  |
|  |  |  |                   | 30                |               |          |   | No. of ECTS<br>credits | 3             |  |  |  |
| Entry<br>requirements                      | Introduction to Information Technology   |  |                   |                   |               |          |   |                        |               |  |  |  |
| Course<br>objectives                       | To provide the students with knowledge of 3D modelling and computer animation (CGI - Computer Graphics Imaging). The student will learn how to use Anim8or program to create 3D animations. The practical skills will allow for self-realization of computer animation for didactic and technical purposes.                                      |  |                   |                   |               |          |   |                        |               |  |  |  |
| Course content                             | Principles of computer animation. Modelling objects and elements of a scene using curves, surfaces and solid elements. Sequence of motion. The relationship between bones and skeleton. Generation of the trajectory of an animated object. Scene settings (lights, cameras, shadows, materials). Morfing, warping, particle systems. Rendering. |  |                   |                   |               |          |   |                        |               |  |  |  |
| Teaching<br>methods                        | Project: work in groups, homework assignments Self-study under supervision: tutorial sessions with worked examples   |  |                   |                   |               |          |   |                        |               |  |  |  |
| Assessment<br>method                       | Elabo  | oration  | of pro            | ject +            | observ        | vation o | of worl   | during classes         | ng classes    |  |  |  |
| Symbol of<br>learning<br>outcome           | Reference to the         Learning outcomes       learning outcomes for         the field of study  |  |                   |                   |               |          | Reference to the<br>learning outcomes for<br>the field of study |                        |               |  |  |  |
| L01  | Student: is able to classify and characterize basic of computer animation  |  |                   |                   |               |          |   |                        |               |  |  |  |
| L02  | desc   | ribes f  | undam             | ental p           | orincip       | les of o | compu   | ter animation          |               |  |  |  |
| LO3  | is abl<br>Anim   | le to ci<br>8or pr   | reate a<br>ogram  | 3D mo             | del an        | d sequ   | ience o   | of motion in           |               |  |  |  |
| LO4  | is abl<br>lights   | is able to modeling a 3D animated object with materials,<br>lights, shadows, cameras |                   |                   |               |          |   |                        |               |  |  |  |
| LO5  | is abl<br>warpi  | le to m<br>ing an  | odelin<br>d parti | g a 3D<br>cle sys | anima<br>tems | ted ob   | ject wi   | th morfing,            |               |  |  |  |
| LO6  |  |  |                   |                   |               |          |   |                        |               |  |  |  |

## **COURSE DESCRIPTION CARD – SPECIMEN**

| Symbol of  | Symbol of   |  |                      |  |  |  |  |
|--|---|--|----------------------|--|--|--|--|
| learning   | Methods of assessing the learning outcomes  | which the outcome is                         |                      |  |  |  |  |
| outcome  |   | assessed                                     |                      |  |  |  |  |
| L01  | Elaboration of project + observation of work during classes   | Р  |                      |  |  |  |  |
| LO2  | Elaboration of project + observation of work during classes   | Р  |                      |  |  |  |  |
| LO3  | Elaboration of project + observation of work during classes   | Р  |                      |  |  |  |  |
| LO4  | Elaboration of project + observation of work during classes   | Р  |                      |  |  |  |  |
| LO5  | Elaboration of project + observation of work during classes P   |  |                      |  |  |  |  |
| LO6  |   |  |                      |  |  |  |  |
|  | No. of hours  |  |                      |  |  |  |  |
|  | participation in project  | 30   |                      |  |  |  |  |
| Calculation  | preparation for projects  | 25   |                      |  |  |  |  |
|  | working on individual project task  | 20   |                      |  |  |  |  |
|  | participation in student-teacher sessions related to project  | 2  |                      |  |  |  |  |
|  |   |  |                      |  |  |  |  |
|  |   |  |                      |  |  |  |  |
|  | TOTAL:  | 77   |                      |  |  |  |  |
|  | HOURS   | No. of<br>ECTS<br>credits                    |                      |  |  |  |  |
| Student workload – activities that require direct teacher participation         30 |   |  |                      |  |  |  |  |
| Student workload   | 77  | 3  |                      |  |  |  |  |
| Basic references   | <ol> <li>Blundel B.G. (2008), An Introduction to Computer Graphics a<br/>Environments, SPRINGER</li> <li>Kipphan H. (2001), Handbook of Print Media, SPRINGER</li> <li>Byrne M.T. (1999) Animation. The art of Layout and Storyboa<br/>Kildare, Ireland</li> <li>Parent R. (2012) Computer Animation: Algorithms and Techn</li> </ol> | nd Creative<br>rding, Leixli<br>iiques, Newr | 3-D<br>p, Co.<br>nes |  |  |  |  |
| Supplementary<br>references  | <ol> <li>Kiciak P. (2000) Basis of modeling curves and planes, using in computer graphics,<br/>WNT, Warsaw (in Polish)</li> <li>Thomas F., Johnson O. (1981) Disney animation - the illusion of life, Walt Disney<br/>Production</li> <li>Internet, http://wikipedia.org</li> </ol>   |  |                      |  |  |  |  |
| Organisational<br>unit conducting<br>the course                                    | Department of Automatic Control and Robotics  | Date of issuing the programme                |                      |  |  |  |  |
| Author of the programme  | Ph.D., Eng. Roman Trochimczuk   | g. Roman Trochimczuk 18-02-2020              |                      |  |  |  |  |

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

S – seminar