Great Ideas in Mathematics

Semester: Fall 2015
Course Number: MATH-SH 010
Credit Hours: 4
Prerequisite: None
Instructor: Yuning Liu
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Office: 1120
Office Hours: Monday 4-5pm

CLASSROOM INFORMATION
Classroom: Pudong 603
Time: 14:45 until 16:00
Day(s): M W
Recitations: F 14:45 until 16:00

EXPECTED WEEKLY TIME COMMITMENT HOURS/WK.
Lecture: 2.5
Supplemental Meeting: Recitation 1.25
Weekly Total: 3.75
Semester Total (× 14): 52.5

COURSE DESCRIPTION
This one-semester course serves as an introduction to great ideas in mathematics. During the course we will examine a variety of topics chosen from the following broad categories.

1. A survey of pure mathematics: What do mathematicians do and what questions inspire them ?
2. Great works: What are some of the historically big ideas in the field ? Who were the mathematicians that came up with them ?
3. Mathematics as a reflection of the world we live in: How does our understanding of the natural world affect mathematics (and vice versa).
4. Computations, proof, and mathematical reasoning: Quantitative skills are crucial for dealing with the sheer amount of information available in modern society.
5. Mathematics as a liberal art: Historically, some of the greatest mathematicians have also been poets, artists, and philosophers. How is mathematics a natural result of humanity’s interest in the nature of truth, beauty, and understanding? Why is math a liberal art?!

TEACHING AND LEARNING METHODS
This course, which meets two days a week with one recitation session, is organized around lectures, readings, problem sets, and discussion.

ASSIGNMENTS AND EXAMS
• There will be weekly written homework assignments. Students may work in groups on the homework assignments. Nevertheless, each student is expected to submit a separate homework with an acknowledgment of collaborators. Students are expected to turn in the homework in handwritten form when due (when it is to be collected), which is at the beginning of class on the stipulated day. Submission of homework in a timely manner is a demonstration that the student is actively participating in the course. Late homework will not be accepted.
There will be one midterm exam (DATES, LOCATIONS) and one cumulative final exam (DATE, LOCATION). Exams will be closed book and closed note, and calculators will not be allowed for exams.

**Participation and Attendance Policies**

- Attendance is expected. Students are expected to arrive to class on time and stay to the end of the class period. Participation is an essential part of learning in this course. Students are expected to participate in all facets of classroom learning.

- Cell phones, smartphones and similar electronic devices are a disturbance to both students and instructors. All such electronic devices must be turned off prior to the start of each class meeting. Laptops are not permitted in class. In addition, photographing or filming the instructor/classmates is not allowed.

**Ethical Guidelines and Student Code of Conduct**

All students are expected to follow the New York University Shanghai Honor Code as presented in the NYUSH Undergraduate Bulletin. A student’s responsibilities include, but are not limited to, the following:

- A duty to acknowledge the work and efforts of others when submitting work as ones own. Ideas, data, direct quotations, paraphrasing, creative expression, or any other incorporation of the work of others must be clearly referenced.

- A duty to exercise the utmost integrity when preparing for and completing examinations, including an obligation to report any observed violations.

**Course Text**


**Grading Policy and Components of the Final Grade**

Homework: 20%
Midterm: 30%
Final: 40%
Attendance and performance in class: 10%
Your lowest 2 homework scores will be dropped.