Discrete Mathematics II (MATH 30123-015) in Spring 2014

Room	Time
WIN 171	TuTh 9:30–10:50 AM
Instructor	**E-mail**
Loren Spice	`l.spice@tcu.edu`
Office	**Office hours**
TUC 315	M 6–7 PM (shared) TuTh 8:30–9:20 AM
TCU Online	F 11–11:50 AM (shared)
`tcuglobal.edu`	and by appointment

Textbook Rosen, *Discrete mathematics and its applications* (7th edition)

Course goals As a student in Discrete Mathematics II, you are expected to continue the transition away from algorithm-based mathematics and towards exploration-centred, proof-based mathematics.

As opposed to the 'continuous' objects discussed in calculus and differential equations, in this class we discuss 'discrete' objects. The first example of such objects is the counting numbers, and we will start the class with a discussion of the surprising subtleties of the topic of counting, including its applications to probability. This is covered in Chapters 6–8.

Another major topic, of importance both to pure mathematicians and for its applications in computer science, is graph theory. The graphs we will study are more like what in colloquial English is known as a map; they are not graphs of functions, as in calculus, but abstract records of adjacency between regions. We will study graph classification and properties, as well as related computational algorithms. This is covered in Chapters 10 and 11.

If time permits, we will cover another exciting topic where pure mathematics meets computer science, namely, Boolean algebra and its relation to logic and circuit design. This is covered in Chapter 12.

Attendance Attendance is **required**. You **must** sign the attendance sheet **each class**, or you may be marked absent. For each exam, if you have attended **all** classes since the previous exam, you will receive 1 bonus point. Official Absences are not counted against your attendance. One un-official absence will be excused per exam.

Grading Course components will be weighted as follows:

Homeworks	Midterms	Final
25%	15% each (45% total)	30%

You may also earn up to 1 bonus point on each midterm for participation. You can see your current weighted percentage on the course web-page at any time. If you think that a grade has been mis-computed, you **must** talk to me within 1 week of its being recorded.

During some class periods, an opportunity will be offered to participate by coming to the board to solve a problem. This is completely optional. If there is more than one volunteer, then volunteers will be chosen according to the following criteria, in order:

- the amount of extra credit earned for the current midterm (least to most);
- the total amount of extra credit this semester (least to most);
- last name (alphabetically earliest to latest).

If you do so correctly, then you will earn 1 bonus point on the next midterm. If you come to the board, but do not solve the problem correctly, then you will earn 1/2 bonus point on the next midterm. You may participate as many times as desired, but may only earn a total of **1 bonus point** per midterm. There is **no "roll-over"**, so, even if you solve two problems correctly, you will still earn only 1 bonus point total.

Your course grade will be determined as follows:

Min. %	Min. Grade	Min. %	Min. Grade	Min. %	Min. Grade
90%	A-	94%	A		
80%	B-	84%	B	87%	B+
70%	C-	74%	C	77%	C+
60%	D-	64%	D	67%	D+

If you have earned less than 60% of the course credit, then you may receive an F. Exam and course grades may be curved.

Academic Conduct You must comply with the University's academic-conduct policies at
`http://www.catalog.tcu.edu/current_year/undergraduate/1411.htm`,
from which the following partial quote is taken.

> Any act that violates the spirit of the academic conduct policy is considered academic misconduct. Specific examples include, but are not limited to:
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> A. **Cheating**. Includes, but is not limited to:
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> 1. Copying from another student's test paper, laboratory report, other report, or computer files and listings.
> 2. Using in any academic exercise or academic setting, material and/or devices not authorized by the person in charge of the test.
> 3. Collaborating with or seeking aid from another student during an academic exercise without the permission of the person in charge of the exercise.
> 4. Knowingly using, buying, selling, stealing, transporting or soliciting in its entirety or in part, the contents of a test or other assignment unauthorized for release.
> 5. Substituting for another student, or permitting another student to substitute for oneself, in a manner that leads to misrepresentation of either or both students work.
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> B. **Plagiarism**. The appropriation, theft, purchase or obtaining by any means another's work, and the unacknowledged submission or incorporation of that work as one's own offered for credit. Appropriation includes the quoting or paraphrasing of another's work without giving credit therefore.
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> C. **Collusion**. The unauthorized collaboration with another in preparing work offered for credit.
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> D. **Abuse of resource materials**. Mutilating, destroying, concealing or stealing such materials.
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> E. **Computer misuse**. Unauthorized or illegal use of computer software or hardware through the TCU Computer Center or through any programs; terminals; or freestanding computers owned, leased or operated by TCU or any of its academic units for the purpose of affecting the academic standing of a student.
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> F. **Fabrication and falsification**. Unauthorized alteration or invention of any information or citation in an academic exercise. Falsification involves altering information for use in any academic exercise. Fabrication involves inventing or counterfeiting information for use in any academic exercise.

G. **Multiple submission**. The submission by the same individual of substantial portions of the same academic work (including oral reports) for credit more than once in the same or another class without authorization.

H. **Complicity in academic misconduct**. Helping another to commit an act of academic misconduct.

I. **Bearing false witness**. Knowingly and falsely accusing another student of academic misconduct.

Calculators and technology A calculator is permitted, but not required, for the class (although it may be **forbidden** for selected problems).

Homeworks Homeworks will be posted on the course web-page after most classes, and are due by the **beginning** of class 1 week after they are assigned. If the due date would fall on a midterm day (Thursday), then it will be moved to the **earlier Tuesday**.

Homeworks must be handed in to me **in person**. If you are not able to do so, then you may have a friend hand it in, or e-mail me a scanned copy by the due time. If an Official Absence will interfere with a due date, please let me know **in advance** so that we can make an appropriate adjustment. **Late** homeworks will not be accepted.

You may work with classmates on the homeworks, but you must write up your own work **independently**. Depending on class size, a portion of the homework grade may be based on **participation**. The lowest homework grade will be dropped.

You should budget about **10 hours** per week for reviewing notes and doing homework. You **cannot** earn better than a C, regardless of exam scores, without satisfactory homework and quiz grades.

Exams Midterms will be held in class on Thursdays: **February 13**; **March 20**; and **April 17**.

Re-scheduling of exams will be provided **only** in case of an Official Absence; or at my discretion, for extreme, documented reasons. In either case, you must tell me **one week** in advance, or as soon as is reasonably possible.

The final exam will be **Tuesday, May 6, 8–10:30 AM**, in a location to be announced. The time is set by the registrar, and **not** subject to change. **Travel plans** are not a sufficient reason to miss a final.

Disability policy This course complies with the University disability statement at `http://www.ugradcouncil.tcu.edu/forms/DisabilitiesStatement.doc`, quoted in full below.

> Texas Christian University complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 regarding students with disabilities. Eligible students seeking accommodations should contact the Coordinator of Student Disabilities Services in the Center for Academic Services located in Sadler Hall, 1010. Accommodations are not retroactive, therefore, students should contact the Coordinator as soon as possible in the term for which they are seeking accommodations. Further information can be obtained from the Center for Academic Services, TCU Box 297710, Fort Worth, TX 76129, or at (817) 257-6567.
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> Adequate time must be allowed to arrange accommodations and accommodations are not retroactive; therefore, students should contact the Coordinator as soon as possible in the academic term for which they are seeking accommodations. Each eligible student is responsible for presenting relevant, verifiable, professional documentation and/or

assessment reports to the Coordinator. Guidelines for documentation may be found at `http://www.acs.tcu.edu/disability_documentation.asp`.

Students with emergency medical information or needing special arrangements in case a building must be evacuated should discuss this information with their instructor/professor as soon as possible.