

Math 120: Groups and Rings (Spring 2018)

Lecture: MWF 11:30am–12:20pm, in **380-X**

Course website: math.stanford.edu/~church/teaching/120-S18/

	Professor: Thomas Church	Teaching assistant: Xiaoyu He
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Office hours:	Monday 4–5pm Wednesday 3–4:30pm Thursday 2–3pm Friday 12:30–1:30pm	Monday 1–3pm [after week 1] Thursday 4–6pm and by appt.

Course: Math 120 is a fast-moving, high-workload class in abstract algebra (groups, rings, fields). Some students will find Math 109 (offered in winter quarter) more appropriate. Math 120 is also a Writing in the Major (WIM) class.

Textbooks: The required textbook for the course is *Abstract Algebra* (3rd ed.) by Dummit and Foote, available at the campus bookstore.

Homework: Essentially all homework problems will consist of proofs. Even if the problem doesn't start with "Prove that...", you are expected to prove that your answer is correct. The only exception are some computations, which will be marked explicitly as "answers only". Make sure you write complete sentences (not just a string of formulas), and emphasize which axioms, propositions, lemmas and theorems you use in your argument.

It is very important that you do all the homework (optional problems are an exception, see below). You are strongly encouraged to discuss the problems with each other, and to work together to solve them, but you must work on your own when you write them down. If you can see someone else's paper when you are writing your solutions, **you are not working on your own**. In particular, you should understand your answers well enough to reproduce them yourself, especially since similar problems and ideas are likely to appear in the exams.

Optional homework problems are designed to provide the opportunity for you to challenge yourself further. In particular, even these problems are chosen so that even if you cannot solve them, *trying* to solve them will benefit you. **It is possible to get an A in this class without doing the optional problems.** Optional problems are especially suitable to working in groups (but make sure that you are not just listening to the answer!).

We will also have extremely-short weekly homework assignments due Sunday, on the reading for the following week. These are designed to give the course staff information on how the reading is going, and let us know if certain concepts give you more trouble than we expect, not to test your performance.

Resources:

- Office hours are the best way to get individualized explanations of anything you are having trouble with. Students who attend office hours **always** do better in Math 120. We offer many hours of office hours each week, and you are encouraged to attend any of the professor or TA's office hours; no appointment is necessary.

- For course discussion we use Piazza: piazza.com/stanford/spring2018/math120/

- Any in-person discussions with Prof. Church that require action from him should be followed up with an email.

Homework Policy: Weekly assignments will be posted on the course website due the following Thursday night at 11:59pm (except HW1, due 11:59pm on Sat Apr 7). Homeworks must be submitted as PDFs through Canvas.

Students are expected to take care in writing their assignments. For instance, assignments should be written neatly and contain clear, complete solutions. Always put your name on the first page. If you do not have much experience writing proofs, visit office hours in the first few weeks.

You are not required to use LaTeX to write your solutions, but it can make your life a lot easier, and it is an important skill for any student continuing in math. You will need to use LaTeX or another comparable system to write your WIM paper. One cloud-based solution is overleaf.com. Handwritten HW is fine, but you need to submit a PDF *that the graders can print* — this means a scan, not pictures taken with your phone.

To facilitate grading we will ask you to submit two separate PDFs (the HW assignment will show which problems should be in which PDF). Late homework submitted after the solutions are posted *cannot be accepted*. To accommodate exceptional situations such as a serious illness, your lowest homework grade will be dropped. (Students adding the class late should contact Prof. Church immediately.)

Final grades: The grade for the course will be calculated as follows (schedule for WIM paper subject to change due to staffing issues).

Homework:	30%
Short online assignments:	5%
Midterm (Take-home) — week 6:	25%
Final exam (Take-home) — return by 11:30am on Tuesday, June 12:	25%
WIM paper: first draft Monday week 8, final paper Monday week 10	15%

Stanford Honor Code:

- a. The Honor Code is an undertaking of the students, individually and collectively:
 1. that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading;
 2. that they will do their share and take an active part in seeing to it that others as well as themselves uphold the spirit and letter of the Honor Code.
- b. The faculty on its part manifests its confidence in the honor of its students by refraining from proctoring examinations and from taking unusual and unreasonable precautions to prevent the forms of dishonesty mentioned above. The faculty will also avoid, as far as practicable, academic procedures that create temptations to violate the Honor Code.
- c. While the faculty alone has the right and obligation to set academic requirements, the students and faculty will work together to establish optimal conditions for honorable academic work.

Students with Documented Disabilities: Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 650-723-1066, studentaffairs.stanford.edu/oae).