

APPLICATION FOR NEW COURSE

1. Submitted by College of _____ Date _____

Department/Division offering course _____

2. Proposed designation and Bulletin description of this course

a. Prefix and Number _____ b. Title* _____

*NOTE: If the title is longer than 24 characters (including spaces), write
A sensible title (not exceeding 24 characters) for use on transcripts _____

c. Lecture/Discussion hours per week _____ d. Laboratory hours per week _____

e. Studio hours per week _____ f. Credits _____

g. Course description

h. Prerequisites (if any)

i. May be repeated to a maximum of _____ (if applicable)

4. To be cross-listed as

Prefix and Number

Signature, Chairman, cross-listing department

5. Effective Date _____ (semester and year)

6. Course to be offered Fall Spring Summer

7. Will the course be offered each year? Yes No
(Explain if not annually)

8. Why is this course needed?

9. a. By whom will the course be taught? _____

b. Are facilities for teaching the course now available? Yes No
If not, what plans have been made for providing them?

10. What enrollment may be reasonably anticipated? _____

11. Will this course serve students in the Department primarily? Yes No

Will it be of service to a significant number of students outside the Department?
If so, explain. Yes No

Will the course serve as a University Studies Program course? Yes No

If yes, under what Area? _____

12. Check the category most applicable to this course

- traditional; offered in corresponding departments elsewhere;
- relatively new, now being widely established
- not yet to be found in many (or any) other universities

13. Is this course part of a proposed new program:
If yes, which? Yes No

14. Will adding this course change the degree requirements in one or more programs?*

If yes, explain the change(s) below Yes No

15. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

16. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.

17. Within the Department, who should be contacted for further information about the proposed course?

Name _____ Phone Extension _____

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.

Signatures of Approval:

_____	_____
Department Chair	Date
_____	_____
Dean of the College	Date
_____	_____
	Date of Notice to the Faculty
_____	_____
*Undergraduate Council	Date
_____	_____
*University Studies	Date
_____	_____
*Graduate Council	Date
_____	_____
*Academic Council for the Medical Center	Date
_____	_____
*Senate Council (Chair)	Date of Notice to University Senate

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL

Application for New Course
MA 614

Course description: An introduction to the basic notions and techniques in enumerative combinatorics. Topics include generating functions, the principle of inclusion and exclusion, bijections, recurrence relations, partially ordered sets, the Möbius function and Möbius algebra, the Lagrange inversion formula, the exponential formula and tree enumeration. Prereq: A graduate course in linear algebra or consent of instructor.

Enumerative Combinatorics Math 614

Outline of Topics

1. Generating Functions.
2. Stirling Numbers of the First and Second Kind.
3. Permutations and Permutation Statistics.
4. q -analogues.
5. The Twelfefold Way.
6. Principle of Inclusion-Exclusion.
7. Partially Ordered Sets and Lattices.
8. The Fundamental Theorem of Distributive Lattices.
9. The Incidence Algebra.
10. The Möbius Inversion Formula.
11. The Möbius Function and Computational Techniques.
12. The Möbius Algebra.
13. Semi-modular Lattices and Hyperplane Arrangements.
14. The Zeta Polynomial.
15. Rank-selection.
16. R -labelings.
17. Eulerian Posets.
18. Exponential Generating Functions.
19. The Exponential Formula.
20. Tree Enumeration.
21. Lagrange Inversion Formula.

Textbook:

1. Richard P. Stanley, Enumerative combinatorics. Vol. 1. Cambridge Studies in Advanced Mathematics, 49. Cambridge University Press, Cambridge, 1997. (required)

Enumerative Combinatorics
Math 614

References:

1. Richard P. Stanley, Enumerative combinatorics. Vol. 2. Cambridge Studies in Advanced Mathematics, 62. Cambridge University Press, Cambridge, 1999.
2. J. H. van Lint and R. M. Wilson, A course in combinatorics. Second edition. Cambridge University Press, Cambridge, 2001.
3. Herbert S. Wilf, Generatingfunctionology. Second edition. Academic Press, Inc., Boston, MA, 1994.

Course Description:

This course is an introduction to the basic notions and techniques in Enumerative Combinatorics. The material has applications to active areas of research, including polytopal theory, hyperplane arrangements, computational commutative algebra, representation theory and symmetric functions. Similar courses are being taught at other universities, such as MIT, Michigan State and the University of Minnesota.