

Module Syllabus:

Course Title: Abstract Algebra 1
 Course Code: 250342
 Semester: First 2009/2010
 Lecturer : Amin Witno
 Office Room: 820 (Ext. 2228)
 Office Hours: STR 10–11; MW 11–12
 E-mail: awitno@gmail.com

Short Description:

This module is the first part of the Abstract Algebra two-semester series, covering standard topics in group theory: the modular integers, cyclic groups, normal subgroups, isomorphisms, permutation groups, finite abelian groups, and possibly some Sylow theorems.

Topics by the Week:

Week	Dates	Topics
1	11/10 – 15/10	Introduction to groups, definition, examples
2	18/10 – 22/10	The group Z_n , the modular operation, review of equivalence relations on a set
3	25/10 – 29/10	The group of units in Z_n
4	01/11 – 05/11	Subgroups, two-step subgroup test, the centralizer and the center of a group
5	08/11 – 12/11	Cyclic groups, subgroups of a cyclic group, the subgroups of Z
6	15/11 – 19/11	Cosets, Lagrange's theorem, order of elements, Euler's theorem
7	22/11 – 26/11	Subgroups of finite cyclic groups, subgroup lattice of Z_n
8	29/11 – 03/12	Normal subgroups and factor groups
9	06/12 – 10/12	Group homomorphism, kernel, isomorphisms
10	13/12 – 17/12	The fundamental homomorphism theorem, the Chinese remainder theorem
11	20/12 – 24/12	Classification of finite abelian groups, Cauchy's theorem for abelian groups
12	27/12 – 31/12	Proof of the fundamental theorem of finite abelian groups
13	03/01 – 07/01	Permutation groups, Cayley's theorem
14	10/01 – 14/01	The dihedral groups, groups of order $2n$
15	17/01 – 21/01	Selections from Sylow theorems
16	24/01 – 02/02	Final Exam will be held in this period

Grade Distribution:

- Exam 1 15/11/2009 20%
- Exam 2 20/12/2009 20%
- Homework Weekly 10%
- Final Exam January 2010 50%

References:

- Joseph A. Gallian, Contemporary Abstract Algebra, Sixth Edition 2006, Houghton Mifflin
- John B. Fraleigh, A First Course in Abstract Algebra, Seventh Edition 2003, Addison Wesley
- John F. Humphreys, A Course in Group Theory, 1996, Oxford University Press
- I. N. Herstein, Topics in Algebra, Second Edition 1975, Wiley

Course Notes:

- Amin Witno, Group Theory, required and available for free from Amin Witno Website.

Websites:

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