

SYLLABUS

Mathematics 220-01: Tuesday, Thursday, 8:35 a.m.–9:50 p.m., King 221.
Mathematics 220-02: Tuesday, Thursday, 11:00 a.m.–12:20 p.m., King 221.

TAUGHT BY: Elizabeth Wilmer

OFFICE: King 205C

E-MAIL: elizabeth.wilmer@oberlin.edu

PHONE: x56707

IM: professorwilmer (AIM, Yahoo, Google, MSN)

OFFICE HOURS: Monday, 2:30–3:30 p.m.

Wednesday, 4:00–5:00 p.m.

Thursday, 3:00–4:00 p.m.

ON-LINE HOURS: Sunday, Wednesday,

Thursday evenings.

COURSE WEB PAGE: <http://www.oberlin.edu/math/faculty/wilmer/220>

GOALS OF THE COURSE: An introduction to the tools and methods of higher mathematics by way of elementary logic, number theory, combinatorics, and graph theory. We will explore the differences between an intuitive understanding of why a mathematical statement is true and a *proof* of its truth, and learn how to convert the former into the latter. Along the way, we'll discuss neat and useful (especially for computer science) mathematics.

TEXT: *Discrete Mathematics*, second edition (Norman L. Biggs, Oxford, 2002), available at the Oberlin Bookstore. We will cover most of Chapters 1 through 10 and parts of chapters 11 through 13. We will also use graph theory notes prepared by the Oberlin Mathematics Department.

EVALUATION: Each of the two in-class exams will be worth 100 points. The final will be worth 200 points. The homework, excluding the graph theory project, will be worth 100 points. The graph theory project will be worth 100 points.

EXAMS: There will be two in-class exams: **THURSDAY, OCTOBER 5** and **THURSDAY, NOVEMBER 16**.

The final exam for Math 220-01 (8:35 a.m.) will be **WEDNESDAY, DECEMBER 20, 9:00–11:00 A.M.**

The final exam for Math 220-02 (11:00 a.m.) will be **TUESDAY, DECEMBER 19, 9:00–11:00 A.M.**

Books, notes, and calculators will not be allowed at any of the exams.

ASSIGNMENTS: Homework will be the intellectual heart of this course. You should take it very seriously. There will be one assignment per week, due on Fridays at 4:30 p.m. (there will be no assignments during exam weeks). You should turn them in to the folder hanging on the wall outside the Mathematics Department office (King 205).

The problems assigned will be challenging. You should expect to spend quite a bit of time working on them. You should also expect that sometimes your first, or second, or third attempt to solve a problem will not work out. Keep going! Keep trying! Come talk to me about what you've tried, how far you've gotten, and what you suspect might work. You learn something about a problem every time you think about it, and seeing why one argument doesn't work may point the way towards one that does.

In Mathematics 220, the words you write will be at least as important as the numbers or equations they surround. Learning how to express abstract reasoning clearly and in appropriate words and symbols is a central goal of this course. Not only the mathematical content, but also the clarity of your writing will be commented on. There will be handouts later giving guidelines for writing proofs.

Solution sets will be posted at the course website shortly after assignments are due.

Late assignments will not be accepted (medical emergencies excepted), although your two lowest ordinary problem set scores will be dropped.

Ordinary problem sets will be graded on a $\sqrt{+/\sqrt{-}}$ scale. An even mix of check-plusses and checks will be scaled to at least a B+ when final grades are prepared.

At the end of the course, there will be a *group project* requiring group work and independent exploration. This project, on graph theory, will be handed out on November 27 and due at the last class meeting on Thursday, December 14. You will work on this project with two or three other students.

IF YOU HAVE QUESTIONS—ASK! Stop by during office hours, or make an appointment for a time that's better for you. Send e-mail. Call.

I will be sure to check my e-mail and monitor instant messages during the late evening (approximately 10:00 to 11:00 p.m.) on the nights before assignments are due.

THE HONOR CODE AND MATHEMATICS 220: As your grade for Mathematics 220 will depend on the results of your exams, your problem sets, and your group projects, you must uphold the Honor Code while completing all three types of work. You are expected to write and sign the Honor Pledge,

“I affirm that I have adhered to the Honor Code in this assignment,”

at the end of each problem set and each exam. At the end of each group project, *every* member of the group should write and sign the Honor Pledge. The meaning of adhering to the Honor Code differs, however, for the three types of assignments.

THE HONOR CODE AND PROBLEM SETS: Talking about mathematics is one of the best ways to improve your understanding of the subject, both because other points of view can be illuminating and because conversation requires you to articulate your own ideas. I encourage you to discuss homework problems with other students. Unless otherwise specified, however, *you must write up the problems on your own*. Some quick examples:

OKAY: “I wonder if we can use De Morgan’s Laws to simplify this. Pat, do you think that will work, or is something different going on?”

NOT OKAY: “Pat, I hate it when you write so small! Is that a 2 or an a in front of the y ? I’m never going to get this copied by the time class starts!”

OKAY: “I’m not sure I understand this. Maybe we should try to find another example, except with the graph not bipartite.”

NOT OKAY: “Huh. You have this letter m in your write-up. Maybe I can call it k instead, to make it look different.”

You may feel free, when working on problem sets, to consult other written resources (such as other books or web sites on discrete mathematics)—as long as the sources you consult do not directly address assigned problems, or close variants of assigned problems.

THE HONOR CODE AND GROUP PROJECTS: You should consult only other members of your group when working on the group project. There will be restrictions on what written materials may be used; details will be provided on the project sheet.

THE HONOR CODE AND EXAMS: You will be expected to work *entirely on your own* during the exams. No books, notes, or calculators may be used during an exam.