University of Silesia in Katowice

1.	Field of study	**Biomedical Engineering**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2023/2024 (winter term)
4.	Level of qualifications/degree	first-cycle studies (in engineering)
5.	Degree profile	general academic
6.	Mode of study	full-time

7.	**General information about the module**

Module name	**Basics of image analysis**
Module code	08-IBPR-S1-20-6-PAO
Number of the ECTS credits	4
Language of instruction	Polish
Purpose and description of the content of education	Celem zajęć jest zapoznanie studentów z metodami analizy obrazów pozwalającymi na rozpoznawanie i klasyfikację obrazów oraz uzyskiwanie informacji ilościowej lub jakościowej zawartej w obrazach. Studenci poznają wybrane metody i algorytmy pozwalające na wyodrębnianie cech obrazów, ich dobór oraz wykorzystanie w budowanych modelach i klasyfikatorach. Studenci będą umieli zastosować wybrane pakiety programistyczne, narzędzia, biblioteki w implementacji typowych funkcjonalności stosowanych do analizy obrazów. W ramach zajęć studenci będą rozwiązywali zadania wskazane przez prowadzącego.
List of modules that must be completed before starting this module (if necessary)	not applicable

8.	**Learning outcomes of the module**

Code	Description	Learning outcomes of the programme	Level of competenc (scale 1-5)
K_1	Dysponuje wiedzą z matematyki i statystyki pozwalającą na opis danych, obrazów lub modeli wykorzystywanych w klasyfikacji lub analizie danych.	W01	3
K_2	Dysponuje wiedzą związaną z metodami przetwarzania obrazów pozwalającą na wykorzystanie ich do segmentacji i wydobywania informacji z obrazów.	W10	4
K_3	Dysponuje wiedzą związaną z wydobywaniem i doborem cech morfometrycznych dla obiektów występujących w obrazach medycznych.	W11	4
K_4	Potrafi samodzielnie pozyskiwać informacje z literatury i innych źródeł oraz samodzielnie je interpretować i wyciągać wnioski.	U01	4
K_5	Potrafi obsługiwać komputer, instalować wymagane aplikacje oraz wykorzystywać popularne oprogramowanie użytkowe.	U07	4
K_6	Potrafi korzystać z popularnych aplikacji do analizy obrazów oraz wydobywać z nich określone dane, które mogą być wykorzystane w praktyce.	U11 U24	3 3
K_7	Rozwija umiejętności wyszukiwania nowych technologii oraz potrzebę dokształcania i rozwoju.	K01	2

9. Methods of conducting classes

Code	Category	Name (description)
a01	Lecture methods / expository methods	**Formal lecture/ course-related lecture** *a systematic course of study involving a synthetic presentation of an academic discipline; its implementation assumes a passive reception of the information provided*
a05	Lecture methods / expository methods	**Explanation/clarification** *explication involving the derivation of a predetermined theorem from other, already known ones, in the number of steps specified by the person teaching the course*
c06	Demonstration methods	**Demonstration-imitation** *a presentation of a model way of performing specific activities accompanied by a commentary; it aims at triggering imitation activities in an individual or in a group of participants observing the activities of the person teaching the course until the right habit is formed through regular exercise; the demonstration-imitation method is combined with a physical practice of activities/behaviours*
d01	Programmed learning methods	**Working with a computer** *e.g., Webquest; implementation of educational tasks using electronic and digital devices, computer programs and Internet applications; the academic teacher acts as a consultant; students' work is carried out step by step according to the plan laid own by the person teaching the course and following his instructions, and proceeds towards producing the indicated results within the set deadline*

10. Forms of teaching

Code	Name	Number of hours	Assessment of the learning outcomes of the module	Learning outcomes of the module	Methods of conducting classes
k_fs_1	lecture	15	course work	K_1, K_2, K_3, K_4, K_5, K_6, K_7	a01
k_fs_2	laboratory classes	30	course work	K_1, K_2, K_3, K_4, K_5, K_6, K_7	a05, c06, d01

11. The student's work, apart from participation in classes, includes in particular:

Code	Category	Name (description)	Is it part of the BUNA?
a01	Preparation for classes	**Search for materials and review activities necessary for class participation** *reviewing literature, documentation, tools and materials as well as the specifics of the syllabus and the range of activities indicated in it as required for full participation in classes*	No
a02	Preparation for classes	**Literature reading / analysis of source materials** *reading the literature indicated in the syllabus; reviewing, organizing, analyzing and selecting source materials to be used in class*	No
a03	Preparation for classes	**Developing practical skills** *activities involving the repetition, refinement and consolidation of practical skills, including those developed during previous classes or new skills necessary for the implementation of subsequent elements of the curriculum (as preparation for class participation)*	No
a05	Preparation for classes	**Production/preparation of tools, materials or documentation necessary for class participation** *developing, preparing and assessing the usefulness of tools and materials (e.g. aids, scenarios, research tools, equipment, etc.) to be employed in class or as an aid when preparing for classes*	No
b01	Consulting the curriculum and the organization	Getting acquainted with the syllabus content	Yes

		of classes	reading through the syllabus and getting acquainted with its content	
c02		Preparation for verification of learning outcomes	Studying the literature used in and the materials produced in class *exploring the studied content, inquiring, considering, assimilating, interpreting it, or organizing knowledge obtained from the literature, documentation, instructions, scenarios, etc., used in class as well as from the notes or other materials/artifacts made in class*	No
d01		Consulting the results of the verification of learning outcomes	Analysis of the corrective feedback provided by the academic teacher on the results of the verification of learning outcomes *reading through the academic teacher's comments, assessments and opinions on the implementation of the task aimed at checking the level of the achieved learning outcomes*	Yes
d02		Consulting the results of the verification of learning outcomes	Development of a corrective action plan as well as supplementary/corrective tasks *reviewing and selecting tasks and activities enabling the elimination of errors indicated by the academic teacher, their verification or correction resulting in completing the task with at least the minimum passing grade*	Yes

Information on the details of the module implementation in a given academic year can be found in the syllabus available in the USOS system: https://usosweb.us.edu.pl.