**COURSE OUTLINE** 

(1) GENERAL			1	
SCHOOL	ENGINEERING			
ACADEMIC UNIT	INFORMATICS AND COMP	UTER ENGINEERI	NG	
LEVEL OF STUDIES	UNDERGRADUATE			
COURSE CODE		SEMESTER 1 <sup>st</sup>	-	
COURSE TITLE	Discrete Mathematics			
INDEPENDENT TEACHI	NG ACTIVITIES			
if credits are awarded for separate components of the course,		WEEKLY	CDEDITE	
e.g. lectures, laboratory exercises, etc. If the credits are			CREDITS	
awarded for the whole of the course, give the weekly teaching		nooks		
Add rows if necessary. The organisa	tion of teaching and the	4	5	
teaching methods used are describe	ed in detail at (d).	-		
COURSE TYPE	General Foundation		·	
general background,				
special background, specialised				
general knowledge, skills				
development				
PREREQUISITE COURSES:				
LANGUAGE OF INSTRUCTION	Greek			
and EXAMINATIONS:				
IS THE COURSE OFFERED TO	Yes (in English)			
ERASMUS STUDENTS				
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/co	ourses/CS154/		
(2) LEARNING OUTCOMES				
<ul> <li>The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described. Consult Appendix A</li> <li>Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</li> <li>Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</li> <li>Guidalines for writing Learning Outcomes</li> </ul>				
After the successful completion of this course, students will have become acquainted with ideas and techniques from discrete mathematics that are widely used in data science and artificial intelligence. They will be able to 1) understand and work with the abstract mathematical structures used to represent discrete objects and relationships between these objects, 2) understand the mathematical reasoning needed to construct and consequently prove arguments, 3) gain the deeper mathematical insight needed in the courses that use certain applications of Discrete Mathematics.				
General Competences Taking into consideration the gener these appear in the Diploma Supple course aim? Search for, analysis and synthesis of and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Team work Working in an international environ	al competences that the deg ment and appear below), at f data Project planning Respect for differ Respect for the n Showing social, p responsibility an Criticism and sel Production of fre	ree-holder must a which of the follow and management rence and multicul atural environmen orofessional and et d sensitivity to gen f-criticism e, creative and ind	cquire (as wing does the turalism nt hical nder issues luctive thinking	

Working in an interdisciplinary	Others
environment	
Production of new research ideas	

Research, analysis and synthesis of the data and information, using the appropriate equipment, Working into an interdisciplinary environment, Producing new research ideas, Promotion of free, creative and inductive thinking.

## (3) SYLLABUS

Propositional Logic; Predicates and Quantifiers; Sets, Relations and Functions; Equivalence Relations and Partitions; Countable and Uncountable Sets; Mathematical Induction; Discrete Numeric Functions; Recursive Relations; Introduction to Combinatorics; The Principle of Inclusion-Exclusion; Introduction to Graph Theory (graph representation, Euler and Hamiltonian paths, connectivity, shortest paths, planar graphs and trees).

## **TEACHING and LEARNING METHODS - EVALUATION**

DELIVERY	Face to face, Distance learning		
Face-to-face, Distance learning, etc.			
<b>USE OF INFORMATION AND</b>	Use of ICT in Course Teaching, Use of ICT in		
COMMUNICATIONS TECHNOLOGY	Communication with Students		
	Post course material on the University's e-learning		
Use of ICT in teaching, laboratory	platform (e-class).		
education, communication with	Use of email and e-class in communication with students.		
students			
TEACHING METHODS	Activity	Semester workload	
The manner and methods of	Lectures	52	
teaching are described in detail.	Non-guided study	73	
Lectures, seminars, laboratory	Course total	125	
practice fieldwork study and	course total	125	
analysis of hibliography tutorials			
nlacements clinical practice art			
workshop interactive teaching			
educational visits project essay			
writing artistic creativity etc			
writing, artistic creativity, etc.			
The student's study hours for each			
learning activity are given as well as			
the hours of non-directed study			
according to the principles of the			
FCTS			
STUDENT PERFORMANCE			
FVALUATION	(1) Mid-term written ex	am	
Description of the evaluation	(1) Mild-tel III willtell example (2) Final written evan at the end of the concetter		
procedure	(2) Final written exam at the end of the semester		
procedure	Final Grade - (70% * Grade o	f the Final Exam ) + (30% *	
I anguage of evaluation methods of	Final Grade $= (70\%)^{\circ}$ Grade of the Final Exam $(30\%)^{\circ}$		
current and the summative or	Grade of the Mid-term Exam)		
evaluation, summative of			
conclusive, indiciple choice			
questionnanes, short-answer	The evaluation process is disc	closed to the students in	
questions, open-ended questions,	class and online, via e-class.		
problem solving, written work,			
essay/report, oral examination,			
public presentation, laboratory			
work, clinical examination of			
patient, art interpretation, other			
specifically-defined evaluation			
criteria are given, and if and where			

they are a	ccessible to students.			
(4) ATTAC	HED BIBLIOGRAPHY			
- Suggeste	d bibliography:			
1.	Judith L. Gersting, "Mathematical Structures for Computer Science", 7th edition, W. H.			
	Freeman, 2014, ISBN: 978-1429215107			
2.	2. Susanna S. Epp, "Discrete Mathematics with Applications", 5th edition, Cengage			
	Learning, Inc, 2019, ISBN: 978-1337694193.			
3.	Kenneth Rosen, "Discrete Mathematics and its Applications", 8th edition, Mc Graw			
	Hill, 2018, ISBN: 978-1260091991			
4.	Kevin Ferland, "Discrete Mathematics: An introduction to proofs and combinatorics",			
	1st edition, Brooks Cole, 2008, ISBN: 978-0-618-41538-0			
5.	Chung Laung Liu, "Elements of Discrete Mathematics", 2nd edition, Mc Graw Hill,			
	1985, ISBN: 0-07-038133-X			
6.	Tom Jenkyns, Ben Stephenson, "Fundamentals of Discrete Math for Computer			
	Science", 2nd edition, Springer, 2018, ISBN: ISBN 978-3-319-70150-9			