

SYLLABUS SPRING 2024

The University of Iowa
The College of Liberal Arts and Sciences
MATH:4060:0001 Discrete Mathematical Models

MWF 9:30am - 10:20 pm in 113 MLH

Course ICON site: To access the course site, log into [Iowa Courses Online \(ICON\)](https://icon.uiowa.edu/index.shtml) <https://icon.uiowa.edu/index.shtml> using your Hawk ID and password.

Some of the policies relating to this course (such as the drop deadline) are governed by its administrative home, the College of Liberal Arts and Sciences, 120 Schaeffer Hall.

Instructor: Dr. Olga Sokratova

Office hours: MWF 10:30-11:30 am, and by appointment

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DEO: Prof. Ryan Kinser, 14 MLH, ryan-kinser@uiowa.edu

Catalog Description of Course: Basic combinatorics and graph theory, their applications (which may include scheduling, matching, optimization); Eulerian and Hamiltonian paths, spanning trees. Offered spring semesters.

Objectives and Goals of the Course:

To study discrete mathematical models arising from various fields through graphs, trees, networks, Markov chains and games. Understanding and writing proofs in graph theory are also integral parts of the course.

Texts: No required texts. All materials will be posted on ICON.

Material to be covered:

Graphs

Trees

Tournaments

Chromatic polynomials

Matching

Markov Chains

Other topics (if time permits)

ICON (<https://icon.uiowa.edu/>)

Class announcements, due dates, and information pertaining to homework, quizzes, and tests will be posted regularly on ICON. I recommend you check it daily.

Assignments and Percentage of Final Grade:

Homework: 25%

Midterms: 2 midterms, each worth 20%

Final Exam: 35%

Homework: will be assigned weekly on Fridays and is due on ICON the following Friday by 11:59pm. The lowest homework score will be dropped.

Examinations: There will be two 50-minute midterm exams and a cumulative final exam.

Midterm Exam I:

Date: February 23, in class.

Midterm Exam II:

Date: Friday, April 5, in class.

Final Exam:

Date TBA Coverage: comprehensive.

All exams are closed-book, closed-notes.

A Word about the Date and Time of the Final Exam:

The final examination date and time will be announced by the Registrar generally by the fifth week of classes. All students should plan on being at the UI through the final examination period, which is May 6 through May 10, 2024. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. Do not make your end of the semester travel plans until the final exam schedule is made public. It is the student's responsibility to know the date, time, and place of the final exam.

Grading System:

Grades will be assigned on a curve, which will be determined after the final examination. The curve will not be lower than the following scale: the table gives the minimum percentages for the grades:

0	60	63	67	70	73	77	80	83	87	90	93
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

Note that A+ grade will only be given for exceptional performance.

Course Policies:

Make-up exams: Exam make-ups will be allowed only in the case of illness, mandatory religious obligations, certain University activities, or unavoidable circumstances. It is your responsibility to contact your instructor to arrange a time to make-up a missed exam. Make-ups must be completed within one week of the missed exam. To qualify for a makeup in the case of an official university event (sporting event, field trip, etc.) your supervising professor/coach must confirm your intended participation via letter or e-mail BEFORE the day of the exam.

Attendance: Attendance will be taken regularly. Absences will only be excused for medical or family emergency reasons, a university-sanctioned field trip or the observance of a religious holiday. If you miss a class, you are still responsible for all material discussed and announcements made in class. Repeated absences may lower your grade.

Timely completion of assignments: Late assignments are not accepted. To be fair to the grader and to the students, it's important that the homework assignments be graded promptly and all at the same time.

Calculators: Unless otherwise indicated, no calculators or other hand-held electronic devices are allowed on exams or quizzes. Exams and quizzes are written in such a way that a calculator is not necessary.

Student Collaboration: The homework for this course is designed to help you master your knowledge related to the topics covered during lecture. As such, you may work on the homework problems with others or use online resources. However, please be aware that to master the skills needed for this class, practice is required and that to do well on the final exam you will need to work many of these problems multiple times without help. Be sure to test your knowledge by doing much of the homework on your own.

Other Expectations of Student Performance: Expect to spend at least 6 hours weekly outside of the classroom doing the assignments. More time may be needed to prepare for exams.

Classroom behavior: I expect that you will behave with respect to the other students in the class and to me. In particular, this means turning off (or silencing) your cell phone. You should not be sending text messages, browsing internet, or listening to your iPod during class.

Resources for Students

Math Tutorial Lab: The Math Lab offers free tutorial services for the course material. Participation is optional, but strongly recommended. It is located in 125 MLH and it is staffed by teaching assistants from the Department of Mathematics.

College of Liberal Arts and Sciences (CLAS) Course Policies

Attendance and Absences

You are expected to attend all lectures. Lectures will occasionally contain material not covered in the textbook. If you miss a class, you are still responsible for all material discussed and announcements made in class. Attendance will be taken regularly. If you are between two grades at the end of the semester, your attendance record will be used to determine which grade you get.

Exam Policies

University regulations require that students be allowed to make up examinations that have been missed due to illness, religious holy days, military service obligations (including service-related medical appointments), or other unavoidable circumstances or University-sponsored activities. Students with UI-authorized activities must discuss their absences with the instructor as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

Other Expectations of Student Performance: Expect to spend at least 6 hours weekly outside of the classroom doing the assignments. More time may be needed to prepare for exams.

Communication: UI Email

Students are responsible for all official correspondence sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community.

Mental Health Resources and Student Support

Students are encouraged to be mindful of their mental health and seek help as a preventive measure or if feeling overwhelmed and/or struggling to meet course expectations. Students are encouraged to talk to their instructor for assistance with specific class-related concerns. For additional support and counseling, students are encouraged to contact University Counseling Service (UCS). Information about UCS, including resources and how to schedule an appointment, can be found at counseling.uiowa.edu. Find out more about UI mental health services at mentalhealth.uiowa.edu.

Student Care and Assistance provides assistance to University of Iowa students who are experiencing a variety of crisis and emergency situations, including but not limited to medical issues, family emergencies, unexpected challenges, and sourcing basic needs such as food and shelter. More information on the resources related to basic needs can be found at basicneeds.uiowa.edu/resources/. Students are encouraged to contact Student Care & Assistance in the Office of the Dean of Students (Room 135 IMU, dos-assistance@uiowa.edu, or 319-335-1162) for support and assistance with resources.

University Policies

Accommodations for Students with Disabilities

The University is committed to providing an educational experience that is accessible to all. If a student has a diagnosed disability or other disabling condition that may impact the student's ability to complete the course requirements as stated in the syllabus, the student may seek accommodations through [Student Disability Services](#) (SDS). SDS is responsible for making Letters of Accommodation (LOA) available. **The student must provide an LOA to the instructor as early in the semester as possible, but requests not made at least two weeks prior to the scheduled activity for which an accommodation is sought may not be accommodated.** The LOA will specify what reasonable course accommodations the student is eligible for and those the instructor should provide. Additional information can be found on the [SDS website](#).

[Free Speech and Expression](#)

[Absences for Religious Holy Days](#)

[Classroom Expectations](#)

[Non-discrimination](#)

[Sexual Harassment/Misconduct and Supportive Measures](#)