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MRM 2018
Academic Year 2016-2017
Section 1

Introduction to logic

1. Objectives

Familiarizing students with the basic structure of logical reasoning, formal analysis and inference

2. Contents

1. The course has 6 sessions, based on Chapters 3 to 6 of the book "Logic", by Robert Baum.

3. Methodology

Classes will consist of lectures, discussions and exercises. Students will present in every class their solutions to the exercises.

4. Grading

On the basis of class participation and the exercises solved in class.

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5. Course outline

SESION	DESCRIPCION	CASO/ACTIVIDAD
1	**Introduction. Logical reasoning**	Lecture on the bases for correct inference and the foundations of knowledge. Role of Logic and of empirical observations.
2	**Introduction to classical Logic. Statements. Contradiction, contrariety, subcontrariety, subimplication, superimplication**	**Baum, Chapter 3, and do Exercises 3-3**
3	**Representation of categorical statements by Venn diagrams.**	Baum, Chapter 3, and do Exercises 3-8
4	**Reasoning by syllogisms. Proofs by counterexamples and proofs by Venn diagrams**	Baum, Chapter 4, and do Exercises 4-6
5	**Propositional Logic. Truth tables. Compound propositions and logical operators. Basic axioms of modern logic. The necessity of the principle of no-contradiction.**	Baum, Chapter 5, and do Exercises 5-9
6	**Arguments and proofs. Logical "shortcuts" to avoid tedious, complex truth-tables: inference rules. Ending comments: from the algorithmic ideal to Gödel's incompleteness.**	Baum, Chapter 6, and do Exercises 6-23

5. Competencies :

Analyzing arguments from a logical point of view, and verifying the consistency of different statements.