

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Biometrics and Video Surveillance		Code 1010802121010842902
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty Information and Communication	Subject offered in: English	Course (compulsory, elective) elective
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 2 Classes: 1 Laboratory: 1 Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 4 100% 4 100%
Responsible for subject / lecturer: dr inż. Sławomir Maćkowiak email: smack@et.put.poznan.pl tel. +48 0616653890 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	K1_W01 K1_W03 K1_W09 K1_W11 K1_W24
2	Skills	K1_U01 K1_U15 K1_U16
3	Social competencies	K1_K01 Capable of self-learning (books, computer programs)He acts actively in class, asks questions, knowingly uses the contact with the teacher (eg consultation).
Assumptions and objectives of the course: Course meets the latest trends in the industrial use of new media technologies in telecommunication systems for the identification of persons or property, access control and surveillance zones and dedicated people. The course covers two very thematically related topics: biometric identification systems and video surveillance of people. Knowledge and understanding of the basic techniques to identify individuals in the practical work under pressure is put on the ability to create algorithms to recognize people. Introduction to the design and modeling of video surveillance systems.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. It has a working knowledge of the systems to ensure the safety of persons and property. - [K2_W01]		
2. It has a practical knowledge of the design principles of CCTV systems using sophisticated dedicated software, equipment, first-class equipment. - [K2_W01]		
3. Familiar with the authentication algorithms based on modern biometric identification systems. - [K2_W01]		
Skills:		
1. Has the ability to build CCTV systems to the core functions. Writing by audio and video materials selected information necessary to maintain the required level of protection areas and sites to be hedged. - [K2_U03]		
2. Has the ability to create recognition algorithms and a personal identification based on physical and behavioral characteristics. These include: fingerprint, face or hand shape, characteristics of the iris, handwriting, and speech, the way you hit the keys, and even a wrist vein. - [K2_U03]		

Social competencies:
1. Is aware of the limitations of his/her current knowledge and skills; is committed to lifelong learning. - [K2_K04]
2. Is aware of the necessity to approach solving technical problems with responsibility and professionalism. - [K2_K05]

Assessment methods of study outcomes
1. A written or oral exams or test questions.
2. Reports from a thematically block of laboratory.
3. Checking preparation for classes and activities in the laboratory.

Course description
lectures: Introduction to biometrics, fingerprint, iris, retina of the eye, the cornea of the eye and blood vessels, detection and face recognition, other biometrics, multibiometria, intelligent video surveillance systems, algorithms, video converters and improve image quality, video surveillance systems - design, motion analysis, thermography in the identification and video surveillance, detection of behavior between individuals, identification - RFID and barcodes Exercises: Bertillion'ego system - statistical analysis of data, identification of persons on the basis of actual fingerprint synthetic fingerprints and their mathematical model, the location of the iris of the eye, the retina of the eye contour line, location of the face, Delaunay triangulation and diagrams Voronoi'a, recognition of handwritten signature, other biometrics - the geometry of the hand and walk, automatic segmentation of video sequences CAD support in the design CCTV, CCTV design for airports, design CCTV system for intelligent building, barcodes

Basic bibliography:
1. Anthony C. Caputo, Digital Video Surveillance and Security, Butterworth-Heinemann; 1 edition (March 15, 2010)
2. Herman Kruegle, CCTV Surveillance, Second Edition: Video Practices and Technology, Butterworth-Heinemann; 2 edition (December 16, 2006)
3. Nillson, Intelligent Network Video: Understanding Modern Video Surveillance Systems, CRC Press; Har/Dvdr edition (September 10, 2008)
4. Domański, Zaawansowane techniki kompresji obrazów i sekwencji wizyjnych, Wydawnictwo Politechniki Poznańskiej, 2000
5. Domański M., Obraz cyfrowy, WKŁ, Warszawa 2010.
6. ITU-R Rec., BT.500-1, Methodology for the subjective assessment of the quality of television pictures, 2002.
7. ITU-T Rec., H.264, Advanced video coding for generic audiovisual service, 2003.
8. ISO/IEC IS 13818 / ITU-T Rec. H.262, Information technology ? Generic coding of moving pictures and associated audio information, 1997
9. Kuczyński K. 2008 ? ?Zastosowanie termowizji w diagnostyce urządzeń elektrycznych? ? Dom Wydawniczy Medium, Elektro.info ? 11/2008
10. Madura H., 2004 ? ?Pomiary termowizyjne w praktyce? ? Agenda Wydawnicza PAK ? Warszawa
11. Minkina W. 2004 ? ?Pomiary termowizyjne ? przyrządy i metody? - Wydawnictwo Politechniki Częstochowskiej
12. Stan Z. Li (Editor), Anil K. Jain (Editor), Handbook of Face Recognition, Springer, 2011
13. Anil K. Jain (Author), Arun A. Ross (Author), Karthik Nandakumar (Author), Introduction to Biometrics, Springer, 2011
14. Davide Maltoni (Author), Dario Maio (Author), Anil K. Jain (Author), Salil Prabhakar (Author), Handbook of Fingerprint Recognition, Springer, 2009
15. Anil K. Jain (Editor), Patrick Flynn (Editor), Arun A. Ross (Editor), Handbook of Biometrics, Springer, 2010

Additional bibliography:
1. Klonecki W.: Statystyka dla inżynierów. Wydawnictwo Naukowe PWN SA, Warszawa, 1999
2. Sobczyk M.: Statystyka. Wydawnictwo Naukowe PWN SA, Warszawa, 2002

Result of average student's workload

Activity	Time (working hours)
1. Lectures and practical classes	60
2. Preparation for the classes and writing a final report	15
3. Literature study	10
4. Preparation for the completion of the course	15
5. consultations with lectures and laboratory project	3
6. participation in the test completing the course	2

Student's workload		
Source of workload	hours	ECTS
Total workload	105	4

Contact hours	65	2
Practical activities	45	2