



COURSE DATA

DATA SUBJECT

Code: 36876
Name: Logic and Discrete Mathematics
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

| Degree | Center | Acad. year | Period |
|--|-----------------------------------|------------|----------------|
| 1935 - Double Degree Program in Mathematics-Telematics Engineering | Facultat de Ciències Matemàtiques | 1 | Second quarter |
| 1936 - Double Degree Program in Mathematics-Telematics Engineering | Facultat de Ciències Matemàtiques | 1 | Second quarter |

SUBJECT-MATTER

| Degree | Subject-matter | Character |
|--|----------------|------------|
| 1935 - Double Degree Program in Mathematics-Telematics Engineering | Primer curso | COMPULSORY |
| 1936 - Double Degree Program in Mathematics-Telematics Engineering | Primer curso | COMPULSORY |

COORDINATION

FERRI RABASA FRANCESC JOSEP

SUMMARY

The subject "Logic and Discrete Mathematics (LMD)" is a subject taught in the second semester of the first year of the Double Degrees in Mathematics and Computer Science and Mathematics and Telematics Engineering. Its purpose is to delve into some fundamental or transversal mathematical concepts, and their relationship with computer and communication sciences. The common thread is the modeling and resolution of a wide spectrum of problems.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

OTHER REQUIREMENTS



COMPETENCES / LEARNING OUTCOMES

DESCRIPTION OF CONTENTS

1. Counting and cardinality

Sets, relationships, applications, variations, permutations, combinations and related mathematical tools.

2. Logic

Predicate logic, propositional logic, deduction and rules of inference. Introduction to logical programming.

3. Recursion and induction

Recurrence relations and recursive predicates. Types of induction proofs. Types of recursion and recurrence manipulation. Recursive logic programs.

4. Graphs and trees

Definitions and properties of different types of graphs. Tree structures. Paths, cycles, trees and graphs. Representation, enumeration and some algorithms on trees and graphs.

WORKLOAD

PRESENCIAL ACTIVITIES

| Activity | Hours |
|---------------------|--------------|
| Theory | 30,00 |
| Laboratory | 20,00 |
| Classroom practices | 10,00 |
| Total hours | 60,00 |

NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---------------------------------------|-------|
| Attendance at other activities | 0,00 |
| Individual or group project | 0,00 |
| Independent study and work | 0,00 |
| Preparation of lessons | 0,00 |
| Preparation for assessment activities | 0,00 |
| Resolution of case studies | 0,00 |



| | |
|-------------|------|
| Total hours | 0,00 |
|-------------|------|

TEACHING METHODOLOGY

Teaching will consist of a combination of lectures, problem sessions and practical activities to be performed by the student. This teaching will be supplemented by the personal work of students, focusing on the study, problem solving, and preparation of papers to deliver. In addition, there will be sessions on lab work with your computer.

- The theoretical activities consist of conducting classes in which the themes will be developed to provide a global and inclusive vision, analyzing in detail the key issues and more complex, encouraging at all times, the share of students.
- Practical activities will include conducting meetings of problems and issues in the classroom as well as conducting seminars, which will address issues on applications and less formal aspects of the subject.
- The student's personal work consists mainly in three aspects:
 - Preparing lessons in advance and recommended reading texts
 - Problem resolution proposed by Professor

Laboratory sessions consist of solving problems related to the theoretical contents through software.

EVALUATION

The continuous evaluation of the knowledge and skills acquired within the following sections will be encouraged:

- Attendance and participation: 10% (non-recoverable)
- Participation in laboratory sessions: 15% (non-recoverable)
- Written tests throughout the course: 0-15% . Written tests may be carried out on any part of the theory and laboratory syllabus. The minimum grade to average is 4.
- Final exam of theoretical-practical content: 60-75% (depending on the previous section, both in first and second call). The minimum grade to average is 4.

Grades will be according to "Grading Qualifications of Universitat de València." At the time of writing this teaching guide, the current legislation is that approved in the Consell de Govern session of 30th of may, 2017. (ACGUV 108/2017)., adjusted as provided for that purpose by the Royal Decrees 1044/2003 and 1125 / 2003. It states basically that the grades will be numbered from 0 to 10 with a decimal expression and must be added the qualitative rating scale for the following:

De 0 a 4,9: Suspenso

De 5 a 6,9: Aprobado



De 7 a 8,9: Notable

De 9 a 10: Sobresaliente o Sobresaliente con Matrícula de Honor

Plagiarism

Copying or plagiarism of any activity that is part of the evaluation will result in the impossibility of passing the course, and the student will then be subject to the appropriate disciplinary procedures indicated in the ACTION PROTOCOL FOR FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA ([ACGUV 123/2020](#)).

REFERENCES

- Ferri, F.J. (2023). Matemàtica Discreta i Lògica. Teoria i, sobretot, problemes. Universitat de València. Versió 2.4. <https://roderic.uv.es/handle/10550/86345>
- Matemática Discreta. Biggs. Ed. Vicens Vives, 1994
- Lógica Simbólica. M. Garrido. Ed Tecnos, 4ª Ed, 2001
- Matemática Discreta y Lógica: una perspectiva desde la Ciencia de la Computación. Grassmann-Tremblay. Ed. Prentice-Hall, 1996
- Concrete Mathematics: A Foundation for Computer Science. Ronald L. Graham, Donald E. Knuth, Oren Patashnik. Ed. Addison-Wesley, 2nd edition, 1994.
- Fonaments de Matemàtica Discreta. Elements de Combinatoria i d'aritmètica. Basart-Rifa-Villanueva. Materials 36 , 1999
- Matemática Discreta Bogart. Prentice Hall, 1996
- Estructuras de Matemáticas Discretas para la Computación Kolman et al.. Prentice Hall, 1997
- Mathematical Structures for Computer Science J. L. Gersting. Freeman. New York, 1987
- Lógica Simbólica. M. Garrido. Ed Tecnos, 4ª Ed, 2001