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| **Course unit title** | **COMPUTER GRAPHICS** |
| **Course unit code** | InfT6008 |
| **Type of course unit** | B part – Restricted option |
| **Level of course unit** | 2nd cycle (Master) |
| **Year of study** | - |
| **Semester** | II |
| **Number of ECTS credits** | 3 |
| **Name of lecturer(s)** | Janeks Kreitāls, Mg.sc.comp. |
| **Learning outcomes of the course unit** | **Aims of the course**  To develop geometrical idea's description and skills of testing and abilities with help of analytical methods  **Objectives of the course**  1. To acquaint with Basic ideas of projective geometry.  2. To acquaint with differential geometry basic facts and methods  **Results of the course (competences to be developed)**  Projective geometry on straight line, projective plane, basic ideas of transformations. Differential geometry affection and surface |
| **Mode of delivery** | Face-to-face |
| **Prerequisites and co-requisites** |  |
| **Recommended optional programme components** | - |
| **Course contents** | Projective straight line and plane, their features. Projective transformations.  Scalar argument vector function. Frene formulas. Flections natural tried its curvature and its spin. Determination of surface, its I and II quadratic form. Surface curvature. Plane, sphere and pseudo sphere. Plane inner geometry. |
| **Course plan** | |  |  | | --- | --- | | **Theme** | **Sub-theme** | | 1. Projective straight line | Notion of projective straight line Co-ordinates system on basic ideas of straight lines. Four points double sequence and harmonium. | | | 1. Projective plane | Notion of projective plane. Projective frame of reference, its connection with homogeneous affine fix. Dualities principle. Dezarga theorem. Full four apexes, its harmonious features. | | | 1. Projective straight lines and Basic ideas of plane's transformation | Projective straight lines and Basic ideas of plane's transformation, its connection with prospect. Pascal and Brianchon theorems, their usage in geometric constructions. Group approach to geometry. | | | 1. Basic principles of graphic picture's making on computer | Graphic primitive in programming languages: point, straight line, curve, ellipse, bow. Loga notion. Colour palette. | | | 1. Practical training for work with graphical editor. | Practical training for work with editor Adobe Illustrator CS3 | | 1. Rastra algorithms | Brezenheim algorithms straight lines for mapping of line segment. Sazerlenda-Kohena algorithm for prosing fragment of the picture. | | | 1. Hiding of invisible lines | Robert algorithms.  Apela algorithms. | | | 1. Plane's scanning algorithms | Painting out of figure. Guro method. Fonga method. Determination of total figure's external margin. Modelling of texture | | |
| **Recommended or required reading** | Laszlo, M.J. Computational Geometry and Computer Graphics in C++, Prentice Hall, 1997.  Parent, R. Computer Animation. Algorithms and Techniques, Academic Press, 2002. |
| **Planned learning activities and teaching methods** | Lectures, practical works, seminars, student's individual work |
| **Assessment methods and criteria** | **Test**  During semester 8 individual home tasks have to be fulfilled and 2 tests |
| **Language of instruction** | English |
| **Work placement(s)** | N/a |