FLORIDA ATLANTIC UNIVERSITY™

Graduate Programs—NEW COURSE PROPOSAL

UGPC APPROVAL _____
UFS APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
ONLINE _____
MISC _____

DEPARTMENT NAME:
MATHEMATICAL SCIENCES

COLLEGE OF:
SCIENCE

RECOMMENDED COURSE IDENTIFICATION:

PREFIX MAT **COURSE NUMBER** ____6516_____ **LAB CODE** (L or C) _____

(*TO OBTAIN A COURSE NUMBER, CONTACT ERUDOLPH@FAU.EDU)*

COMPLETE COURSE TITLE

PROBLEM SOLVING AND RECREATIONAL MATHEMATICS

EFFECTIVE DATE
(first term course will be offered)

_____

CREDITS:
3

TEXTBOOK INFORMATION:
G. POLYA, MATHEMATICS AND PLAUSIBLE REASONING, 2 VOLUMES, PRINCETON, 1990.

GRADING *(SELECT ONLY ONE GRADING OPTION)*: **REGULAR** __x___ **PASS/FAIL** _____ **SATISFACTORY/UNSATISFACTORY** _____

COURSE DESCRIPTION, NO MORE THAN 3 LINES:

Introduction to mathematical problem solving literature, principles and methods of problem solving, and analysis of selected famous problems in recreational mathematics.

PREREQUISITES W/MINIMUM GRADE:*
MODERN ANALYSIS (MAA4200) OR PERMISSION BY INSTRUCTOR

COREQUISITES:
NONE

OTHER REGISTRATION CONTROLS (MAJOR, COLLEGE, LEVEL):

PREREQUISITES, COREQUISITES & REGISTRATION CONTROLS SHOWN ABOVE WILL BE ENFORCED FOR ALL COURSE SECTIONS.
****DEFAULT MINIMUM GRADE IS D-.***

MINIMUM QUALIFICATIONS NEEDED TO TEACH THIS COURSE:
PH. D IN MATHEMATICS

Other departments, colleges that might be affected by the new course must be consulted. List entities that have been consulted and attach written comments from each.

Paul Yiu, yiu@fau.edu, (561)-297-2481

_____
Faculty Contact, Email, Complete Phone Number

SIGNATURES

SUPPORTING MATERIALS

Approved by:	*Date:*
Department Chair: _____	_____
College Curriculum Chair: _____	_____
College Dean: _____	_____
UGPC Chair: _____	_____
Dean of the Graduate College: _____	_____

Syllabus—must include all details as shown in the UGPC Guidelines.

Written Consent—required from all departments affected.

Go to: *http://graduate.fau.edu/gpc/* to download this form and guidelines to fill out the form.

Email this form and syllabus to *sfulks@fau.edu* and *eqirjo@fau.edu* one week ***before*** the University Graduate Programs Committee meeting so that materials may be viewed on the UGPC website by committee members prior to the meeting.

MAT 6516 Problem Solving and Recreational Mathematics (3 credits)

Catalogue description: Introduction to mathematical problem solving literature, principles and methods of problem solving, and analysis of selected famous problems in recreational mathematics.

Course objectives: Students will

1. be exposed to some famous problems and their solutions,
2. master some basic problem solving techniques, and
3. be able to solve problems up to the level of elementary mathematical analysis.

Prerequisites: Modern Analysis (MAA4200) or permission of instructor.

Corequisites: None.

Recommended Texts

1. G. Polya, Mathematics and Plausible Reasoning, 2 volumes, Princeton, 1990.

Bibliography

1. G. Polya, How to Solve It? Princeton, 1953.
2. G.Polya, Mathematical Discovery, 2 volumes, Wiley, 1967.
3. R. Honsberger, In Polya's Footsteps, MAA, 1997.
4. One Hundred Great Problems in Mathematics, Dover reprint.
5. C.W.Trigg, What is recreational mathematics?, Math. Magazine, 51 (1978) 18—21.
6. P. Yiu, Recreational Mathematics, Florida Atlantic University Lecture Notes, 2009.
7. Various mathematical journals with problem departments, including The American Math. Monthly, Mathematics Magazine, College Mathematics Journal, and Crux Mathematricorum.

Syllabus (representative)

1. Problems in elementary number theory (1 week)
2. Mathematical games (1 week)
3. Solution of Diophantine equations (1 week)
4. Geometry Problems (1 week)
5. Interplay between number theory and geometry (2 weeks)
6. Summation of finite series (1 week)
7. Geometric constructions (1 week)
8. Dissection problems (1 week)
9. Prime numbers (1 week)
10. Permutations (1 week)
11. Maxima and minima without calculus (1 week)
12. Calculus problems (1 week)
13. Summation of infinite series (1 week)
14. Probability (1 week)
15. Selected famous historical problems (1 week)

    Total : 16 weeks

Method of Instruction: Lecture.
Assessment: Homework 40%/Journal 20%/ Tests 20%/Exam 20%
Grading Criteria: 92--100% A; 90--91% A-; 88-89% B+; 82—87% B; 80—81% B-; 78—79% C+; 70—77% C; 60—69% D; 0—59% F.

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Ration – SU 133 (561-297-388), in Davie – MOD 1 (954-226-1222), in Jupiter – SU 117 (561-799-8585), or at the Treasure Coast – CO 128 (772-873-3305), and follow all OSD procedures.

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, is

considered a series breach of these ethical standards, because it interferes with the University mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the University community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see http://www.fau.edu/regulations/chapter4/4/001_Honor_Code.pdf