GREAT IDEAS IN MATHEMATICS SYLLABUS
FALL 2017 CORE-UA 110

AN INVITATION TO A MATHEMATICAL EXPLORATION

A musician wakes from a terrible nightmare. In his dream he finds himself in a society where music education has been made mandatory. . . . Since musicians are known to set down their ideas in the form of sheet music, these curious black dots and lines must constitute the “language of music”. It is imperative that students become fluent in this language if they are to attain any degree of musical competence; indeed, it would be ludicrous to expect a child to sing a song or play an instrument without having a thorough grounding in music notation and theory. Playing and listening to music, let alone composing an original piece, are considered very advanced topics and are generally put off until college, and more often graduate school. . . .

Waking up in a cold sweat, the musician realizes, gratefully, that it was all just a crazy dream. Of course! he reassures himself, “No society would ever reduce such a beautiful and meaningful art form to something so mindless and trivial; no culture could be so cruel to its children as to deprive them of such a natural, satisfying means of human expression. How absurd!”

-Paul Lockhart, A Mathematician’s Lament

There are two main goals in this course: (1) to learn about new kinds of mathematical ideas that most of us had not seen before and (2) to gain a new appreciation for mathematics. Just as we cannot gain a real appreciation for music or arts by simply listening to lectures about music or arts, we cannot truly appreciate mathematics by only listening to lectures about math. In this course, we will be doing mathematics. You are not expected to be “good at math” in a conventional sense, but you are asked to be curious and to be willing to get your hands dirty (with math!).

We will study a selection of mathematical topics such as number theory, notions of infinity, symmetry, geometry, graph theory, and topology.

INSTRUCTOR

Name  Corrin Clarkson  Email  clarkson@nyu.edu  Office  WWH 721  
Office hours  Mon. 10-10:50 WWH 705, Thur. 2-2:50 WWH 505 and by appointment  
Questions  via Piazza

Class Meetings  Tues. Thur. 3:30-4:45PM, SILV 405
Teaching Assistants

<table>
<thead>
<tr>
<th>Name</th>
<th>Office Hours</th>
<th>Discussion Sections</th>
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<tr>
<td>TBA</td>
<td>TBA</td>
<td>Section 1: F 8am-9:15am, 25W4 C-8</td>
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<tr>
<td>???@nyu.edu</td>
<td>TBA</td>
<td>Section 2: F 9:30am-10:45am, 7E12 LL27</td>
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<td>Harrison Hsu</td>
<td>TBA</td>
<td>Section 3: F 11am-12:15pm, BOBS LL149</td>
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<tr>
<td>???@nyu.edu</td>
<td>TBA</td>
<td>Section 4: F 12:30pm-1:45pm, 25W4 C-8</td>
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Course Materials


Assessment

The grades in this course will be determined by six different forms of assessment: participation, homework, quizzes, journals, final project and exams. The following table outlines the portion of the grade corresponding to each of the assessment types:

- Participation  5%
- Quizzes        15%
- Homework       15%
- Journals       5%
- Final Project  10%
- Exams          50%

Participation (5%). You are required to attend class meetings and your discussion section. Among other things, you will receive participation credit for answering clicker questions, submitting worksheets, and taking part in class discussions. Bring your clicker to every lecture!

Quizzes (15%). Quizzes will take place on Fridays during discussion section. See the Course Schedule for dates and corresponding textbook sections. The lowest quiz grade will be dropped.

Written Homework (15%) and Journal Assignments (5%). Homework and journal assignments will be due on **Mondays at 11:59pm** and must be submitted through gradescope. For a detailed schedule of these assignments, see the Course Schedule. **Late** and **emailed homework** will not be accepted. The lowest homework score will be dropped; scores for journal assignments will not be dropped.

Homework assignments will primarily consist of problems similar to those in the textbook. The journal assignments will consist of writing prompts which will ask you to relate the mathematical ideas we learn in class to other topics.

Final Project (10%). Like the journal assignments, the final project is an opportunity for you to connect the ideas from this course to other topics. Unlike the journal assignments, you will be free to choose your own topic for the final project. A project proposal outlining your choice of topic will be due on **Monday, November 27th at 11:59PM**; this is the Monday after Thanksgiving Break. The final project will be due on **Friday, December 15th at 11:59PM**.
Exams (50%).

- Midterm 1  October 17 (in class)  Ch 2, 3
- Midterm 2  November 21 (in class)  Ch 4, 6
- Final Exam  December 21, 4pm-5:50pm (location TBA)  All

The lowest exam is dropped. The remaining two exams are weighed equally (25% each).

**Tips for an enjoyable semester!**

- **Get your hands dirty in class!** Work on problems in class. Participate when we solve problems together. Get to know your classmates and help each other (but write up your homework individually!).
- **Spend time** on all assignments. This is your opportunity to wrestle with and to internalize new ideas introduced in class.
- **Get help** early:
  - **Attend instructor’s office hours.** Office hours schedule, course information, homework assignments, and grades will be posted on Piazza.
  - **Forum:** Use the course Piazza page to post questions and to respond to classmates’ questions.

**Course policies**

There will be no accommodation for missed homework, quizzes, and exams, except in the cases of illness and observance of religious holidays. In the case of observance of religious holidays, you must make arrangements to make up missed work **at least one week in advance.** In the case of illness, you must present a detailed letter from a physician/health care provider. Students with disabilities can make arrangements at the Moses Center.

**Honor Code**

We value integrity and do not tolerate academic dishonesty. You are expected to uphold academic integrity as specified by the university and the College of Arts and Sciences (http://cas.nyu.edu/ewp/writing-resources/statement-on-academic-integrity.html).