

King Fahd University of Petroleum and Minerals
Department of Mathematics & Statistics

Syllabus MATH345
Semester II, 2011-2012 (112)

- Instructor:** Dr. Robert Heffernan
[Office: 5-203-6, Phone: 4377, E-mail: *heffernan@kfupm.edu.sa*]
- Course:** Math 345 (Modern Algebra I)
- Textbook:** *Contemporary Abstract Algebra (6e)* by Joseph A. Gallian.
- Objectives:** This course is intended to introduce students to fundamental concepts and techniques in abstract algebra and to provide students with appropriate background for more advanced courses in mathematics.
- Lectures:** Saturday/Monday/Wednesday 10.00–10.50 ; Building 5, Room 105
- Grading:** Exam I: 20%, Exam II: 20%, Coursework: 30%, Final exam: 30%
- Syllabus:**

Week	Date	Chp.	Topic
1	28 Jan–1 Feb	2–3	Review of basic group theory.
2	04 Feb–08 Feb	4 5	Classification of subgroups of cyclic groups. Permutation groups.
3	11 Feb–15 Feb	6 7	Automorphisms. Cosets & Lagrange's theorem.
4	18 Feb–22 Feb	7 8	The orbit-stabiliser theorem. External direct products.
5	25 Feb–29 Feb	9	Normal subgroups & factor groups.
6	03 Mar–07 Mar	10	Group homomorphisms.
Major exam I: Date, time & location TBA			
7	10 Mar–14 Mar	11	The fundamental theorem of abelian groups.
8	17 Mar–21 Mar	12	Introduction to rings.
Mid-term vacation: 24 March, 2012 – 28 March, 2012			
9	31 Mar–04 Apr	13	Integral domains.
10	07 Mar–11 Apr	14	Ideals and factor rings.
Major exam II: Date, time & location TBA			
11	14 Apr–18 Apr	15	Ring homomorphisms.
12	21 Apr–25 Apr	16	Polynomial rings.
13	28 Apr–01 May	17	Factorisation of polynomials.
14	05 May–09 May	18	Divisibility in integral domains.
15	12 May–16 May	26	Special topic: groups of order ≤ 15 .
Final exam (comprehensive): TBA			