

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Biometrics</b>		Code <b>1010332531010337272</b>
Field of study <b>Information Engineering</b>	Profile of study (general academic, practical) <b>(brak)</b>	Year /Semester <b>2 / 3</b>
Elective path/specialty <b>Security of Information Technology (IT)</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</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>15</b> Classes: <b>-</b> Laboratory: <b>30</b> Project/seminars: <b>-</b>		No. of credits <b>5</b>
Status of the course in the study program (Basic, major, other) <b>(brak)</b>		(university-wide, from another field) <b>(brak)</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>5 100%</b> <b>5 100%</b>
<b>Responsible for subject / lecturer:</b> dr inż. Tomasz Piaścik email: tomasz.piascik@put.poznan.pl tel. 61 665-28-77 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		<b>Responsible for subject / lecturer:</b> dr inż. Andrzej Florek email: andrzej.florek@put.poznan.pl tel. 61 665-28-77 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Student has a well-grounded knowledge in the area of data security. Student has a well-grounded knowledge in the area of cryptography and preliminary knowledge in the area of cryptoanalysis.
2	<b>Skills</b>	Student can use advanced tools and information technology.
3	<b>Social competencies</b>	Student understands the need to provide information to the public about the achievements of computer science and other aspects of the IT engineer's business; strives to convey the information in a comprehensible manner, presenting various points of view.
<b>Assumptions and objectives of the course:</b> The aim of the course is to familiarize students with selected issues of identification and authentication of persons using biometric features.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. Student has knowledge concerning IT, their applications and related problems. - [K_W06]		
2. Student has knowledge of the trends and the most important new developments in the field of computer science. - [K_W14]		
<b>Skills:</b>		
1. Student can obtain information from literature, databases, and other sources; can integrate the information obtained, their interpretation and critical evaluation, and also draw conclusions and formulate and fully justify the feedback. - [K_U01]		
2. Student is able to propose and justify improvements to existing solutions. - [K_U12]		
<b>Social competencies:</b>		
1. Student is able to think and act in a way that is creative and enterprising. - [K_K01]		
<b>Assessment methods of study outcomes</b>		
The lecture is based on the activity of the students in the classes and discussion of the products of laboratory exercises. Laboratory exercises are based on participation in classes and on the basis of work, which is most often the development of a particular biometrics issue and sample biometric application.		
<b>Course description</b>		

<p>The lectures cover the following issues:                  Authentication and biometrics. Popular biometrics and their detection (recognition of fingerprints, face recognition, speech, eye iris, finger vein, and handwritten sign analysis). Biometric system architecture. The effectiveness of the biometric system (basic system errors, ROC curves, negative authentication).                  eecture based on multimedia presentations with discussion elements.</p> <p>Laboratories cover the following issues: fingerprint recognition, face recognition, iris recognition, speech recognition, handwritten signs recognition, and finger vein recognition. Classes are conducted in a laboratory equipped with scanners (detectors) of selected biometric features.</p>		
<p><b>Basic bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Biometria, R.M. Bolle, J.H. Connell, S. Pankanti, N.K. Ratha, A.W. Senior, Wydawnictwa Naukowo-Techniczne, Warszawa, 2008.</li> <li>2. Rozpoznawanie biometryczne - nowe metody ilościowej reprezentacji obiektów, K. Ślot, WKiŁ, Warszawa 2010, 159 stron.</li> </ol>		
<p><b>Additional bibliography:</b></p> <ol style="list-style-type: none"> <li>1. Biometrics: Personal Identification in Networked Society, Anil K. Jain, Ruud M. Bolle, Sharath Pankanti, Springer, 1999.</li> <li>2. Handbook of Fingerprint Recognition, D. Maltoni, Springer, 2003.</li> </ol>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>	<p><b>Time (working hours)</b></p>	
1. Lectures	15	
2. Laboratories	30	
3. Preparing a report concerning a particular biometric topic	30	
4. Implementation of a biometric software application	50	
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	125	5
Contact hours	45	3
Practical activities	80	2