

MATH 422-001 – Elementary Abstract Algebra Spring 2009, Liberty University, Lynchburg, VA	Class Meets in: Student Life & Academic Bldg. 102 Lecture Times: T-R 2:00 -3:15pm
<i>Even though I walk through the valley of the shadow of death, I will fear no evil, for you are with me; your rod and your staff, they comfort me.</i>  <i>Psalm 23:4 (E.S.V.)</i>	Instructor: Dr. James S. Cook Office: Applied Science 105 Office Hours: 11am-12pm weekdays. Email: jcook4@liberty.edu office phone: 434-582-2476

### **I. Course Description**

A continuation of MATH 421. The theory of rings and fields, integral domains, and the theory of polynomials..

### **II. Rationale**

Along with MATH 421, this forms a two-course sequence in modern abstract algebra. It includes all of the material usually found in a first course in the theory of groups. To the mathematics major it also adds the dimension of abstract axiomatic mathematics, the science of deductive structure and pattern. MATH 422 covers rings and fields in more detail and includes the theory of polynomials over a ring or a field. The two courses provide excellent preparation for graduate study in modern algebra.

### **III. Prerequisite Statement**

MATH 421, It is the student's responsibility to make up any prerequisite deficiencies, as stated in the Liberty University Catalog, which would prevent the successful completion of this course

### **IV. Materials List**

*A First Course in Abstract Algebra, Seventh Edition*, by John B. Fraleigh. Addison-Wesley, 2003.

### **V. Learning Outcomes**

Learning Outcomes: upon completion of this course the student will be able

1. Demonstrate a basic understanding of abstract algebra concepts by mastering the learning objectives for each chapter and sections listed in the course content. These objectives provide the basis for tests.
2. Analyze and solve problems using the definitions, theorems, and examples provided in the text and classroom.
3. Apply acquired problem solving skills to work abstract algebra homework.

### **VI. Assignments/Requirements**

- Cognitive growth – Demonstrate mathematical proficiency by working exercises and solving problems related to the topics discussed. (See the course description and the outcomes listed in Section V above.)
- Product – Daily assignments and quizzes, two in-class tests, a end-of-semester project, comprehensive final exam
- Process – A students will demonstrate individual progress by solving problems in daily assignments, quizzes, and tests. (See the outcomes listed in Section V above.)

### **VII. Grading Policies**

- Tests must be taken as scheduled. No make-up tests will be given after the scheduled time. If a test is missed due to an excused absence, the final exam grade may be substituted.
- **GRADING SCALE:** A – 90% and above, B – 80-89%, C – 70-79%, D – 60-69%, F – below 60%
- The course grade will be determined based on: homework/quizzes (20%), two tests (20% each), semester project(15%), and the cumulative final exam (25%).

As you are aware, mathematical concepts and processes develop best in a proof and problem solving setting. Therefore, problems and exercises will be assigned with each lesson. They are to be worked, turned in, and graded, so that you will have them for future study. Although the assignments (All that work!) count only 20% of your grade, the payoff for working lots of problems will be much greater than that.

### **VIII. Attendance Policies**

- Class attendance is essential and students are expected to be present each class.
- Students will bring textbook, pen/pencil, paper, calculator, and completed homework to class.

### **IX. Other Policies**

#### **Dress Code**

Students are expected to come to class dressed in a manner consistent with The Liberty Way.

#### **Honor Code**

We, the students, faculty, and staff of Liberty University, have a responsibility to uphold the moral and ethical standards of this institution and personally confront those who do not.

#### **Academic Misconduct**

Academic misconduct includes: academic dishonesty, plagiarism, and falsification. See The Liberty Way for specific definitions, penalties, and processes for reporting.

**Disability Statement**

Any student with a documented disability may contact the Office of Disability Academic Support (ODAS) in Teacher Education Building-TE 127 in order to make arrangements for an academic accommodation.

**X. Calendar for the semester/term**

- **TEST DATES:** TBA (scheduled at least a week in advance)
- The final exam must be taken at the time scheduled by the University.

**XI. Disclaimer:**

*While I have attempted to completely specify the content of this course, I reserve the right to change this syllabus if necessary. It is your responsibility to monitor your Liberty University email account for any changes in the syllabus. I will notify you via email and announce in class in the event something needs modification.*