

NEW COURSE PROPOSAL

PROGRAM AREAS _____ MATH

1. Catalog Description of the Course. *[Include the course prefix, number, full title, and units. Provide a course narrative including prerequisites and corequisites. If any of the following apply, include in the description: Repeatability (May be repeated to a maximum of ___ units); time distribution (Lecture ___ hours, laboratory ___ hours); non-traditional grading system (Graded CR/NC, ABC/NC). Follow accepted catalog format.]*

MATH 300 DISCRETE MATHEMATICS (3)

Three hours of lecture per week.

Prerequisite: MATH 151 and MATH 230

Topics include: Sets, algebraic systems, axioms, definitions, propositions and proofs. Combinatorics, graph theory, moduli calculus. Coding, coding errors and Hamming codes. Students are expected to write mathematical proofs, and communicate mathematical ideas clearly in written and oral form.

2. Mode of Instruction.

	Units	Hours per Unit	Benchmark Enrollment
Lecture	___3___	___1___	___24___
Seminar	_____	_____	_____
Laboratory	_____	_____	_____
Activity	_____	_____	_____

3. Justification and Learning Objectives for the Course. (Indicate whether required or elective, and whether it meets University Writing, and/or Language requirements) *[Use as much space as necessary]*

The course is a required course for Mathematics and Computer Science majors.

Through this course, students will be able to

- Apply the principles of Logic in a formal language
- Discuss the theory and use of Sets
- Compute the number of ways complicated tasks can be performed
- Incorporate applied problems into graph theoretic framework and using this interpretation to solve them.
- Express quantitative ideas in oral and written form.

4. Is this a General Education Course **YES** **NO**
 If Yes, indicate GE category:

A (English Language, Communication, Critical Thinking)	
B (Mathematics & Sciences)	
C (Fine Arts, Literature, Languages & Cultures)	
D (Social Perspectives)	
E (Human Psychological and Physiological Perspectives)	

5. Course Content in Outline Form. *[Be as brief as possible, but use as much space as necessary]*

- Logic: Propositions, Predicates, Quantifiers and Introduction to Boolean operators.
- Basic Set Theory and Set Operations.

- Introduction to Mathematical Reasoning: Induction, Recursive Definitions and Algorithms.
 - Combinatorics: Introduction to Counting, the Pigeonhole Principle, Permutations and Combinations, Introduction to Discrete Probability.
- More advanced counting methods: Generalized Permutations and Combinations, Recurrence Relations, Inclusion-Exclusion Principle and Generating Functions.
- Graph Theory: Relations and their Properties, Introduction to Graphs and Trees, Connectivity, Euler and Hamilton Paths, Applications of Graphs and Trees.

6. References. *[Provide 3 - 5 references on which this course is based and/or support it.]*

“Discrete Mathematics and its Applications” of Kenneth H. Rosen (4th Edition). 1999.

7. List Faculty Qualified to Teach This Course.

All Mathematics and Computer Science Faculty

8. Frequency.

a. Projected semesters to be offered: Fall Fall Spring Summer

9. New Resources Required.

a. Computer (data processing), audio visual, broadcasting needs, other equipment

None

b. Library needs

None

c. Facility/space needs

None

10. Consultation.

Attach consultation sheet from all program areas, Library, and others (if necessary)

11. If this new course will alter any degree, credential, certificate, or minor in your program, attach a program modification.

Proposer of Course

Date