Subject & Course: MATH 232 – DISCRETE MATHEMATICS - 36404
Term: Winter Quarter 2013
Credits: 4
Instructor’s name: Filix Maisch
Instructor’s email: maischf@math.oregonstate.edu

OSU catalog course description, including pre-requisites/co-requisites:
Covers combinatorics, algorithms, graphs and trees, PREREQS: MTH 231

Course content:

Weeks 1-2: Review of proofs and mathematical induction. Read chapter 2 and do suggested homework. The first two homework quizzes have material from chapter 2.

Weeks 3-5: Study combinatorics and probability. Read chapter 6 and do suggested homework. Homework quizzes 2, 3, and 4 will have questions related to this material.

Midterm Exam: Will cover proofs, including mathematical induction, as well as combinatorics and probability (end of week 5). This exam requires a proctor. Note: the material for homework quiz 4, which is to be completed after the midterm, will be on the midterm.

Weeks 6-8: A survey of graph theory. Read chapter 8 and do suggested homework. Homework quizzes 5, 6, and 7 have material from chapter 8.

Weeks 9-10: Trees, applications, and algorithms. Read chapter 9 and do suggested homework. Homework quizzes 7 and 8 will have questions related to this material.

Final Exam: A cumulative final will be given during finals week. This exam requires a proctor.

Weekly homework: Starts in week 2, but skips the week of the midterm. Each assignment will consist of a few selected problems from the suggested homework (in blue at the end of this syllabus) along with one problem not in the suggested homework list. It is a requirement that the submission be typed (or scanned) and submitted through blackboard or via e-mail. Each assignment will appear Wednesday before midnight and will be due Friday by midnight, no exceptions.

Blackboard — This course will be delivered via Blackboard, your online learning community, where you will interact with your classmates and with me. Within the course Blackboard site you will access learning materials and the syllabus; discuss issues; submit assignments; engage with other students and the instructor; and participate in discussions. To preview how an online course works, visit the Ecampus Course Demo. For technical assistance, Blackboard and otherwise, see http://ecampus.oregonstate.edu/services/technical-help.htm.

Measurable student learning outcomes:

1. Construct direct proofs, including proofs using the Principle of Mathematical Induction.

2. Construct simple proofs using contradiction and contraposition.
3. Demonstrate an understanding of the logical foundation of some simple algorithms.

4. Use the Sum Rule and Product Rule in combinatorial arguments.

5. Construct complete explanations for solutions to counting problems.

6. Demonstrate a basic understanding of discrete probability.

7. Understand and apply Bayes' Theorem.

8. Understand and use the matrix representation of finite graphs.

9. Use graphs to model systems.

10. Use at least one algorithm for finding a minimal spanning tree in a connected graph.

**Learning resources:**

Discrete Mathematics, 7th edition by Richard Johnsonbaugh

**Evaluation of student performance:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>70</td>
<td>(8 assignments worth 10 points each, but only the top seven)</td>
</tr>
<tr>
<td>Midterm</td>
<td>80</td>
<td>(Wed, Thurs, or Fri of Week 5 (Feb. 6, 7, or 8) – You schedule!)</td>
</tr>
<tr>
<td>Final</td>
<td>100</td>
<td>(First 3 days of Finals Week (Mar. 18, 19, or 20 – You schedule!)</td>
</tr>
</tbody>
</table>

Grading will not be harder than: 225-250 A- /A 200-224 B- /B+ 175-199 C /C+ 150-174 D 0-149 F

This course requires that you take **2 exams under the supervision of an approved proctor**. Proctoring guidelines and registration for proctored exams are available online through the Ecampus testing and proctoring website. It is important to submit your proctoring request as early as possible to avoid delays. Why not do it now? Really!

**Exam Policies** — Preparing a make-up exam requires a significant effort. Consequently, make-up exams will not routinely be given. Makeup exams will be given only for missed exams excused in advance by the instructor. For missed exams that can be anticipated ahead of exam time, advance permission from the instructor to miss the exam will be necessary. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very
unusual circumstances. Re-grades of exams will be performed when there is an error and the student requests it. All requests for re-grading must be made within 3 class days of the day the exam is returned. After that period of time, grades will be fixed and will not be changed.

**Incompletes** — Take this course only if you plan to finish it in a timely manner (during this term). I assign an "I" or incomplete only when there is a strong and compelling case for doing so (e.g., health reasons, military commitment). I will not consider assigning an incomplete unless the individual has completed over 75% of the course tasks (e.g., most of the homework and at least the midterm). Please note that students receiving incompletes are subject to assignment weight reduction (and consequently may not be eligible for A or A- grades) because some of their work will be submitted late.

**Statement Regarding Students with Disabilities:**

Accommodations are collaborative efforts between students, faculty and [Disability Access Services (DAS)] with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

**Expectations for Student Conduct:**

Student conduct is governed by the university's policies, as explained in the [Office of Student Conduct: information and regulations](#).

In an academic community, students and faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity and respect. Disruption of teaching, administration, research, and other institutional activities is prohibited by [Oregon Administrative Rule 576-015-0015](#) and is subject to sanctions under university policies, [OSU Office of Student Conduct](#).

**Academic Integrity** — Students are expected to comply with all regulations pertaining to academic honesty, defined as: *An intentional act of deception in which a student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work.* For further information, visit [Avoiding Academic Dishonesty](#), or contact the office of Student Conduct and Mediation at 541-737-3656.

**Conduct in this online classroom** — Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the [university’s regulations regarding civility](#). Students will be expected to treat all others with the same respect as they would want afforded themselves. Disrespectful behavior to others (such as harassing behavior, personal insults, inappropriate language) or disruptive behaviors in the course (such as persistent and unreasonable
demands for time and attention both in and out of the classroom) is unacceptable and can result in sanctions as defined by Oregon Administrative Rules Division 015 Student Conduct Regulations.

Communications:

Ground Rules for Online Communication & Participation:
- Online threaded discussions are public messages, and all writings in this area will be viewable by the entire class or assigned group members. If you prefer that only the instructor sees your communication, send it to me by email, and be sure to identify yourself and the class. In particular, you may be directed to the threaded discussions if you e-mail me a question to which it is advantageous for everyone in the course to see the response (questions about the course material, for example).
- Posting of personal contact information is discouraged (e.g. telephone numbers, address, personal website address).
- Online Instructor Response Policy: I will check email frequently and will respond to course-related questions within 48 hours (excluding Saturday and Sunday).
- Observation of “Netiquette”: All your online communications need to be composed with fairness, honesty and tact. Spelling and grammar are very important in an online course. What you put into an online course reflects on your level of professionalism. Here are a couple of references that discuss
  - writing online: http://goto.intwg.com/
- Please check the Announcements area and the course syllabus before you ask general course "housekeeping" questions (i.e. how do I submit assignment 3?). If you don't see your answer there, then please contact me.

Guidelines for a productive and effective online classroom
- The discussion board is your space to interact with your colleagues related to current topics or responses to your colleague’s statements. It is expected that each student will participate in a mature and respectful fashion.
- Participate actively in the discussions, having completed the readings and thought about the issues.
- Pay close attention to what your classmates write in their online comments. Ask clarifying questions, when appropriate. These questions are meant to probe and shed new light, not to minimize or devalue comments.
- Think through and reread your comments before you post them.
- Assume the best of others in the class and expect the best from them.
- Value the diversity of the class. Recognize and value the experiences, abilities, and knowledge each person brings to class.
- Disagree with ideas, but do not make personal attacks. Do not demean or embarrass others. Do not make sexist, racist, homophobic, or victim-blaming comments at all.
- Be open to be challenged or confronted on your ideas or prejudices.

Student Assistance:

- Contacting the instructor — E-mail is the best way to contact me. Please make sure you are not asking routine questions like “how many points is the final,” because I will simply direct you to the course syllabus.

- Technical Assistance — If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in
your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the OSU Computer Helpdesk online.

Tutoring —

Effective fall term 2009 we went to a new Online Tutoring Service - NetTutor to meet the needs of Ecampus students.

NetTutor is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. NetTutor provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment.

Suggested Homework:

These suggested exercises are from Johnsonbaugh's text. Assignment one corresponds to the first homework quiz. Assignment two corresponds to the second homework quiz. And so it goes.

ONE:

Exercises 2:1: 8, 9, 12, 13, 18, 28, 29, 35.
Exercises 2:2: 3, 6, 9, 12, 13, 14, 15, 17, 27, 37, 46, 47, 49.

TWO:

Exercises 2:4: 3, 9, 15, 17, 22, 27, 28, 46, 49, 67, 69, 70.
Exercises 6:1: 4, 6, 7, 8, 9, 13, 14, 15, 20, 27, 38, 39, 43, 57, 61, 70, 77, 79, 82, 84, 85, 86, 91, 92, 93.

THREE:

Exercises 6:2: 1, 3, 6, 7, 14, 17, 19, 24, 25, 26, 29, 30, 31, 43, 55, 60, 64, 82, 88.
Exercises 6:7: 1, 2, 6, 13, 15, 16, 18, 22, 28, 29, 30, 32.
Exercises 6:8: 1, 2, 5, 12, 26, 27, 28, 29, 31, 33, 35.

FOUR:

Exercises 6:6: 1, 2, 3, 4, 8, 9, 14, 18, 22, 27, 29, 30, 36, 40, 41, 42, 43, 45, 51, 53.

FIVE:

Exercises 8:1: 5, 9, 11, 14, 15, 25, 47, 49.
Exercises 8:2: 1, 9, 12, 13, 15, 18, 22, 32, 35, 36, 45, 47, 55, 56, 68, 72, 75.
Exercises 8:3: 9, 10, 11, 14, 15, 16.

SIX:

Exercises 8:5: 1, 5, 6, 7, 11, 12, 15, 16, 21, 22, 26.
Exercises 8:6: 1, 3, 10, 19, 26, 27, 28, 29, 38, 39, 42.
Exercises 8:7: 1, 2, 5, 7, 9, 18.
SEVEN:

Exercises 9.1: 1, 6, 8, 9, 14, 31, 38.
Exercises 9.2: 22, 26, 30, 33, 35.

EIGHT:
Exercises 9.3: 5, 10, 12, 23.
Exercises 9.5: 2, 3, 12, 15, 19.
Exercises 9.8: 3, 9, 12, 13, 14, 15, 16, 17.