

**New Course Request**

**Indiana University**

South Bend Campus

Check Appropriate Boxes: Undergraduate credit  Graduate credit  Professional credit

1. School/Division Liberal Arts and Sciences 2. Academic Subject Code MATH  
3. Course Number M260 (must be cleared with University Enrollment Services) 4. Instructor Faculty/Staff  
5. Course Title Combinatorial Counting and Probability

Recommended Abbreviation (Optional) \_\_\_\_\_  
(Limited to 32 Characters including spaces)

6. First time this course is to be offered (Semester/Year): Fall 2003

7. Credit Hours: Fixed at 2 or Variable from \_\_\_\_\_ to \_\_\_\_\_

8. Is this course to be graded S-F (only)? Yes \_\_\_\_\_ No X

9. Is variable title approval being requested? Yes \_\_\_\_\_ No X

10. Course description (not to exceed 50 words) for Bulletin publication: P: One of the following M208, M215 or M211. Permutations, combinations, counting principles, tree diagrams, binomial theorem, statistical experiments, conditional probability, independent events, random variables, probability density, cumulative distribution, expected values, standard deviations, binomial, Poisson, normal distribution, and the central limit theorem. (Credit not given for both M260 and M365.)

11. Lecture Contact Hours: Fixed at 2 or Variable from \_\_\_\_\_ to \_\_\_\_\_

12. Non-Lecture Contact Hours: Fixed at 0 or Variable from \_\_\_\_\_ to \_\_\_\_\_

13. Estimated enrollment: 30-40 of which 0 percent are expected to be graduate students.

14. Frequency of scheduling: Annual-Fall Will this course be required for majors? No

15. Justification for new course: An elementary probability course intended to meet probability needs of computer science students.

16. Are the necessary reading materials currently available in the appropriate library? Yes

17. Please append a complete outline of the proposed course, and indicate instructor (if known), textbooks, and other materials.

18. If this course overlaps with existing courses, please explain with which courses it overlaps and whether this overlap is necessary, desirable, or unimportant.

19. A copy of every new course proposal must be submitted to departments, schools, or divisions in which there may be overlap of the new course with existing courses or areas of strong concern, with instructions that they send comments directly to the originating Curriculum Committee. Please append a list of departments, schools, or divisions thus consulted.

Submitted by: [Signature] Date 10/15/02  
Department Chairman/Division Director

Approved by: [Signature] Date 11/22/02  
Dean

[Signature] Date 2/02/03  
Dean of Graduate School (when required)  
Chair, Senate Curriculum Committee

Chancellor/Vice-President \_\_\_\_\_ Date \_\_\_\_\_  
University Enrollment Services \_\_\_\_\_ Date \_\_\_\_\_

After School/Division approval, forward the last copy (without attachments) to University Enrollment Services for initial processing, and the remaining four copies and attachments to the Campus Chancellor or Vice-President.

## **M260 – Combinatorial Counting and Probability (2 Credits)**

This course is intended to meet the probability needs of computer science majors.

**Prerequisite:** One of the following: M208, M215 or M211

**Instructors:** Mathematical Sciences department faculty

**Suggested Text:** Not identified at this time

### **Course Description:**

Combinatorics is a time-honored branch of mathematics concerned with counting, arranging, and ordering. Applications of combinatorics are rich in both diversity and number. Users range from a computer scientist studying queueing priorities to a biologist trying to determine how many ways genes can be positioned along chromosomes. In this course, we will cover essential topics in combinatorics and probability. The topics are: the multiplication principle, permutations and combinations, addition principle, complementarity principle, tree diagrams, binomial theorem, the pigeon hole principle, elements in statistical experiments and probability, conditional probability, independent events, discrete and continuous random variables, probability density functions and cumulative distribution functions, expected values and standard deviations, binomial distribution, Poisson distribution, normal distribution, and central limit theorem.

- 
19. The only departments, schools, or division affected by the creation of this course are the Department of Mathematical Sciences and the Department of Computer and Information Sciences at Indiana University South Bend, both of which cooperated in the design of the course.