COURSE DESCRIPTION CARD - SYLLABUS

Course name
Augmented and Virtual Reality [S2Teleinf2-STRC>WR]

Course

Field of study
Teleinformatics

Year/Semester
2/3

Area of study (specialization)
ICT networks and cloud solutions

Profile of study
general academic

Level of study
second-cycle

Course offered in
Polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
14

Laboratory classes
24

Other (e.g. online)
0

Tutorials
0

Projects/seminars
0

Number of credit points

4,00

Coordinators

prof. dr hab. inż. Marek Domański
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Lecturers

Prerequisites

Has a good knowledge of issues of representation, transmission and compression of vision and sound. Is familiar with issues of human perception of vision and sound. Is aware of the necessity of a professional approach to solving technical problems and taking responsibility for his/her proposed technical solutions. Understands the rapid development of technical sciences and limitations of his/her own knowledge and skills, understands the necessity of further education.

Course objective

The aim of the course is to acquire knowledge and skills in the functions, architecture and relevant solutions for augmented (enhanced) reality, especially from the point of view of content creation, processing and presentation.

Course-related learning outcomes

Knowledge:
Functions, architectures and appropriate solutions for augmented (enhanced) reality, especially from the point of view of content creation, processing and presentation. - K2_W02, K2_W05, K2_W11

Skills:
Ability to correctly select basic methods for selected augmented and virtual reality problems - K2_U01, K2_U09, K2_U10, K2_U13

Social competences:
Knowledge of the impact of virtual reality techniques on human life, also in a social context. - K2_K01

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Credit at the end of the semester will be given for all topics covered in class. Credit is given in written and/or oral form. Credit for laboratory exercises is given on the basis of current results of work during laboratory exercises and current tests assessing the current preparation for laboratory exercises. The threshold for a positive mark is 50% of correct answers out of all the questions and problems asked. This is the threshold for a grade of 3.0. The thresholds for the other grades are evenly distributed between 50% and 100%.ics is provided during the lectures.
Laboratory: reports on laboratory exercises.

Programme content

Immersive visual and auditory experiences.
Augmented (enhanced) reality versus virtual reality.
Acquisition of visual pervasive content. VR and AR displays.
Mathematical foundations of spatial operations for AR/VR technology.
Vision and audio processing for virtual reality systems.
Practical examples of AR and VR system solutions.

Course topics

none

Teaching methods

Lecture supported by presentations. Active work in the laboratory including, in particular, performing experiments and measurements.

Bibliography

Basic:
1. Free VR book: Steven M. LaValle, VIRTUAL REALITY. Available at http://lavalle.pl/vr/. To be published by Cambridge University Press.
2. Lectures of S.M. LaValle available at:
https://www.youtube.com/playlist?list=PLbMVogVj5nJSyt80VRXYC-YrAvQuUb6dh
3. Stanford Univ. Course EE 267: Virtual Reality, Available at:
https://stanford.edu/class/ee267/projects.html

Additional:
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Breakdown of average student's workload

	Hours	ECTS
Total workload	103	4,00
Classes requiring direct contact with the teacher	38	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	65	2,50