Module Syllabus:

Course Title: Set Theory
Course Code: 250251
Semester: First / 2010–2011
Lecturer : Amin Witno
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Short Description:

This course is an introduction to Abstract Mathematics, also known as Transition to Advanced Mathematics, wherein heavy emphases are placed on proof structures in the setting of Logic and Set Theory. Topics include Propositional Logic and Quantification, Methods of Proof, Set Operations and Identities, Relations and Functions, Cardinal Numbers and Countability.

Topics by the Week:

Week	Topics
1	Review of the real numbers, some notations, functions and sequences
2	Logic and operators, Truth Tables, Quantification
3	Proving Conditional Statements, Equivalence, Contrapositive
4	Proof by Cases, Proving Existence Statements
5	The Principles of Mathematical Induction
6	Set operations, Venn diagrams and Truth Tables, Set Identities
7	Power Sets, Cross Product, Generalized Union and Intersection
8	Relations, Inverse and Composition, Equivalence Relations
9	Partial Ordering, Total Order, Well Ordering Principle
10	Functions as relations, Composition of functions
11	One-to-one and onto functions, Inverse functions
12	Cardinality and Cardinal Arithmetic
13	Properties of Infinite Countable Sets
14	Uncountable Sets, The Continuum Hypothesis
15	Review for Final Exam
16	Final Exam will be held in this period

Mark Distribution:

- Exam 1 15/11/2010 15%
- Exam 2 15/12/2010 15%
- Quizzes TBA 20%
- Final Exam TBA 50%

Lecture Notes:

My lecture notes, Logic and Sets, are required and are available for free download from the web site: http://www.philadelphia.edu.jo/math/witno/notes.htm

Textbook:

No textbook is required. A recommended text is the one I have written, Discrete Structures in Five Chapters, CreateSpace 2010, particularly Chapters 2 and 3.

Web sites:

- Basic Sciences Department: http://www.philadelphia.edu.jo/math
- Amin Witno Web: http://www.witno.com/