College of Engineering, Forestry, and Natural Sciences
Department of Mathematics and Statistics

SYLLABUS

MAT 612
Abstract Algebra II
Spring, 2010

Course number 10376.
Meeting times: 9:10 - 10:00 MWF.
Meeting place: Adel Mathematics Bldg. Room 146.
3 credit hours.
Prerequisite: MAT 511 or equivalent.

Lecturer: Michael Falk Office: AMB 132, 523-6891
e-mail: `michael.falk@nau.edu` Personal web page: `http://www.cefns.nau.edu/~falk`
Course web page: `http://www.cefns.nau.edu/~falk/classes/612/index612.html`

Office hours: Mondays and Wednesdays 3:00 - 4:30; Tuesdays and Thursdays 2:00 - 3:00.
I'm also available to students for "drop-in" help outside of regular office hours. No appointment is necessary, although it may be more convenient to set up a time to meet – speak to me after class or e-mail me. I can also sometimes answer questions over the phone. Don't hesitate to call or drop by.
Virtual office hours: Students are also encouraged to e-mail me with questions; I will respond quickly (depending on the time of day or night), and in a helpful manner (one would hope). This process is called "virtual office hours." Don't hesitate to use them - I promise to let you know if it gets to be too much.

Web page and e-mail: The course web page listed above will include links to exams and problem sets, hints and solutions, study outlines, and other useful information. In case I want to communicate with the entire class, I will express myself on the web page. I will also send occasional e-mails to the entire class. If at some point you decide you do not wish to receive these e-mails, please let me know. Make sure I have an e-mail address for you that is checked regularly. I will not be using the Blackboard Vista page for this course - it will merely contain a link to the course web page.

Texts: *Abstract Algebra*, by David Dummit and Richard Foote (3rd edition).
Computational Algebraic Geometry, by Hal Schenck.

Course Content: During the first half of the semester we will study the classification theorem for finitely-generated modules over principal ideal domains, free resolutions, graded betti numbers, primary decomposition, and applications to projective algebraic geometry. We will prove Hilbert's Basis Theorem and the Nullstellensatz. We will do some computing with Macaulay2. If there is time we will study the Wedderburn-Artin theory of semisimple Artinian rings. In the second half of the semester we will study field extensions and Galois Theory, with applications. This material will be based on Sections 10.3-10.4, 11.5, 12.1-12.2, and Chapters 13-14 of Dummit and Foote, and Chapters 1-4 of Schenck.

Evaluation: Grades will be based exam performance and scores on daily and weekly homework assignments. Students earn points throughout the semester, and final grades are based on the cumulative total, as a percentage of 500 points. There will be two take-home mid-term exams worth 90 points each, a take-home final exam worth 120 points, and eight problem sets worth 25 points each.
At the end of the semester, I will translate the numerical scores into letter grades, based on clusters and natural breaks in the distribution of students' overall point totals, and my assessment of the difficulty of the course and the quality of student performance. The actual cutoffs will be no higher than the "straight scale," 90% A, 80% B, 70% C, 60% D.
Students may obtain information on their class standing from me at any time. After each exam, I will produce a "provisional curve" to indicate to the class what grades I might give at various points during the semester, but these intermediate curves have no bearing on final grades.

Course policies : Students may bring one sheet of notes to consult during in-class exams. This is a blanket policy, and will apply even if it is not explicitly announced in class. Three to four pages of notes will be allowed for the final exam.

Students are encouraged to work together and to seek assistance from the lecturer on all homework. It is expected that all written homework will be composed and written individually by each student in a concise, grammatically correct, and readable form. Students must work *independently* on all exams (in-class or take-home).

Late homework can be handed in for half credit any time during the semester.

Tentative exam dates:	Exam 1	Friday 2/19 (due 2/24)
	Exam 2	Friday 4/2 (due 4/7)
	Final Exam	Due Wednesday 5/5, 5:00 pm.

Other important dates :	Monday Jan. 18	Martin Luther King, Jr. day, no classes
	Friday Jan. 22	last day to add, change to audit, file for grade repl.
	Friday February 5	last day to drop/delete
	Friday March 12	last day to drop with a "W"
	Mon -Fri March 15-19	Spring Break