#### card of course

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| Subject name | **Introduction to Computer Graphics** |

**1. The placement of the subject in the study system**

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| 1.1. Field of study | **Computer science** |
| 1.2. Form and path of study | **Full-time/Part-time** |
| 1.3. Level of education | **First-cycle studies** |
| 1.4. Study profile | **Practical** |

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| 1.5. Specialty | **-** |
| 1.6. Subject Coordinator | **Mgr inż. Michał Brogowski** |

**2. General characteristics of the subject**

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| 2.1. Belonging to a subject group | **Directional/Practical** |
| 2.2. Number of ECTS | **2** |
| 2.3. Language of lectures | **English** |
| 2.4. Semesters in which the subject is taught | **III** |
| 2.5.Criteria for selecting course participants | **-** |

1. **Learning outcomes and course delivery**
   1. **Subject Objectives**

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| **No.** | **Subject Objectives** |
|
| C1 | Familiarizing students with the field of computer graphics |
| C2 | Acquiring practical skills in designing and creating 2D and 3D graphics using modern tools |
| C3 | Preparation for the use of computer graphics in various fields, such as visualizations, animation or advertising. |

* 1. **Subject-specific learning outcomes, divided into knowledge , skills and competences , with reference to the directional learning outcomes**

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| **No.** | **Description of subject  learning outcomes** | **Reference to  directional effects**  **learning (symbols)** | **Method of implementation (mark "X")** | | | |
| **ST** | | **NST** | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| After passing the course, the student knows and understands **the knowledge** | | | | | | |
| W1 | Knows the basic concepts of computer graphics such as pixel, vector, raster, modeling and rendering . | INF\_W09 |  | X |  | X |
| W2 | Understands the differences between 2D and 3D graphics and their applications in practice. |  | X |  | X |
| W3 | Has knowledge of the operation of popular graphics programs such as Adobe Photoshop, Adobe Illustrator, Blender and Figma . |  | X |  | X |
| After passing the course, the student is **able** to: | | | | | | |
| U1 | Can create simple raster and vector graphics using selected graphics software. | INF\_U12  INF\_U21 | X |  | X |  |
| U2 | Can perform basic graphic processing, including color correction and photo retouching. | X |  | X |  |
| U3 | Can model simple 3D objects and render them using available tools. | X |  | X |  |
| U4 | Is able to apply basic principles of lighting, shading and colour in graphic design. | X |  | X |  |
| U5 | Can export and prepare graphic files in appropriate formats for various applications. | X |  | X |  |
| After completing the course, the student is ready to take part in **social competences.** | | | | | | |
| K1 | Carrying out tasks in the field of computer graphics in a creative and clear manner for the recipient | INF\_K03 | X |  | X |  |

**3.3. Forms of teaching and their number of hours - Full-time studies (ST), Part-time studies (NST)**

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| **Path** | **Lecture** | **Exercises** | **Design** | **Workshop** | **Laboratory** | **Seminar** | **Lecturer** | **Classes conducted using distance learning methods and techniques in the form of** | **Other** | **ECTS points** |
| **ST** |  |  |  | 30 |  |  |  |  |  | 2 |
| **NST** |  |  |  | 15 |  |  |  |  |  | 2 |

**3.4. Content of education** (separately for each form of classes: (W, ĆW, PROJ, WAR, LAB, LEK, OTHER). It should be marked (X) how the given content will be implemented (classes at the university or classes on the e-learning platform conducted using distance learning methods and techniques)

**TYPE OF CLASS: LABORATORY**

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| --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Content of the course** | **Reference to subject-specific learning outcomes** | **Method of implementation (mark "X")** | | | |
| **ST** | | **NST** | |
| **Classes at the University** | **Activities on  the platform** | **Classes at the University** | **Activities on  the platform** |
| **1.** | Introductory exercises for working with Adobe programs (Photoshop, Illustrator ) | W1, W2 | **X** |  | **X** |  |
| **2.** | Creating raster graphics in Photoshop, basic image processing, working with layers, color correction. | U1, U2, K1, K2 | **X** |  | **X** |  |
| **3.** | Creating vector graphics in Illustrator , Designing simple shapes and icons, using Bézier curve tools. | W1, U1, U5, K2 | **X** |  | **X** |  |
| **4.** | 3D modeling in Blender - basics,  creating simple objects, navigating the interface, introduction to rendering . | W2, W4, U3, K2 | **X** |  | **X** |  |
| **5.** | Principles of lighting and color in computer graphics, practical use of light and shadow in projects. | W3, U4, K2 | **X** |  | **X** |  |
| **6.** | Exporting and preparing files for various applications, graphic formats, file optimization, preparing graphics for printing and the Internet. | U5, K1, K2 | **X** |  | **X** |  |
| **7.** | Summary of classes and evaluation of final projects. | K1, K2 | **X** |  | **X** |  |

**3.5. Methods of verifying learning outcomes** (indication and description of methods of conducting classes and verification of achievement of learning outcomes and method of documentation)

Students in the lab will be tasked with getting to know the basic techniques and tools of computer graphics. During the lab, you will have to create a graphic design that will include elements of vector graphics (logo and simple visual identification), raster (photos and graphics with effects) and transfer the designs to various 3D solids in order to create a visualization. The result of the student's work in the lab will be a series of renders and graphics showing the entire process of designing and combining different types of graphics (vector, raster and 3D).

The works will be collected on the PUW platform.

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| **Subject Effects** | **Teaching methods** | **Methods of verifying learning outcomes** | **Documentation methods** |
| **KNOWLEDGE** | | | |
| **W1-W3** | Knowledge gained during laboratories while working on projects | The knowledge will be tested during the development of an independent project and its defense during the last class (described above) | Project submitted to PUW platform |
| **SKILLS** | | | |
| **U1-U5** | Working on your own project, practical assignments | Your skills will be tested during the development of your own project and its defense during the last class (described above) | Works posted on the platform |
| **SOCIAL COMPETENCES** | | | |
| **K1** | Working on your own project, practical assignments, group work | Competencies will be tested during the development of an independent project and its defense during the last classes (described above) | Works posted on the platform |

**3.6. Assessment criteria for the achieved learning outcomes**

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| --- | --- | --- | --- | --- | --- |
| Learning effect | For a grade of 3 or " zal ."  the student knows and understands/is able to/is ready to | For a grade of 3.5, the student knows and understands/is able to/is ready to | For a grade of 4, the student knows and understands/is able to/is ready to | For a grade of 4.5, the student knows and understands/is able to/is ready to | For a grade of 5, the student knows and understands/is able to/is ready to |
| W | 51-60% of knowledge indicated in learning outcomes | 61-70% of knowledge indicated in learning outcomes | 71-80% of knowledge indicated in learning outcomes | 81-90% of knowledge indicated in learning outcomes | 91-100% of knowledge indicated in learning outcomes |
| U | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |
| K | 51-60% of skills indicated in learning outcomes | 61-70% of skills indicated in learning outcomes | 71-80% of skills indicated in learning outcomes | 81-90% of skills indicated in learning outcomes | 91-100% of skills indicated in learning outcomes |

**3.7. Literature**

**Basic**

Handbook of Photoshop: [**https://helpx.adobe.com/pl/photoshop/user-guide.html**](https://helpx.adobe.com/pl/photoshop/user-guide.html)

Handbook of Illustrator: [**https://helpx.adobe.com/pl/illustrator/user-guide.html**](https://helpx.adobe.com/pl/illustrator/user-guide.html)

Documentation of Blender: [**https://docs.blender.org**](https://docs.blender.org)

**4. Student workload - ECTS points balance**

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| --- | --- | --- |
| **Types of student activity** | **Student Load** | |
| **ST** | **NST** |
| **Classes requiring direct contact between the student and the academic teacher at the university premises** | **50** | **25** |
| Classes included in the study plan | 50 | 25 |
| **Student's own work** | **75** | **100** |
| Ongoing preparation for classes, preparation of project work/presentations/etc. | 40 | 50 |
| Preparation for passing classes | 35 | 50 |
| **TOTAL STUDENT HOURLY LOAD** | **125** | **125** |
| **Number of ECTS points** | **5** | **5** |

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| Last change date | 30/09/2024 |
| The changes were introduced | INF Education Quality Team |
| The changes were approved | Arkadiusz Gwarda, M.A. |