Ministry of Higher Education and Scientific Research

Mustansiriyah University /College of Science

Department of Science Mathematics

(الخطة الدراسية للمساق)
Course Plan

Course No.: 54451123
Course Name: Foundation of Mathematics (1)
Course Website: https://uomustansiriyah.edu.iq/e-learn/profile.php?id=94

Time Division: 4hr Theoretical
Semester & Year: First, 2022/2023

Course Description:

This course introduces students to techniques for evaluating deductive and probabilistic arguments. Our study of deductive reasoning will consist in the development of three different logical systems: categorical logic, propositional logic, and predicate logic. Syllogistic logic, which formed the basis of logic for over two thousand years, is the study of arguments whose constituent sentences express certain relations between classes of things. Propositional logic (Boolean logic) is the study of arguments that depend on the number of important sentence-connecting expressions in ordinary language like *and*, *or*, and *not* expressions whose logic also lies at the foundation of modern computer systems. Predicate logic (first-order logic) extends propositional logic to arguments that depend on the linguistic phenomena of predication (e.g., "Ali is *a* philosopher") and quantification (e.g., "All prime numbers except 2 are odd").

Course Intended Outcomes:

1. Understanding the role and importance of proof in mathematics, as well as the concept of the importance of assumptions in the proof.
2. Introducing the concepts and methods of mathematical logic, set theory, and concepts concerning functions which are included in the fundamentals of various disciplines of mathematics.

Course Outline:

Week	Description depends on the Timing table (Theoretical & Practical)
1	Logic and Truth Table
2	Tautology /Contradiction / Contingency
3	Rules of Proof
4	Logical Implication and Logical Reasoning
5	Quantifiers
6	Mathematical Proof
7	Review and test
8	Sets
9	Equality of Sets
10	Algebra of sets
11	Review and Test

12	Cartesian Product
13	Relations Reflexive, Symmetric and Transitive Relations
14	Composition of relations
15	Review

Textbooks:

[1]**:** Fundamental Concepts of Modern Mathematics. Max D. Larsen. 1970.

[2] : اسس الرياضيات, الجزء الاول. تاليف د. هادي جابر مصطفى, رياض شاكر نعوم و نادر جورج منصور. 1980.

Suggested references:

[1]: Introduction to Mathematical Logic, 4th edition. Elliott Mendelson.1997.

[2]: A Mathematical Introduction to Logic, 2nd edition. Herbert B. Enderton. 2001.

[3]: Calvin Jongsma. Introduction to Discrete Mathematics via Logic and Proof. Springer Nature Switzerland AG, 2019.

Marking:

First Semester				Final Exam
1st exam	2nd exam	Practical	Activity	
10	10		5	70

Assignment/ Project	Description	Due Date	Marking
quiz	---	----	3
quiz	---	----	2

Instructor(s) information [معلومات الأستاذ]

Section: (Mathematics);   Lecture Room:[A403, A404];   Office No.: (9)

Instructor's Name: Dr. Emad Bakr Al-Zangana

E-Mail: e.b.abdulkareem@uomustansiriyah.iq.com

Office Hours: Wen.:[10:10 –11:50]

NOTES:
-Office Hour: Other office hours are available by appointment.
-The content of this syllabus not be changed during the current semester.

Lecturer Signature   Chairman Signature