SUBJECT TEACHING GUIDE

G647 - Discrete Mathematics

First Degree in Computer Systems Engineering

Academic year 2026 - 2027

1. IDENTIFYING DATA					
Degree	First Degree in Computer Systems Engineering			Type and Year	Core. Year 2
Faculty	Faculty of Sciences				
Discipline	Subject Area: Mathematical Foundations of Computer Science Basic Training Module				
Course unit title and code	G647 - Discrete Mathematics				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field	Computer and systems engineering				
Web	http://moodle.unican.es				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION
Name of lecturer	MARIA MARTÍN VEGA
E-mail	maria.martinvega@unican.es
Office	
Other lecturers	

4. OBJECTIVES
Discrete Mathematics has as its fundamental objective to provide the computer science students the basic mathematical tools and thecniques closest to your discipline. In general these have a eminently discrete character and must allow the student, in the first place, to understand and manipulate structures, mainly finite, such as graphs, trees, etc. and, secondly, the availability of tools such as combinatorics or enumeration techniques without which a specialist could hardly develop his work.
Discrete Mathematics has an unquestionable formative character since it provides reasoning procedures and mental organization that will be extremely useful both during their studies and in the future development of his professional activity in the field of Computer Science

6. SUBJECT PROGRAM

CONTENTS	
1	COMBINATORICS Applications and enumeration. Enumerative principles. Subsets and binomial numbers. Partitions of sets and integer partitions. Recurrence Equations Generating functions
2	GRAPH THEORY Definition, representation and isomorphisms. Paths, cycles and connection. Distances and minimum paths. Trees and search. Bipartite graphs and pairing problems. Coloration in graphs. Digraphs, networks and flows. Planar graphs
3	Partial Exams
4	Final Exam

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessment	%
Partial Exams	Written exam	No	Yes	45,00
Final Exam	Written exam	Yes	Yes	55,00
TOTAL				100,00

Observations

Provided that PE and PC marks are equal to or greater than 3 (over 10), the student's final grade will be the weighted average of the grades obtained in the three categories of evaluation labeled as PC and EF plus that obtained in ET. Otherwise, the one obtained in section EF will be assigned if it is lower than 5 (out of 10); or a grade of 4 will be obtained.

In September the marks of the ET and PC tests are maintained. In the September exam the student must decide if he / she improves the PC and must perform the final exam compulsory.

Observations for part-time students

Partial time students have the option of doing a single final exam that covers all the contents of the whole subject.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

C. Valero Revenga, D. Sadornil Renedo. Apuntes Matemática Discreta.

N. L. Biggs. Discrete Mathematics. Oxford University Press, 2002.