MTH 355: Discrete Mathematics 3 credits Spring 2015

Catalog Description: Proof analysis and development in the context of discrete mathematics for math majors transitioning to upper division coursework. Topics include elementary logic and set theory, quantifiers, basic counting principles, elementary combinatorics, equivalence relations, the binomial theorem, and mathematical induction. Additional topics may include recurrence relations, generating functions, and introductory graph theory. All courses used to satisfy MTH prerequisites must be completed with C- or better.

Prerequisites: MTH 253 required, MTH 341 recommended.

Meets: Two 80 minute meetings weekly, with a mix of lecture and student cooperative learning.

Instructor: Dr. Cozzi, Kidder 290

Office Hours: Monday and Friday: 1:00pm-2:00pm; Wednesday 3:30pm-4:30pm

Course Content: The content of this course includes the following.

- Elementary logic
- Set theory
- Quantifiers
- Introduction to proof techniques
- Basic counting
- Elementary combinatorics
- Equivalence relations
- Mathematical induction
- The binomial theorem

Learning Resources: The required course text is 'A Discrete Transition to Advanced Mathematics', by Bettina Richmond and Thomas Richmond, published by the American Mathematical Society, 2004.

Learning Outcomes: Upon completing MTH 355 a successful student is expected to be able to do the following.

1. Construct simple proofs using quantifiers.
2. Construct an inductive argument.
3. Identify equivalence relations and employ them in constructing combinatoric identities.
4. State and prove the binomial theorem.
Course Plan: Class meetings will begin with a short lecture on class material. Following the lecture, students will work through related problems given by the instructor. Students will be assigned to small groups for this work. Group assignments will change weekly. Students are expected to participate constructively in the group to which they have been assigned.

Homework will be assigned weekly. Students are expected to write up homework solutions independently. The lowest homework grade of the term will be dropped. Late homework is strongly discouraged and may be penalized.

There will be 3 short quizzes given during the term with the lowest of the 3 quiz grades being dropped. No make-up quizzes will be given.

There will be one in-class midterm examination in addition to the final examination. (The final examination is scheduled to be given on Tuesday December 10 at noon.) No make-up examinations will be given.

Evaluation of Student Learning: (Approximate percentages given.)

- Homework problems 20 %
- In class participation: 20 %
- Quizzes 10 %
- Midterm 20 %
- Final Exam: 30 %

Students with Disabilities: Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

Student Conduct: All students are expected to obey OSU’s student conduct regulations. Here is the link to OSU’s Statement of Expectations for Student Conduct: http://studentlife.oregonstate.edu/studentconduct/offenses-0

Course revised Fall 2014, syllabus submitted December 23, 2014