MA 330, History of Mathematics
University of Kentucky, Spring 2019

Instructor: Jonathan Clark
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Class Time/Location:
Office Location/Hours: POT 757, MWF 11:00 AM – 12:00 PM

Required Course Texts:
A History of Mathematics: From Mesopotamia to Modernity, 2005, Luke Hodgkin
ISBN-10: 0198529376

Various articles, handouts to be distributed in class and through Canvas

Course Description and Learning Outcomes

This course aims to inform our vision of how mathematics develops, creating for ourselves a cohesive picture of mathematics. Over the course of the semester, we will study connections between mathematics and the non-mathematical world, helping us understand what drives our intellectual values, both individually and collectively.

How have our intellectual values changed over time? What makes a theorem important? What does that even mean? What makes a theorem beautiful? Or useful? What is the role and purpose of proof in mathematics? How do we as mathematical learners and practitioners fit into the contemporary culture of mathematics?

Students in MA 330 will deepen their understanding of

(1) Greek, Egyptian, and Mesopotamian mathematics, with a focus on arithmetic, number theory, Euclidean geometry, and rhetorical algebra;
(2) how the Islamic mathematicians blended these mathematical traditions with traditions from the Indian subcontinent;
(3) how algebra and calculus were initially regarded and practiced, and how this differs from contemporary use;
(4) the development of mathematical approaches to infinite processes; and
(5) the role, purpose, and development of mathematical proof.

Further, students in MA 330 will

(6) enhance their reading, writing, and oral communication skills in mathematical contexts;
(7) increase their persistence and use of self-monitoring when working on mathematics;
(8) develop an understanding of the global nature of mathematical culture, and the importance of cultural interactions in mathematical history; and
(9) reflect on contemporary mathematical culture, their place in it, and their mathematical values.

Course Structure

Our activities in this course will directly serve the student learning outcomes listed above. Class time will usually not be spent in a formal lecture style. Instead, we will spend time in class:

- discussing the readings with the entire class,
- working through math in the readings in groups,
- working on problem sets related to the readings in groups,
- presenting problem progress and solutions at the board, and
- offering and receiving constructive criticism regarding our ideas and understanding.

You should expect to spend *at least* six hours per week outside of class for MA 330.

Assessment and Grading

Your course grade will be determined by assessment of "homework", exams, and a series of essays. The grading scale will be the traditional 10 point scale: A>=90, B>=80, C>=70, D>=60, E otherwise, weighted as follows:

Midterm Exam: 15%
Final Exam: 25%
Homework: 30%
Essays: 30%

On "Homework"

- Assignments will be given regularly. Some portions of the assignments must be typed.
- WARNING: No late work will be accepted.
- You should work with other students and share your ideas as part of our course community. However, you should not let your collaboration devolve into letting someone else do all the "hard parts" and then copying their answers.
- Some of the "homework" may consist of quizzes over assigned reading, or short 1-2 question quizzes at the beginning of class.
- Four Rules for Assignments:
  - Don't talk to anyone about the problems until you have made a genuine effort to solve them yourself.
  - You must write up the solutions on your own.
  - For each problem, write the names of any other people (students, tutors, etc) with whom you shared ideas.
  - You may not search the internet for solutions to problems. We will use our creativity, course texts, and peer collaboration

Course Expectations and Classroom/Learning Accomodations

All students are expected to follow the academic integrity standards as explained in the University Senate Rules, particularly Chapter 6, found at:

http://www.uky.edu/Faculty/Senate/rules regulations/index.htm

Turn off all cell phones, pagers, etc. prior to entering the classroom. You are not to use your cell phones, pagers, or other electronic communication devices during class. An attitude of respect for and civility towards other students in the class and the instructor is expected at all times.

Any student with a disability who is taking this course and needs classroom or exam accommodations should contact the Disability Resource Center. This should be done as early as possible, to ensure adequate time for making accommodations.