SYLLABUS SPRING 2023
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

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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Phone: 319-335-3873
E-mail: olga-sokratova@uiowa.edu

**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.
**Optional text:** Introductory Combinatorics by Richard A. Brualdi, ISBN:0136020402
5/e, Pearson, 2009 or any older edition.

**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 24, in class.
Midterm Exam II:
Date: Friday, April 7, 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 8 through May 12, 2023. 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:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>0-60</td>
<td>F</td>
</tr>
<tr>
<td>61-63</td>
<td>D-</td>
</tr>
<tr>
<td>64-67</td>
<td>D</td>
</tr>
<tr>
<td>68-70</td>
<td>D+</td>
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<tr>
<td>71-73</td>
<td>C-</td>
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<tr>
<td>74-77</td>
<td>C</td>
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<tr>
<td>78-80</td>
<td>C+</td>
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<tr>
<td>81-83</td>
<td>B-</td>
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<tr>
<td>84-87</td>
<td>B</td>
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<td>88-90</td>
<td>B+</td>
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<tr>
<td>91-93</td>
<td>A-</td>
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<tr>
<td>94-100</td>
<td>A</td>
</tr>
</tbody>
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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.

Participation in class discussions: I highly recommend that students make use of opportunities to ask questions in class or present problems at the board when offered.

Timely completion of assignments: There will be 10% per day penalty for late homework; no assignments are accepted after the solution is posted.
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 MathLab 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.

Notes to the Students:
1. All students in the College have specific rights and responsibilities. You have the right to adjudication of any complaints you have about classroom activities or instructor actions. Information on these procedures and your responsibilities is available in the Schedule of Courses and on-line in the College's Student Academic Handbook, (https://clas.uiowa.edu/students/handbook). In summary, first see the person you wish to complain about, and then see his/her immediate supervisor. The chain is: your instructor, then the Chairman of the Department of Mathematics Prof. Ryan Kinser, and then an appropriate Dean. The Department of Mathematics has offices in 14 MLH (MacLean Hall). To make an appointment to talk to the chairman of the department call 335-0714 or contact the departmental secretary in 14 MLH.
2. We would like to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please contact your lecturer during his office hours, in the beginning of the semester and far in advance of the exams. You should notify the Office of Student Disability Services, SDS and obtain the form(s) needed. The necessary modifications will be made available to you after the SDS processes and approves your request.
3. We are planning to use ICON for posting grades and other course material. Also, some announcements may be e-mailed through ICON to your UI e-mail. Check ICON and your UI e-mail regularly, and make sure that UI has your correct e-mail address.
4. This course plan may be modified during the semester. All changes will be announced in class in advance. It is solely the student’s responsibility to be informed of such announced changes.

University Policies
Accommodations for Students with Disabilities
Basic Needs and Support for Students
Classroom Expectations
Exam Make-up Owing to Absence
Free Speech and Expression
Mental Health
Military Service Obligations
Non-discrimination
Religious Holy Days
Sexual Harassment/Misconduct and Supportive Measures
Sharing of Class Recordings