# Graduate Programs—NEW COURSE PROPOSAL

**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**

## Credits:
- **3**

## Textbook Information:
- **G. Polya, Mathematics and Plausible Reasoning, 2 volumes, Princeton, 1990.**

## Grading (Select Only One Grading Option):
- **Regular**
- **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 with Minimum Grade:
- **Modern Analysis (Maa4200) or Permission by Instructor**

## 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

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## Signatures

**Approved by:**
- Department Chair: ____________________________
- College Curriculum Chair: ____________________________
- College Dean: ____________________________
- UGPC Chair: ____________________________
- Dean of the Graduate College: ____________________________

**Date:**

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

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FAUnewverseGrad—Revised May 2008
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

Bibliography
4. One Hundred Great Problems in Mathematics, Dover reprint.
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 Raton – 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