

## **Spring 2016 Course Syllabus -Mathematics 4096**

**Course:** Mathematics 4096.001

**Course Title:** Senior Problem solving

**Time:**TR 3:30pm - 4:50pm

**Place:** Wachman 1036

**Office Hours:** by appointment.

**Instructor:** Mitrea, Irina, and Awala, Hussein A.

**Instructor Office:** Wachman 1020 and Wachman 517.

**Instructor Email:** [imitrea@temple.edu](mailto:imitrea@temple.edu) and [Hussein.awala@temple.edu](mailto:Hussein.awala@temple.edu)

**Instructor Phone:** 215-204-6741.

**Course Description:** This course provides an introduction to a variety of problem solving techniques in mathematics. The plan is to explore a number of classical topics ranging from calculus, probability, basic number theory, and introductory linear algebra, to the mathematics behind secret codes and to exploring the periodicity of Escher patterns.

This is a writing intensive course designed to hone students' scientific writing skills and to train them as clear and accurate communicators of mathematical ideas.

This course will strengthen students' problem solving abilities in mathematics and will open the door to conducting independent mathematical research. In addition, students are expected to gain experience in (1) effective written and oral communication of basic and advanced mathematics, (2) reading mathematical literature (popular and/or research based), and (3) using technical typesetting (LaTeX), mathematical software (e.g., Matlab) and online tools (e.g., MathSciNet).

**Prerequisite:** One of Math 3138 or Math 3142 and one of Math 3096 or Math 3098 with a minimum grade requirement (see the official course catalog).

**References:** We shall use the book "How to Prove It: A Structured Approach", 2nd Edition by Daniel J. Velleman, as a guiding reference. However, there is no single book covering our entire selection of topics. Instead, we will make background material freely available throughout the semester, either on Blackboard or via Email. It is crucial that you take good class notes.

Course website: <http://www.math.temple.edu/~imitrea/mathpage4096.html>

### **Examinations:**

- Prelim I: Thursday, February 25th, 3:30pm - 4:50pm.
- Prelim II: Thursday, March 31st, 3:30pm - 4:50pm.
- Final: Tuesday, May 3rd, 1:00pm - 2:30pm.

**Grading:** Prelims count 20% each, the final 20%, 20% homework, and the remaining 20% is apportioned among writing project (with revisions) and/or in-class presentation.

**Grading Scale:** A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: <60

**Homework:** To be handed in during lecture meeting. Do all problems assigned. These will be graded and returned to you the next week. Please be sure that your work is legible.

No late homework will be accepted. You may work cooperatively on assignments provide you write up the solution yourself, and put a note on your homework indicating the names of anyone you worked with.

**Incomplete:** The grade I (an "incomplete") is reserved for extreme circumstances. It is necessary to have completed almost all of the course with a passing average and to file an incomplete

contract specifying what is left for you to do. To be eligible for an I grade you need a good reason and you should have missed not more than 25% of the first nine weeks of classes. If approved by the Mathematics Department chair and the CST Dean's office, the incomplete contract must include a default grade that will be used in case the I grade is not resolved within 12 months.

**Attendance and absences:** You are responsible for the material covered in class, whether you attend or not. You are also responsible for the announcements made during class; these may include changes in the syllabus.

**Academic honesty** is fundamental to the activities and principles of a University. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. When in doubt about plagiarism or collaboration, consult the course instructor. The academic community regards academic dishonesty as an extremely serious matter, with serious consequences that range from probation to expulsion.

**Disability Accommodations:** Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at (215) 204-1280, 100 Ritter Annex, to coordinate reasonable accommodations for students with documented disabilities.

**Student and Faculty Academic Rights and Responsibilities:** Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02).

**Words of advice:** I encourage you to ask questions about the HW. Keep up with the latest materials covered; experience shows that, otherwise, you are likely to get poor grades on the exams. If you miss a class, make sure you get the notes from someone else who attended it. The professor will not assist any absentee to find out what happened in his/her absence. Hard work and regular attendance will get you through this course.

### **Important registration/add/drop dates:**

Students will be charged for a course unless dropped by the Drop/Add deadline date given below.

Spring Begins: Monday January 11, 2016

Classes Begin: Monday January 11, 2016

Martin Luther King Day: Monday January 18, 2016

Course Add/Drop Deadline (tuition refund): Friday January 22, 2016

Course Withdraw Deadline (no refund): Tuesday March 15, 2016

Spring Break: Monday-Friday February 29 - March 4, 2016

Classes End: Monday April 25, 2016

Study Days: Tuesday-Wednesday April 26 - April 27, 2016

Exam Week: Thursday-Wednesday April 28 - May 4, 2016

Honors Ceremonies: Thursday May 5, 2016

Commencement Ceremonies: Friday May 6, 2016

Diploma Date: Friday May 6, 2016

During the first two weeks of the fall or spring semester or summer sessions, students may withdraw from a course with no record of the class appearing on the transcript. In weeks three through nine of the fall or spring semester, or during weeks three and four of summer sessions,

the student may withdraw with the advisor's permission. The course will be recorded on the transcript with the instructor's notation of "W," indicating that the student withdrew. After week nine of the fall or spring semester, or week four of summer sessions, students may not withdraw from courses. No student may withdraw from more than five courses during the duration of his/her studies to earn a bachelor's degree. A student may not withdraw from the same course more than once. Students who miss the final exam and do not make alternative arrangements before the grades are turned in will be graded F.