Module Syllabus:

Course Title: Abstract Algebra 1
Course Code: 250342
Semester: First / 2016–2017
Lecturer : Amin Witno
Office Room: 820 (Ext. 2228)
Office Hours: Weekdays 10–11
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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 if time permits, some Sylow theorems.

Topics by the Week:

Week	Topics
1	Introduction to groups, definition, examples
2	The group Z_n, the modular operation, review of equivalence relations on a set
3	The group of units in Z_n
4	Subgroups, the two-step subgroup test, the centralizer and the center of a group
5	Cyclic groups, subgroups of a cyclic group, the subgroups of Z
6	Cosets, Lagrange's theorem, order of elements, Euler's theorem
7	Subgroups of finite cyclic groups, subgroup lattice of Z_n
8	Normal subgroups and factor groups
9	Group homomorphism, the kernel of a homomorphism, isomorphism
10	The fundamental homomorphism theorem for groups, the Chinese remainder theorem
11	Classification of finite abelian groups, Cauchy's theorem for abelian groups
12	Permutation groups, even and odd cycles, the alternating subgroups of S_n
13	The dihedral groups, finite groups of order 2p
14	Selections from Sylow theorems
15	Review for Final exam

Lecture Notes:

- Amin Witno, From Groups to Galois. Students are required to download a softcopy of these notes for free from the University website. We will cover only Chapters 1 to 13, while the rest of the notes will be used for Abstract Algebra 2.
- Amin Witno, Finite Abelian Groups. These notes are a supplement to the lecture notes, to be used when we discuss Chapter 10---also available from the website.

References:

Students who wish to consult an Abstract Algebra textbook can do so by visiting our main library. The following titles are highly recommended.

- Joseph A. Gallian, Contemporary Abstract Algebra, Ninth Edition 2016, Brooks/Cole.
- I. N. Herstein, Topics in Algebra, Second Edition 1975, Wiley.

Mark Distribution:

Students will be evaluated based on a 100-point scale according to the following distribution.

HW/Quiz/Attendance		20%
Exam 1	TBA	20%
Exam 2	TBA	20%
Final Exam	TBA	40%

Exam dates, once determined, will be posted online at the Department's website.

Supporting Websites:

- Abstract Algebra Course Website -- http://www.philadelphia.edu.jo/math/witno/250342.htm
- Amin Witno Website -- http://phi.witno.com