

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Systems of surveillance and security</b>		Code <b>1010842121010842621</b>
Field of study <b>Electronics and Telecommunications</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>Multimedia and Consumer Electronics</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>elective</b>
Cycle of study: <b>Second-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>2</b> Project/seminars: <b>-</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>from field</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b> <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  dr inż. Sławomir Maćkowiak email: smack@et.put.poznan.pl tel. +48 0616653890 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	He has ordered , mathematical underpinnings knowledge of the acquisition , human perception , quality assessment , processing, digital representation, compression and transmission of video signals , speech and audio for use in multimedia systems It has a basic knowledge of the development trends of the issues related to the processing and image processing
2	<b>Skills</b>	He can freely communicate in English, able to speak in English for professional purposes, can benefit from understanding the literature in English
3	<b>Social competencies</b>	1 He knows the limitations of their knowledge and skills, understands the need for ongoing education. [K1_K01] 2 He can pursue collaborative projects. [K1_K02]
<b>Assumptions and objectives of the course:</b> 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. Knowledge and understanding of the fundamental design video surveillance systems, CCTV systems. The course is presented extended information about the hardware and software for use in surveillance systems and security support.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
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]		
<b>Skills:</b>		
1. Has the ability to build CCTV systems to the core functions are to identify what kinds of events, to identify persons, the identification of persons, identification of vehicles - [K2_U03] 2. Can design intelligent video surveillance system for a public building. - [K2_U03]		
<b>Social competencies:</b>		
1. It is open to the possibility of continuous training and understands the need to improve professional competence. - [K2_K04] 2. He has a sense of responsibility for design electronic systems and telecommunications. - [K2_K05]		

<b>Assessment methods of study outcomes</b>		
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.		
<b>Course description</b>		
Video Converters and improve image quality (noise reduction, restaurant image)Traffic analysis (motion estimation, optical flow method)Automatic segmentation of video sequences (methods of sowing area, segmentation because of the characteristics of objects)Infrared surveillance video (emissivity, thermal image analysis, bolometric arrays, practical performance measurement, thermal equipment)Intelligent video surveillance systems, algorithms (detection of moving objects detection, missing object, object counting, identifying abnormal behavior of objects)Monitoring systems (design, cameras, wired and wireless networks, devices coaxial)Recording and analyzing audio surveillance systems.Support for CAD in designing CCTV (VideoCAD)Design of CCTV systems for public facilities (public places).An introduction to biometric identification (basic biometrics, biometrics fusion).		
<b>Basic bibliography:</b>		
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. Anil K. Jain (Author), Arun A. Ross (Author), Karthik Nandakumar (Author), Introduction to Biometrics, Springer, 2011 13. Anil K. Jain (Editor), Patrick Flynn (Editor), Arun A. Ross (Editor), Handbook of Biometrics, Springer, 2010		
<b>Additional bibliography:</b>		
1. Klonecki W.: Statystyka dla inżynierów. Wydawnictwo Naukowe PWN SA, Warszawa, 1999 2. Sobczyk M.: Statystyka. Wydawnictwo Naukowe PWN SA, Warszawa, 2002		
<b>Result of average student's workload</b>		
Activity	Time (working hours)	
1. Lectures and practical classes	60	
2. Preparation for the classes and writing a final report	15	
3. Literature study	15	
4. Preparation for exam	15	
5. Konsultacje z wykladow i projektu z labotarotrium	15	
<b>Student's workload</b>		
Source of workload	hours	ECTS
Total workload	105	4
Contact hours	65	2
Practical activities	45	2