STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Data security**		Code **1010331551010334967**

Field of study **Information Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 5**

Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**

No. of hours Lecture: **30** Classes: **-** Laboratory: **30** Project/seminars: **-**	No. of credits **6**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art **technical sciences**	ECTS distribution (number and %**)** **6 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has an ordered knowledge of basic algorithms and their analysis, design techniques, algorithms abstract data structures and their implementation, computationally difficult problems.
2	**Skills**	Student can obtain information from literature, databases, and other sources; can integrate the information obtained, their interpretation, and also draw conclusions and formulate and justify opinions.
3	**Social competencies**	Student can construct algorithms using basic algorithmic techniques and analyse their complexity.

Assumptions and objectives of the course:

Presentation of theoretical and practical problems dealing with data security.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Student has organized knowledge with theoretical foundations of data protection and IT system security. - [[K_W13]]

Skills:

1. Student is able to apply the appropriate methods of data protection and ensure the security of the IT system. - [[K_U17]]

Social competencies:

1. Student is aware of the importance of behavior in a professional manner, compliance with the rules of professional ethics and respect for the diversity of ideas and cultures. - [[K_K03]]

Assessment methods of study outcomes

Based on lecture and laboratory participation.Written or/and oral examination based on lecture and laboratory..

Course description

Teaching methods: lectures - lecture with multimedia presentations, theory presented in close relation to practical application; labs- reports and conclusions are discused, computational experiments.

Threats to the data security. Methods of data protection: UPSs, system access security, logs, RAIDs, antivirus protection, steganography; cryptographic methods of data protection: ciphers, cryptographic techniques, data integrity, authentication, non-repudiation, cryptographic key management. Firewalls. Virtual Private Networks. Intrusion Detection Systems. Management of IT security.

Laboratory: Substitutions and permutations ciphers and their cryptanalysis, hash functions, symmetric ciphers and their modes of operations, asymetric ciphers, random generators and tests of randomness, steganography and visual cryptography.

Course update 2017: secret sharing and key distribution.

Basic bibliography:

1. Bezpieczeństwo danych w systemach informatycznych, Stokłosa J., Bilski T., Pankowski T. PWN Warszawa 2001

2. Ochrona danych i zabezpieczenia w systemach teleinformatycznych, Stokłosa J. (red.), Wydawnictwo Politechniki Poznańskiej, Poznań, 2005

3. Teoria bezpieczeństwa systemów komputerowych, Pieprzyk J., Hardjono T., Seberry J., Helion 2003

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Lecture	30
2. Classes	30
3. Laboratory	30
4. Preparation of laboratory reports	15
5. Preparation to tests	15
6. Preparation to the examination	20
7. Participation in consultations and examination	10

Student's workload

Source of workload	hours	ECTS
Total workload	150	6
Contact hours	70	3
Practical activities	70	3