COURSE DATA

DATA SUBJECT

Code: 34666
Name: Discrete mathematics and logic
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1400 - Degree in Computer Engineering	Escola Tècnica Superior d'Enginyeria	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1400 - Degree in Computer Engineering	Mathematics	BASIC

COORDINATION

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SUMMARY

The course "Discrete Mathematics and logic" is a subject that is taught in the second semester of the first degree course in Computer Science. Its purpose is to give students the math skills necessary to formally address the problems that subsequently found in different subjects and grade in the exercise of their profession.

Within the set of mathematical topics, focuses on a selection of songs that either have a direct interest in computing or serve as a basis for other branches of Computer Science. The main topics covered include predicate logic, counting and graph theory.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

It is recommended to have passed Mathematics I.

COMPETENCES / LEARNING OUTCOMES

1400 - Degree in Computer Engineering

B3 - Ability to understand and master the basics of discrete mathematics, logic, algorithms and computational complexity and their application for solving problems in engineering.

G8 - Knowledge of basic subject areas and technologies that serve as a basis for learning and developing new methods and technologies, and of those which provide versatility to adapt to new situations.

G9 - Ability to solve problems with initiative, decision making, autonomy and creativity. Ability to communicate and transmit the knowledge, skills and abilities of a computer engineer.

DESCRIPTION OF CONTENTS

1. Logics

Introduction to Logics. Propositional and predicate Logics. Introduction to proofs.

2. Induction principle

Preorder relationship. Weak induction. Strong and Noetherian induction. Application to abstract data types.

3. Graphs and binary relations

Definitions and properties. Trees. Graph colouring and applications. Equivalence binary relationships.

4. Counting

Introduction to count. Bijections. Enumeration theorems.

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	2,00
Individual or group project	20,00
Independent study and work	25,00
Preparation of lessons	20,00
Preparation for assessment activities	15,00
Resolution of case studies	8,00
Total hours	**90,00**

TEACHING METHODOLOGY

Teaching will consist of a combination of lectures, problem sessions and theoretical/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 problem solving and computer programming.

EVALUATION

a) Participation. The attendance and involvement of the students in the scheduled face-to-face activities will be taken into account, which will be evaluated by means of attendance control, use of tutorials and re-submission of assignments. This part of the evaluation is not recoverable. Weight: 10%.

b) Laboratory. Performance of laboratory practicals and delivery of related exercises. They will have a joint weight of 15% and will not be recoverable.

c) Individual partial evaluations. To be carried out after the completion of some subjects. Their performance will be subject to their viability within the organisation of the academic year. Total weight of the section: 60% for theory (if all the syllabus is covered and proportionally if not).

d) Final exam (theory). This will consist of an individual test to be taken in a single session on the subject matter of the whole course, including practicals, organised in parts (in principle the same as in the previous section). Students are only obliged to sit the corresponding parts of the partial evaluations not passed or not presented. The weight of this section complements that of the previous section and is therefore a maximum of 60%.

e) Final exam (laboratory). This will consist of an individual test to be taken in a single session on the contents of the laboratory. It will be possible to establish parts and a minimum mark for each of them in order to pass. The weight is 15%.

In order to pass the course in the first exam session, it will be necessary:

- To hand in 75% of the exercises proposed for the laboratory practicals.
- Obtain a 4.5 out of 10 in each partial exam (or in each part of the final) and in each laboratory exam.

In the second call, there will be an individual test on the whole syllabus (up to 60% of the mark) and on the content of the practicals (15% of the mark) to recover sections d) and e), in the event that they have not been passed, averaging the rest of the sections. In order to average the rest of the sections, it will be necessary to obtain a minimum mark of 4.5 out of 10 in both the theoretical part and the practical part of the second exam

The evaluation will be in accordance with the `Universitat de València Grading Regulations. At the time of writing this teaching guide, the current regulation is the one approved in the session of the Governing Council of 30 May 2017 (ACGUV 108/2017), which conforms to the one established for this purpose by Royal Decrees 1044/2003 and 1125 / 2003. It basically establishes that the qualifications will be numerical from 0 to 10 with the expression of one decimal place and to which the qualitative qualification corresponding to the following scale must be added:

From 0 - 4.9: "Fail".
From 5 to 6.9: "Pass".
From 7 to 8.9: "Pass".
From 9 to 10: "Excellent" or "Excellent with Honours".

Plagiarism and copying
Copying or plagiarism of any activity that forms part of the evaluation will make it impossible to pass the course, and the student will be subject to the appropriate disciplinary procedures indicated in the PROTOCOL OF ACTION AGAINST FRAUDULENT PRACTICES AT THE UNIVERSITY OF VALENCIA (ACGUV 123/2020).

REFERENCES

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- Grassmann, W. K., Díez Platas, M. L., Fernández Vázquez, V. de los A., García-Bermejo Giner, R., Joyanes Aguilar, L., & Tremblay, J.-P. (1997). Matemática discreta y lógica. Prentice Hall.
- Basart i Muñoz, J. M., Rifà i Coma, J., Villanueva, M., & Universitat Autònoma de Barcelona. (1999). Fonaments de matemàtica discreta: elements de combinatòria i d'aritmètica. Universitat Autònoma de Barcelona, Servei de Publicacions.
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