

COURSE SYLLABUS
MATH 724
FALL 2010

Welcome to Math 724, my name is Jim Coykendall, and I will be your instructor for this course. My office is 310A Minard Hall. My office hours this semester will be from 5:30am-8:00am and 9:00am-11:00am on Mondays, Wednesdays, and Fridays and from 1:00pm-2:30pm on Mondays and Wednesdays. If my hours are inconvenient then email me (Jim.Coykendall@ndsu.edu) or give me a call (office 231-8079, home 297-5114). Another good resource for this course is my homepage, which can be found at

<https://www.ndsu.edu/pubweb/~coykenda/>

In general, you may consider my office an “open door, and I strongly recommend that you come and see me if you are having any trouble in class (or if you find that you are not being challenged enough). Come by...I enjoy seeing my students.

COURSE DESCRIPTION: This course will be a “topics” course in the theory of factorization in integral domains and other mathematical structures. We will begin by reviewing some needed material in commutative algebra and then get into factorization (the study of multiplicative structures). Some topics to be covered will be the classical domains of factorization theory (UFDs, PIDs, Euclidean domains), some important generalizations (HFDs, FFDs, BFDs), the behavior of factorization properties in ring extensions (integral closures, polynomial/power series extensions etc.), applications to algebraic number rings, the norm, the Davenport constant, elasticity, and (hopefully) many more. Many examples will be used in the development of the theory.

GOALS: To impart an appreciation and a hands-on working knowledge of this field of mathematics is the major goal of this course. This course will provide essential tools for students specializing in algebra as well as give a broad understanding to the non-specialist.

TEXTBOOK: There is no required text for this course, but some good references are *Introduction of Commutative Algebra* by Atiyah and Macdonald, *Commutative Rings* by Kaplansky, and *Non-Unique Factorizations: Algebraic, Combinatorial and Analytic Theory* by Geroldinger and Halter-Koch (this last one is good, but quite dense). I have course notes on the webpage for this course (listed as Math 725 on my page). These notes will be what I will mostly follow, but there may be a number of updates as the semester progresses.

HOMEWORK: Homework will be collected (approximately) weekly to bi-weekly. Your homework average will be 100% of your grade.

EXAMS: There will be no formal exams in this class.

GRADES: Here is a breakdown of the quizzes/exams/final:

Homework Average...100%

If you get the following scores (out of 100) you will receive:

90-100...A

80-89...B

70-79...C

60-69...D

SPECIAL NEEDS: Any students with disabilities or other special needs, who need special accommodations in the course, are invited to share these concerns or requests with the instructor as soon as possible.

ACADEMIC HONESTY: All work in this course must be completed in a manner consistent with NDSU University Senate Policy, Section 335: Code of Academic Responsibility and Conduct (<http://www.ndsu.nodak.edu/policy/335.htm>).

I wish you the best of luck in this course, please stop by and keep me posted on how you are doing.