COURSE DESCRIPTION

Dept., Number	Math 301	Course Title	Discrete Mathematics
Semester hours	3	Course Coordinator	Laura Sheppardson, Assistant Professor

Current Catalog Description

Elementary counting principles; mathematical induction; inclusion-exclusion principles; and graphs.

Textbook

Required: Edward R. Scheinerman, *Mathematics, A Discrete Introduction,* 2nd edition, Brooks and Cole, 2006.

Recommended: Ralph P. Grimaldi. *Discrete and Combinatorial Mathematics: An Applied Introduction,* 5th edition, Addison Wesley, 2004.

References

The course website is on the Blackboard system.

Course Outcomes

Upon successful completion of this course, the students can:

1. apply counting methods to a solve a variety of problems,

2. explain their solutions to someone who understands basic counting methods,

3. read and write statements involving standard mathematical notation, including quantifiers, set operations, and "if…then…" structures,

4. write simple proofs using direct methods, mathematical induction, or contradiction,

5. read and write a variety of notation for relations and functions, and identify standard properties of relations and functions,

6. apply equivalence relations and bijective functions in solving counting problems,

7. understand standard graph definitions, and identify examples of such items as subgraphs, trees, independent sets, and cliques,

8. use graphs to model and solve problems.

Relationship between Course Outcomes and Program Outcomes

The ABET/CAC criteria for computer science require the study of discrete mathematics. The BSCS program requires Math 301 and 302 to satisfy this expectation.

All eight course outcomes contribute to program outcomes (a) and (j).

Prerequisites by Topic

Introductory differential and integral calculus (Math 261)

Major Topics Covered in the Course

This course covers elementary counting principles, mathematical induction and other proof methods, relations and functions, and graphs. This includes selected sections of chapters 1-5 and 9 from the Scheinerman texbook. The focus is on logical thinking and problem solving.

Assessment Plan for the Course

The instructor assesses the student performance related to the course outcomes by using examinations, quizzes, and homework assignments.

How Data in the Course are Used to Assess Program Outcomes (unless adequately covered already in the assessment discussion under Criterion 4)

The conduct of this course is not governed by the ABET program faculty. No data are collected that are used to assess program outcomes directly.

Estimate Curriculum Category Content (Semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms			Software design		
Data structures			Concepts of programming languages		
Discrete math	3				