Math 313   Modern Algebra   Fall 2009

Instructor: Fred Schultheis

Office: PPHAC 218

Office Hours: MW 10:30 am - 11:30 pm, W 2:30-3:30, and by appointment

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Text: A First Course in Abstract Algebra , 7th edition, John B. Fraleigh

Course Content

This course is a modern, abstract approach to the problems of algebra. We will study in detail some of the basic algebraic structures including groups, rings, and fields. Although these topics will probably not appear to be familiar to you from algebra, they all sprang from attempts to solve the more classical types of problems that you would associate with algebra. The main content of the course is contained in the first 5 chapters of the text, although we may omit some sections here and there and possibly add some additional topics from later chapters.

Course Description

The course meets MWF from 8:55 till 10:05 a.m. in PPHAC 232. Homework assignments will be given at each class meeting. Students are expected to complete these assignments by the next class meeting, where they will be discussed. No one can learn mathematics without doing it themselves and so, to the student, homework is the most important part of the course. Since class participation is important, students are expected to attend every class.

Attendance

Class attendance is required. You are responsible for all work covered in class and all assignments, even if absent from class. If you must miss more than one class due to illness or emergency, you should notify the instructor. In-class exams must be taken at the announced time; make-up exams will be given only in case of extreme emergency or serious illness.

Grading

Your final grade will be based on 2 hourly exams (about 100 points each), regular graded homework assignments (about 200 points total), class participation (about 30 points), cultural awareness (about 40 points, see below), daily quizzes (about 100 points total), and a comprehensive final exam (180 points) for a total of 750 points. The exams may be in-class, take-home, or a combination of the two.

Cultural Awareness

One goal for this course is to develop an appreciation of the beauty and utility of algebra in particular and mathematics in general. To help foster this appreciation you are encouraged to spend some time outside of class thinking and discussing algebra and mathematics.

There are no specific assignments for this portion of the course but many opportunities for you to satisfy the requirements. Some examples of activities that foster cultural awareness include: attending talks, giving a talk, reading a paper, or solving a problem.

Some typical cultural events include, but are not limited to
- attending an epsilon talk (5 points)
- attending a Mathematics Colloquium at Moravian (7 points)
- attending a math talk at another LVAIC school (9 points)
- attending the EPADEL conference in November (10 points)
- review an article on algebra and present it to the class (7 points)
- solving a problem outside the scope of the class (5-infinite points) with
5 additional points available for presenting the solution to the class

If you attend an event relevant to your mathematical growth you need to write a short paper that explains what the event was and how it deepened your appreciation of algebra or mathematics.

At most 3 epsilon talks and 3 Mathematics Colloquiums may count towards your cultural awareness grade. However, once you have reached the 40 points for your cultural awareness grade, you may do additional cultural events for extra credit.

Course Goals

In this course you will be learning the fundamental concepts from the modern theory of algebra. Upon completing the course, successful students will

(a) be able to read, comprehend, and write mathematical proofs,

(b) gain a better understanding of abstract mathematical concepts and why they are important,

(c) improve their communication and technical writing skills by discussing mathematics problems and presenting solutions in written and oral form.

ACADEMIC HONESTY POLICY GUIDELINES

MATHEMATICS COURSES

The Mathematics and Computer Science Department supports and is governed by the Academic Honesty Policy of Moravian College as stated in the Moravian College Student Handbook. The following statements will help clarify the policies of members of the Mathematics faculty.

In all homework assignments which are to be graded, you may use your class notes and any books or library sources. When you use the ideas or thoughts of others, however, you must acknowledge the source. For graded homework assignments, you may not use a solution manual or the help, orally or in written form, of an individual other than your instructor. If you receive help from anyone other than your instructor or if you fail to reference your sources you will be violating the Academic Honesty Policy of Moravian College. For homework which is not to be graded, if you choose, you may work with your fellow students. You are responsible for understanding and being able to explain the solution of all assigned problems, both graded and ungraded.