A	**Course Title & Number**	**MTH 420 – Abstract Algebra II**
B	**Pre/Co-requisite(s)**	Prerequisites: MTH 320 (Abstract Algebra I)
C	**Number of credits**	3
D	**Faculty Name**	Ayman Badawi
E	**Term/ Year**	Spring 2018
F	**Sections**	

CRN	Course	Days	Time	Location
Abstract Algebra II--1	MTH420	M, W	12:30—13:45	PHY 108

* Location subject to change

G	**Instructor Information**	

Instructor	Office	Telephone	Email
Ayman Badawi	Nab 262	----------	abadawi@aus.edu

Office hours: M, W : 14—14:50 and T (Tuesday): 15---15:50 (others by appointment, just EMAIL me for an appointment)

H	**Course Description from Catalog**	Introduces rings, subrings, ideals, quotient rings, quotient fields, ring-homomorphism and isomorphism, factorization of polynomials, unique factorization domains, finite fields, and field extensions, in particular, cyclotomic field extensions and Galois's theory. If time allows,, Sylow theorems.
I	**Course Learning Outcomes**	Upon completion of the course, students will be able to: 1. Understand the concept of prime, primary, and maximal ideals. 2. Construct ring homomorphisms and isomorphisms 3. Use division algorithm, reducibility tests, and irreducibility tests for polynomials 4. Understand the concept of unique factorization domains 5. Construct finite fields, cyclotomic fields, and splitting–field extensions for an irreducible polynomial 6. Understand the fundamental theorem of Galois's theory and its applications.
J	**Textbook and other Instructional Material and Resources**	*Class notes. Materials on I-learn and my personal webpage* *(Optional) Contemporary Abstract Algebra (any edition), by Joseph A. Gallian. Publisher: Houghton Mifflin Company.*
K	**Teaching and Learning Methodologies**	Lectures
L	**Grading Scale, Grading Distribution, and Due Dates**	**Grading Distribution**

Assessment	Weight	Due Date
Quizzes and/or Homework	20%	TBA
First Midterm	22.5%	TBA
Second Midterm	22.5%	TBA
Final Exam (Comprehensive)	35%	Comprehensive Saturday, May 12 @ 8am-10am
Total	100%	

M	**Explanation of Assessments**	Homework sets, two midterms and a final exam. ***Tests and other graded assignments due dates are set. No addendum, make-up exams, or extra assignments to improve grades will be given.***
N	**Student Academic Integrity Code Statement**	All students are expected to abide by the Student Academic Integrity Code as articulated in the AUS undergraduate catalog.

SCHEDULE

WEEK Number	**CHAPTER**
1	Definition of rings and fields, subrings, ideals, examples
2	Prime ideals, primary ideals, maximal ideals, radical ideals
3	More on ideals and product of rings
4	Prime elements and irreducible elements
5	Unique factorization domains, Euclidean domains
6	Integral domains and their quotient fields, Quotient rings
7	Irreducible polynomials over domains and fields
8	Homomorphism of rings
9	Homomorphism and isomorphism of rings
	Fall Break
10	Finite fields and irreducible polynomials
11	Field extensions
12	Introduction to Galois's theory
13	Splitting fields, Separable fields
14	Cyclotomic fields
15	Reviews