
Senior Comps

Math 400 Fall 2015

Thursdays 3:05-4:30pm Fowler 309

☉ 2015 Ron Buckmire

<http://sites.oxy.edu/ron/math/400/15/>

Instructor: Professor Ron Buckmire
Office: Fowler 323
Office Hours: MWF 4:00PM–5:00PM,
T 11AM–12PM
R 11AM–12PM
Office Phone: 323-259-2536 (x2536 on-campus)
Email: buckmire@oxy.edu
Website: <http://faculty.oxy.edu/ron/math/400/15/>

MEETING TIMES We will meet in Fowler 309 from 3:05pm to 4:30pm on Thursdays.

LEARNING GOALS The learning goals of this course are to facilitate student in achieving these particular Departmental Goals:

Goal 3 Students will communicate mathematics to others in both written and oral form.

Goal 5 : Students will explore at least one field of advanced mathematics in depth.

In particular the key goal of Math 400 (and the Senior Comprehensives Project in Mathematics) is to provide an opportunity for students to demonstrate their ability to grapple with a topic in advanced mathematics individually (in consultation and with assistance from a faculty advisor/mentor), and then to communicate their understanding of this topic in both written and spoken form.

DEADLINES At the end of fall semester, you will most likely receive a CIP (Course In Progress) for your grade in Math 400. Then, at the end of spring semester, you will receive a letter grade. Your grade in Math 400 will be determined as follows:

- Regular progress (10%)
- Comps proposal (10%)
- Comps paper (Penultimate draft 20% and Final draft 30%)
- Comps presentation (30% or 80%)

LATE WORK There is a stiff penalty for turning in work late! The penalty for n days late will be $2^{(n-1)}$ percentage points; e.g., if the final draft is 4 days late, it will count as $(60 - 2^3)\% = 52\%$ of the grade.

COMPS PAPER The paper should preferably be at most 15 pages long, double-spaced, and, if possible, have only one (main) source. We are not putting a strict lower limit on the number of pages, in order to emphasize that it is quality, not quantity, that matters most. Your paper should have substantial mathematical content that you have not seen previously (i.e., we want you to learn mathematics that is new to you) and is at an upper-division level. It should be content that is not currently covered in the upper-division courses that we offer at Oxy. Your mathematical writing should be precise and rigorous; and it should be explained clearly and with enough detail so that a mathematician not familiar with the topic will be able to follow it.

COMPS TALK The talk should be roughly 20 minutes long, with another 5 minutes reserved for questions at the end. The talk should be a well-prepared, previously rehearsed presentation, delivering mathematical content the student has learned in the process of engaging in their Senior Comprehensives project. This mathematical content should consist of content that is not currently covered in the upper-division courses that we offer at Oxy. The presentation will generally be expected to use slides and should contain the following sections:

- Introduction (or Background or Motivation)
- A Main Idea (or Focal Result or Project Goal or Thesis Statement)
- Conclusion (or Future Work or Putting Results In Context)
- References (or Bibliography)
- Thanks (or Acknowledgements)

In addition to these required sections of the talk noted above during your talk you must also:

- attribute appropriately to other sources of material during the talk
- include at least one illustrative example
- include technical details of at least one mathematical fact
- prepare for rigorous questions on any aspect of the material

Attendance You are responsible for everything that goes on in every class meeting (such as announcements). This means even if you miss a class for a valid reason, *it is your responsibility* to contact me and find out what you missed.

CLASS MAILING LIST When necessary, announcements will be made via the class mailing list, in addition to (or instead of) in the classroom. You are expected to check your email at least once a day. You are encouraged to use the class email list, `math400-L@oxy.edu`, to send messages to everyone in the class.

COLLEGE POLICIES Here are some official policies of the College which are in effect for this course:

Disabilities: Students with documented disabilities 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 experiences significant physical or mental impairments 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>.

Disabilities: Students with documented disabilities 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 experiences significant physical or mental impairments 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>.

Honest Academic Work: Shared commitment to ethical principles is essential to the educational purposes and fairness of the academic enterprise. Occidental College assumes that students and faculty will embrace a high ethical standard for academic work. Fundamental to academic ethics is a spirit of honor. A spirit of honor thrives when students challenge each other to attain the highest levels of scholarship, civility, and responsibility. For more information, see <http://www.oxy.edu/student-handbook/academic-ethics/academic-ethics>

Classroom Conduct: The goals of this course can only be accomplished in a setting of respect. Although mathematics rarely lends itself to too much controversy in this regard, we must still provide a safe environment that is conducive to learning. All are welcomed and encouraged to actively participate in the learning of course content, regardless of gender, race, nationality, native language, sexual orientation, gender identity, political ideology, and especially personal mathematical history. Any student who feels she or he is experiencing a hostile environment should speak to me immediately.

Electronic Devices: Please remember that common courtesy dictates turning off all electronic devices and cell phones (or place in silent mode) before coming to class; these devices can be a distraction for other students (and me!) in the class and thus should not be in use during class time unless I give you explicit permission to do so.