STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Discrete mathematics**		Code **1010341721010342739**
Field of study **Mathematics in Technology**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 2**
Elective path/specialty -	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **First-cycle studies** **(Polish Qualifications Framework level six)**	Form of study (full-time,part-time) **full-time**

No. of hours				No. of credits **3**
Lecture: **15**	Classes: **15**	Laboratory: **15**	Project/seminars: **-**	

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

Education areas and fields of science and art	ECTS distribution (number and %)
The sciences	**3 100%**
Mathematical sciences	**3 100%**

Responsible for subject / lecturer:

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Prerequisites   in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of mathematical logic, abstract algebra and mathematical analysis [PRK4].
2	**Skills**	Array bill knows, knows how to develop a role in a number of the infinite, knows the concept of group [PRK 4].
3	Social competencies	He sees the need to acquire new skills [PRK 4].

Assumptions and objectives of the course:

The aim of the course is to familiarize students with the basic concepts and methods of discrete mathematics and its applications

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

Knowledge:

1. He knows and understands the basic concepts, theorems and methods of discrete mathematics [K_W01 (P6S_WG), K_W02 (P6S_WG)]

2. Able to assess the difficulty of the problems in the field of discrete mathematics, and select a method to solve them [K_W01 (P6S_WG), K_W06 (P6S_WG)]

3. He knows some of the types of practical problems using combinatorial models [K_W02 (P6S_WG), K_W06 (P6S_WG)]

Skills:

1. Can understanding the present known zag adnienia and their applications [K_U01 (P6S_UW)]

2. .Can independently carry out strict reasoning with knowledge [K_U01 (P6S_UW), K_U02 (P6S_UW)]

3. Able to use knowledge of the elements of discrete mathematics [K_U02 (P6S_UW)]

Social competencies:

1. Able to critically assess their level of understanding of a given problem and the lack of elements of reasoning [K_K01 (P6S_KK), K_K02 (P6S_KK)]

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Assessment   methods of study outcomes
One test problematic issues **Written exam**

Course description
Update 2018/2019. •   Mathematical Induction, •   Recursion, •   Generating functions, •   Modular arithmetic , •   Cryptosystem RSA, •   Combinatorial problems Applied methods of education. Lecture: 1. Interactive lecture with formulationquestions to a group of studentsor to specific students indicated. 2. Theory presented in connection with current knowledge students. 3. The activity of the students is taken into account during the classes when giving a final grade. Practical lessons: 1. Solving example tasks on the board. 2. Detailed review of task solutions and discussions on comments. 3. Initiate discussion on solutions. Laboratory: 1. Solving example tasks using computers. 2. Detailed review of task solutions and discussions on comments. 3. Initiate discussion on solutions.

Basic bibliography:

1. K.A.Ross, Ch.R.B.Wright, Matematyka Dyskretna, Państwowe Wydawnictwo Naukowe, Warszawa 1996.

2. W.Lipski, W.Marek, Analiza kombinatoryczna, Państwowe Wydawnictwo Naukowe, Warszawa 1986.

3. R.J.Wilson, Wprowadzenie do teorii grafów, Państwowe Wydawnictwo Naukowe, Warszawa 1985.

Additional bibliography:

1. V.Bryant, Aspekty kombinatoryki, Wydawnictwa Naukowo-Techniczne 1977.

2. R.L.Graham, D.E.Knuth, O.Patashnik, Matematyka Konkretna, Państwowe Wydawnictwo Naukowe, Warszawa 1996.

Result of average student's workload	
Activity	**Time (working hours)**
1. Taking part in practical classes	45
2. Preparing for practical lessons	25
3. Prepating for tests	20

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	90	3
Contact hours	55	2
Practical activities	30	1