

Course Syllabi

1. MAES-00126 DISCRETE MATHEMATICS

2. 192 credits hours.

3. Bibliography

- MATEMÁTICAS DISCRETAS /

<https://broman.dev/download/Discrete%20Mathematics%208th%20Edition.pdf>, JOHNSONBAUGH RICHARD, 2005

- Matemáticas Discretas, Seymour Lipchutz, Marc Lipson, 2007

4. Specific Course Information

- Discrete mathematics is the part of mathematics in charge of the study of finite discrete or infinite numerable sets. In opposition to continuous mathematics, which is in charge of the study of concepts such as continuity and continuous change, discrete mathematics studies structures whose elements can be counted one by one separately. That is, processes in discrete mathematics are finite and accounting. Discrete mathematics helps the development of certain fundamental capabilities for the This subject seeks to develop reasoning skills and strategies to solve real-life problems and, to apply concepts, theorems, postulates, methods and techniques of discrete mathematics, so that the student assumes a reflective, critical and creative attitude when he has to make decisions regarding cases of everyday life that involve problems that relate to his or her own or her own needs. The main topics are: Logic and Mathematical Reasoning, Algorithms, Modular Arithmetic, Graphs and Relationships.

5. Learning Objectives of the Course

- PROPOSAL TO THE STUDY OF THE THEORETICAL TOOLS AND METHODS OF DISCRETE MATHEMATICS PERMITTING HIM TO RESOLVE PROBLEMS OF ENGINEERING.
 - APPLY THE CONCEPTS OF THE LANGUAGE OF MATHEMATICS, NUMERIC SYSTEMS AND BOOLE ALGEBRA.
 - ENJOY THE GENERAL ASPECTS OF THE LANGUAGE (INCLUDING QUANTIFIERS), AND METHODS OF DEMONSTRATION.
 - Identify the concepts of graphs, including the Hamiltonian paths, flat graphs and algorithms of the shortest way.
 - Differentiate the concepts of tree, expansion tree, cover tree and introduce the concept of networks.
 - RESOLVE NUMERATION PROBLEMS, JOINTS, PROPOSAL LOGIC, BOOLEAN AND GRAPHICAL
- Learning Outcomes
 - Recognises the different positional numeration systems and is able to effect operations and conversions between them.
 - Models and resolves real problems by theory of graphs.
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 - Use the right theories to solve real problems by using arbores.
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 - Applause the logic principles in their cotidian life from the language and theory of joints and numbers theory.
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- Applause with destroy theory in demonstrations.
- Applause the logic principles in their cotidian life from the language and theory of joints and numbers theory.
- Recognises the different postional numeration systems and is able to effect operations and conversions between them.
- Models and resolves real problems by theory of graphs.
- Applause the logic principles in their cotidian life from the language and theory of joints and numbers theory.
- Uses algebra booleana as a mechanism for the simplification of propositions.
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- Applause the logic principles in their cotidian life from the language and theory of joints and numbers theory.

6. Course Topics

- Introduction
- Number systems
- Logical and joint
- Boolean algebra
- Reason and demonstration
- Graph theory
- Trees and networks