

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR: 2022-2023 ... FIRST SEMESTER ...

Course title	Computer Vision Systems
Course Code	IVM203AN
Hours/Week: le/pr/lab	2/2/0
Credits	4
Degree Programme	IT Engineering MSc
Study Mode	
Requirements	exam
Teaching Period	Sep. 6 th - May. 16 th
Prerequisites	
Department(s)	System and Software technologies
Course Director	
Teaching Staff	Dr. Géza Várady

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: [Instruction/Subjects/Subject Details/Basic data/Subject description](#)

The subject explores human- and computer vision methods, their similar solutions and related applications. Students will learn about the basics of vision, colour vision, spatial vision, measurement, communication, digital replication of biological methods, discrepancies, hardware and software solutions and methods for perception and vision.

SYLLABUS

Neptun: [Instruction/Subjects/Subject Details/Syllabus](#)

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: [Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction](#)

The aim of the course is to learn about the basics of vision systems, sensors, procedures and about human vision. Partly because some elements of machine vision mimic real vision, and partly because some systems need to support human vision.

2. COURSE CONTENT

Neptun: [Instruction/Subjects/Subject Details/Syllabus/Subject content](#)

TOPICS

LECTURE

1. Radiometry, physical quantities
 2. Photometry, human vision
 3. Colour perception, visual defects and their correction
 4. Communication of colour and other colour parameters, colour systems
 5. Spatial perception
 6. machine perception of space, colour perception
 7. Types of machine perception, devices
- +
- Carrying out project work in an assigned or chosen subject area.

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completion date, due date
1.				
2.	Radiometric basics	lecture slides		
3.				
4.	Photometry	lecture slides		
5.				
6.	Vision basics	1-11; 65-84; 98		
7.				
8.	Colour vision, visual aberrations, correction	209-247; 275-279		
9.				
10.	Colour communication, colour systems, digital representation	lecture slides		
11.				
12.	Detectors, instruments	lecture slides		
13.				
14.	Project presentation, pre-exam			
15.				

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attending is not required but is strongly recommended. Preparation for the exams can be done according to the handout slides and the reference materials. The course is part of the state exam for students.

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course resulting in mid-term grade (PTE TVSz 40§(3))

Mid-term assessments, performance evaluation and their ratio in the final grade (The samples in the table to be deleted.)

Type	Assessment	Ratio in the final grade
Pre-Exam - 2022. dec. 9.	percentage	100%
Test results can give a proposed note (3+). Normal exams are running during the exam period.		

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Without a proposed note, one has to make a normal exam during the exam period.

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %

satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

Course-unit with final examination

Requirements for the end-of-semester signature

(Eg.: mid-term assessment of 40%)

Attendance at classes.

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Type of examination (written, oral): written

The exam is successful if the result is minimum 40 %. (The minimum cannot exceed 40%.)

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for a possible proposed mark. The performance at the final exam accounts for the final grade.

Calculation of the final grade based on aggregate performance in percentage.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

[1.] Light, Vision, Color – Arne Valberg, John Wiley and Sons, 2005 (can be borrowed or downloaded)

[2.] Műszaki Optika (Technical Optics), Dr. Ábrahám, György, Dr. Wenzelné Gerőfy, Klára, Dr. Antal, Ákos, Dr. Kovács, Gábor

https://mogi.bme.hu/TAMOP/muszaki_optika/index.html

[3.] Lecture slides and notes