CSCI-4260/MATH-4150: Graph Theory
www.cs.rpi.edu/~slotag/classes/SP17/index.html

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Office Hours: 14:00-16:00 on Tuesday in 317 Lally

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Office Hours:
Monday: Xin and Shreya at 14:00-16:00 in 119A Amos Eaton
Wednesday: Xin at 15:00-17:00 in 119A Amos Eaton

Class Hours: 16:00-17:50 Monday & Thursday in 203 Ricketts

1 Course Description

This course discusses fundamental concepts of Graph Theory and its applications in computer, social, and natural sciences. The topics include: graphs as models; representation of graphs; trees; universal trees; distances; matchings; connectivity; flows in networks; colorings; Hamiltonian cycles; planarity; and computational problems. All concepts and methods will be presented through a sequence of exercises and application demonstrations.

1.1 Prerequisites

Students should have taken a course in discrete mathematics, such as CSCI-2200 Foundations of Compute Science or MATH-4090 Foundation of Analysis. Additionally, although not formally required, students should have some programming experience to best understand the coding-based application demonstrations. Students will not be required to write their own code, although knowledge and understanding of algorithms and basic data structures is necessary.

1.2 Course Resources

The course textbook is *Introduction to Graph Theory - 2nd Edition* by Douglas B. West. The textbook can be found at the student bookstore or online through Amazon/Ebay/etc. Course notes and code and additional resources will be available through the course website.

2   Course Schedule

Classes will meet every Monday and Thursday at 16:00 in 203 Ricketts during the Spring 2017 semester with the following exceptions:

January 16: No class - MLK Day
February 20: Class scheduled for February 21 - Presidents' Day
March 13 and 16: No class - Spring Break
4 May: No class - final exam study day

For an up-to-date schedule with class notes and content, check the website.

3   Coursework and Grading Policies

Quiz policy: Quizzes will comprise 30% of the course grade. There will be approximately 10 in-class quizzes throughout the semester. Quizzes will be open book (**course textbook and notes only**). Although attendance is not mandated, a missed quiz will result in a zero with no chance for a makeup outside of a verifiable excuse (e.g., a legitimate excuse: you were in the hospital and bring in a physician's note; an illegitimate excuse: you had other work to do). The lowest two quiz scores will be dropped to account for any potential absences. Quiz solutions will be posted online and gone through in class, time-permitting. Quiz score will be posted but graded copies will not be handed back. It is the students' job to check their score and posted solution and talk to the instructor during office hours if there is any questions.

Exam policy: There will be an in-class midterm exam worth 30% of the course grade and a final worth 40% of the course grade. ~~These exams will also be open book (again, course textbook and notes only).~~ **Exams will be closed book**. There will be no makeups for exams unless either there is a verifiable medical excuse or a prior arrangement is made with the instructor. Students who know they are going to miss a test must notify me in advance. Special circumstances can be accommodated if I am notified about them in advance. Graded midterms will be handed back. Graded finals can be retrieved from the instructor after scores are posted. Any questions about scores must be discussed ASAP with the instructor, before final grades are posted.

Homework policy: There will be no graded homeworks. However, there will be "recommended" problem sets assigned. It is **highly** recommended that students complete these problem sets to prepare for quizzes and exams. If you complete and fully understand all assigned problems, you are likely to do very well in the graded portion of the course.

Grade Modifiers Policy: Grade modifiers will be used in this class. You can expect to earn a B- if your score is greater than 79.5 and less than 83, B if your score is greater than 83 and less than 86, B+ if your score is greater than 86 and less than 89.5. The similar modifier points occur for the A, C and D ranges except that there is no A+ nor is a D- allowed under the RPI Grade Modifier Policy.

4   Academic Integrity

No collaboration is allowed during in-class exams or quizzes. The evaluation of student performance is a service provided by Rensselaer. Attempts to undermine this service lower Rensselaer's reputation. Therefore, it is essential that academic honesty be preserved. You are encouraged to cooperate with one another inside and outside of class on the solutions to prescribed practice problems. However, you may not collaborate on quizzes or examinations or otherwise misrepresent another persons work as your own. You may not bring crib sheets to examinations, and you may not write on or alter examination materials that you submit for re-grading. Students who violate the spirit or letter of these rules are subject to penalties according to the principles outlined in the Rensselaer Handbook:

`http://www.rpi.edu/dept/doso/resources/main/2014-2016StudentHandbookrevOctober2015.pdf`.

5   Learning Outcomes

At the end of this course, you will:

- understand some of the main topics and results in basic Graph Theory

- gain problem solving skills and proof techniques for problems on graphs

- have learned several graph applications