
Senior Colloquium: *History of Mathematics*

Math 400 Spring 2020

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Fowler 310 T 1:30pm - 2:55pm

<http://sites.oxy.edu/ron/math/400/20/>

INSTRUCTOR Ron Buckmire ~ Johnson 113 ~ x2536 ~ ron@oxy.edu

OFFICE HOURS I am in my Associate Dean's office (Johnson 113) from around 9am until around 5pm most week days. However, I also often have meetings which take me out of my office. My official office hours (which I have reserved for interacting with students) for Spring 2020 are **T 4-5pm, R 2-3pm, F 1-2pm**.

I am readily accessible by e-mail at ron@oxy.edu and by phone at **323-259-2536**. If you need to see me at a time not specified here, then contact me and make an appointment.

I strongly recommend that you come to office hours at least once in the semester. Although it is not mandatory, I do ask that you come and see me for a brief visit at some point early in the semester so that I can learn more about your background, interests and expectations for the semester.

TEXTBOOK(S) We will be using multiple sources of information during the class.

- **(REQUIRED)** *A History of Mathematics*, 3rd edition by Carl B. Boyer and Uta C. Mertzbach. Wiley, 2011. ISBN-13 978-0470525487.
- **(SUPPLEMENTAL)** *A History of Mathematics, An Introduction*, Third Edition by Victor J. Katz Addison-Wesley, 2009. ISBN-13 978-0321387004.
- **(SUPPLEMENTAL)** *An Introduction to the History of Mathematics*, Sixth Edition by Howard Eves. Cengage, 1990. ISBN-13 978-0030295584.

OTHER SOURCES In addition to the required textbook above I would encourage students to have access to some of the following

- Mathematical Association of America's *Convergence* journal on the History of Mathematics
- Online version of Euclid's *Elements*
- Donald Allen's *History of Mathematics* online textbook
- David Pengelley's *Teaching with Original Historical Sources in Mathematics* website
- *History of Mathematics Archive* at University of St. Andrew's, Scotland

COURSE WEBSITE <http://sites.oxy.edu/ron/math/400/20/>

COURSE DESCRIPTION This weekly seminar course is a survey of selected topics in the history of mathematics. The Spring semester seminar will (roughly) cover material starting from the early Eighteenth Century (the development of the Calculus and the birth of Leonhard Euler in 1707) until the Twenty-First Century and the recognition of Maryam Mirzakhani and Karen Uhlenbeck. Through exposure and access to primary historical sources and other materials, students will gain deeper insights into mathematical concepts they have

seen before, be introduced to new mathematical ideas, and learn about the history and development of mathematics as it used today. The objective of the course is for students to synthesize and connect various mathematical ideas as a capstone experience for the major. Students will present a project in written and oral form at the end of the course.

COURSE OBJECTIVES This course is designed so that students will

- be exposed to the human side of mathematics and the people involved in the development of mathematical concepts.
- appreciate the significant contributions and connections mathematics and mathematicians have with our culture.
- receive an overview of a wide variety of mathematics topics, so students can see how various mathematics concepts and results are related to each other, and how and where important ideas come from.
- improve their written and oral communication skills in the context of mathematics.
- use primary sources to see the ways that various mathematical concepts were initially presented and contrast this with more modern approaches.
- learn about contributions of female and non-western mathematicians to the mathematics discipline.

STUDENT LEARNING OUTCOMES The official Departmental learning outcomes of this class are:

- Outcome 2.1: Students will complete an individual or group project related to the content of an upper division mathematics course, and present the results of the project through a paper, poster, or talk.
- Outcome 3.1: Students will write a clear and well-organized paper in the model of a scholarly paper in the field.
- Outcome 3.2: Students will give a clear and well-organized presentation on a mathematical topic.
- Outcome 5.1: Students are able to define and deploy important terms in multiple areas of advanced mathematics.
- Outcome 5.2: Students are able to provide examples that illustrate important concepts found in multiple areas of advanced mathematics.

COURSE GRADE Your course grade will be composed of the following 500 point scheme:

- **50 points** Attendance and Participation
- **150 points** Homework & Quizzes
- **300 points** Course Project (paper and presentation)

Grades will be computed as **A**: 460+ points, **A-**: 450+ points, **B+**: 440+ points, **B**: 410+ points, **B-**: 410+ points, et cetera. NOTE: There will be *multiple* extra credit opportunities.

FINAL EXAM There will be no final exam in this class. There will be a midterm quiz (50 points) in the second half of the semester (probably March 24, 2020).

COURSE PROJECT The course project will be an opportunity for students to use historical knowledge to discuss their understanding of a mathematical concept selected from one of their other 300-level Mathematics classes. The course project is worth 300 points and will consist of

- **100 points** Project Proposal & Paper Draft
- **100 points** 8-10 minute Oral Presentation on Tuesday April 28
- **100 points** 8-10 page (2000-2500 words) Paper due on Tuesday May 5 at 5pm.

CLASSROOM EXPECTATIONS Here are some expectations I have for behavior in the classroom

Inclusiveness I strive to foster an inclusive classroom environment. Please be respectful of your peers and feel free to come to us with any concerns. We are allies. You should know that we are not confidential resources (those you will find here).

Class Updates Students will be expected to regularly access the course website and to frequently check Oxy email for course announcements.

Electronic Devices Technology in the classroom is great as a tool, not as a distraction. You may use any device of your choice, but don't let your computers, phones, etc. take you off-task – or distract your neighbors.

ATTENDANCE POLICY Attendance and participation in class are a significant component of the course grade since this is a small seminar class. We will be working together to analyze and understand the course material together. However, if there is a medical issue or family emergency please let me know; I do not want you coming to class if you are seriously ill, and I recognize that other life issues can sometimes arise unexpectedly. If you must miss class due to an official Oxy event, or due to reasons of faith or conscience, please let me know as early in the semester as possible.

LATE WORK Students have one(1) opportunity to submit work late without any negative grading consequence (before the next class). This policy does not apply to the course project final paper or draft. For each of those the policy is a geometric loss of points (10% first 24 hours, another 20% second 24 hours, et cetera).

SYLLABUS CHANGES Any aspect of this syllabus is subject to change, at any time, although you will be notified of any changes in writing (probably by email).

OTHER NOTES Prof. Buckmire will be out of town Tuesday January 28.

COLLEGE POLICIES

Credit Hour Policy Math 400 is a 2-credit course. The expectation is that students will be devoting at least six(6) hours each week (including in-class time) on average working on this course.

Discrimination, Harassment and Retaliation The College seeks to maintain an environment of mutual respect among all members of its community. All forms of harassment and discrimination on the basis of sex, gender identity and expression, pregnancy, religion, creed, color, race, national or ethnic origin, ancestry, sexual orientation, medical condition, physical or

mental disability, age, marital status, veteran status, family care leave status, political affiliation or any other class protected by federal, state or local law destroy the foundation for such respect and are violations of this policy.

<https://www.oxy.edu/student-handbook/general-college-policies/discrimination-harassment-and-retaliation>

Accommodations for Reasons of Faith and Conscience Consistent with Occidental Colleges commitment to creating an academic community that is respectful of and welcoming to persons of differing backgrounds, we believe that students should be excused from class for reasons of faith and conscience without academic consequence. While it is not feasible to schedule coursework around all days of conviction for a class as a whole, faculty will honor requests from individual students to reschedule coursework, to be absent from classes that conflict with the identified days. Information about this process is available on the ORSL website: <https://www.oxy.edu/office-religious-spiritual-life>

Students with Disabilities Students with documented disabilities and learning differences who are registered with Disability Services are required to present their accommodation letter to the instructor at the beginning of each semester or as soon as possible thereafter. Any student who has, or thinks they may have, a physical, learning, or psychological disability may contact Disability Services at (323) 259-2969 to learn about available services and support. More information is available at <http://www.oxy.edu/disability-services>.

Academic Ethics Students are expected to comply with the Student Handbook, in particular the section on Academic Ethics. Whenever outside sources are used, they must be properly credited. <https://www.oxy.edu/student-handbook/academic-ethics/academic-ethics>.

Title IX In the event that you choose to write or speak about having experienced sexual or interpersonal violence, including sexual assault, dating violence, domestic violence, stalking, sexual exploitation or any other form of sexual harassment, federal and state education laws require that, as your instructor and a designated Responsible Employee, I notify the Title IX office. They will contact you to let you know about accommodations and support services at Oxy and reporting options both on and off-campus.

If you do not want the Title IX Office notified, instead of disclosing this information to your instructor, you can speak confidentially with the following people on campus:

Marianne Frapwell, Survivor Advocate, Project SAFE (survivoradvocate@oxy.edu)

Emmons Counseling (For appointments, call: 323-259-2657)

Rev. Dr. Susan Young, Office of Religious and Spiritual Life (young@oxy.edu)

The sexual misconduct policy, along with additional resources, can be found at: <http://www.oxy.edu/sexual-respect-title-ix/policies-procedures>.

Writing Assistance The Writing Center (located on the Ground Floor of the Academic Commons) offers students from all disciplines two types of support to work on their writing: peer-to-peer, drop-in consultations with knowledgeable Writing Advisers, Sunday through Thursday from 7:00-11:00 p.m., and appointments with Faculty Writing Specialists from the Writing and Rhetoric department. Information about the Writing Center and a link to the appointment system is on the WC website: <https://www.oxy.edu/writing-center>