

Course Name : Discrete Mathematics							
Course Code	Course Type	Regular Semester	Lecture (hours/week)	Seminar (hours/week)	Lab. (hours/week)	Credits	ECTS
CMP 130	B	Spring	3.00	1.00	0.00	3.50	5.00
Lecturer		Anjeza Pasku, PhD					
Assistant							
Course language		Albanian					
Course level		Bachelor					
Description							
Objectives							
Core Concepts							
Course Outline							
Week	Topic						
1	Elements of mathematical logics: Propositional logics and connectives. Propositional Equivalences. Applications of propositional logics.						
2	Predicates and quantifiers. Rules of Interference. Proof methods and strategy.						
3	Sets. Sequences and recurrence relations.						
4	Number Theory: Divisibility and modular arithmetic. Prime numbers, greatest common divisor and least common multiple.The Euclidian Algorithm and Bezout identity.						
5	Solving congruences. Applications of congruences.						
6	Mathematical induction, strong induction and well-ordering.						
7	Recursive definitions and structural induction. Recursive algorithms.						
8	Midterm exam						
9	Counting, the basic of counting. The Pigeonhole principle. Permutations and combinations. Binomial coefficients and identities.						
10	Advanced counting techniques. Applications of recurrence relations. Solving linear recurrence relations.						
11	Relations and their properties. Representing relations. Equivalence relations, partial orderings.						
12	Introduction to graph theory. Graphs models. Special types of graphs						
13	Representing graphs and graphs isomorphism. Connectivity. Euler and Hamilton paths.						
14	Shortest path problems. Planar graphs and graph coloring.						
15	Trees and their applications.						
16	Final Exam						

Prerequisites	The student must attend the course at a minimum rate of 75%.		
Literature	• Lecture Notes		
References	• Discrete Mathematics and its Applications- Kenneth Rosen, 7-th Edition • Discrete Mathematics-Richard Johnsonbaugh, 6-th Edition		
Course Outcome			
1	Theoretical and practical training, sufficient for a successful and skillful profession of basic scientific knowledge in student practice.		
2	Skills and professional training in description, formulation, modeling and problem analysis, with consideration for appropriate analytical solutions in all necessary situations.		
3	Required technical, academic and practical knowledge and confidence design and evaluation of mechanical systems with consideration for productivity, feasibility, and social and environmental aspects.		
4	Ability to design and run experiments, gather data, analyze and draw conclusions		
Course Evaluation			
In-term Studies		Quantity	Percentage
Midterms		1	40
Quizzes		0	0
Projects		1	10
Term Projects		0	0
Laboratory		0	0
Class Participation		1	10
Total in-term evaluation percent			60
Final exam percent			40
Total			100
ECTS Workload (Based on Student Workload)			
Activities	Quantity	Duration (hours)	Total (hours)
Course duration (Including the exam week: 16x Total hours of the course)	16	4	64
Study hours outside the classroom (Preparation, Practice, etc.)	14	3	42
Duties	1	0	0
Midterms	1	9	9
Final Exam	1	10	10
Other	0	0	0
Total Work Load			125
Total Work Load / 25 (hours)			5.00
ECTS			5.00