

MATH 5322 - Graph Theory Fall 2025

Professor: Dr. Christy Graves

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Office: RBN 4013

Office Hours: Tuesday and Thursday 9:30-11:00 and by appointment

Class Time: Tuesdays and Thursdays 11:00-12:20

Class Location: RBN 4019

Text: *Introduction to Graph Theory, 2nd ed.*, Douglas B. West, ISBN 0-13-014400-2.

Prerequisites: Consent of graduate advisor or instructor.

Course Description: A graduate level survey of graph theory. Topics may include simple graphs, digraphs, connectivity, graph colorings, planar graphs, matchings, graph isomorphisms, graph polynomials, Eulerian graphs, algebraic graph theory, or other fundamental concepts in graph theory.

Student Learning Outcomes: By the end of the course, successful students should be able to:

- Gain an understanding of the fundamental concepts of graph theory.
- Gain an understanding of when a graph is a useful mathematical tool to solve problems in mathematics, the sciences, and the environment;
- Understand and use famous graph theory problems including: Hall's Marriage Theorem, Traveling Salesman Problem, and Network Flow Problem.

Canvas: A Canvas site has been set up for this course. All handouts and announcements will be posted here. All assignments must be uploaded to Canvas.

Attendance: Students are expected to attend every lecture, and are responsible for any announcements made during lecture. The course moves quickly, and any absence will be detrimental to the student's performance. Part of your grade will be based on participation, so please come to class.

Exams

There will be three exams in the class. Tentative exam dates are listed in the syllabus but are subject to change.

Exam 1	Tuesday, September 16
Exam 2	Thursday, October 9
Exam 3	Tuesday, November 4

There are no regular make-up exams for any reason. If you have a university-approved reason to miss an exam, and have the appropriate documentation, an oral make-up exam will be administered.

Homework

Homework is vital to your success in this course. A significant amount of what you gain from this course will be learned through homework assignments. There will be a homework assignment almost every day.

Collaboration with your fellow students is encouraged. However, please write who you worked with at the beginning of each problem and *write up all answers individually*. Also, if an outside source is used (i.e. another book or the internet), please make a note of the source of outside help. Plagiarism will not be tolerated. If you cannot explain your homework solution to the class or me, your homework grade will be an automatic 0. If it turns out that students are getting too many solutions from sources online, the grading scale will be adjusted.

Final Project

Each student will work on a final project for this course. The final project must be typed up using LaTeX and will be 15% of the overall grade. More details of the final project will be given later.

Academic Dishonesty

Homework must be written in your own handwriting and must be in your own words. Copying another student's homework or a solution from the internet or AI is an act of academic dishonesty and will result in a "0" on ALL Homework grades in the course. If you cannot explain your solution to the class or to me, it is assumed that you found the solution dishonestly. Any form of academic dishonesty will not be tolerated, and all cases will be reported to UT Tyler Judicial Affairs.

Final Exam

The final exam will be cumulative and will be held:

Tuesday, December 9, 11:00-1:00

Grading

Your final grade in this course will be based on your performance on homework, participation, homework presentations, exams, and a final project. These items will be weighted as follows:

Homework & participation	10%
Exam 1	25%
Exam 2	25%
Exam 3	25%
Final project	15%

The grading scale is as follows:

- A final course grade of 90% is at least an A;
- A final course grade of 80% is at least a B;
- A final course grade of 70% is at least an C;
- Anything lower than a C is an F.

Important Dates:

- September 8 - Census Date
- September 16 - Exam 1
- October 9 - Exam 2
- November 3 - Withdraw Deadline
- November 4 - Exam 3
- December 2 & 4 - Final Projects
- December 9 - Final Exam

UNIVERSITY POLICIES AND ADDITIONAL INFORMATION THAT MUST APPEAR IN EACH COURSE SYLLABUS

UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/rightsresponsibilities.php>

Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at

<http://www.uttyler.edu/about/campus-carry/index.php>

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

Grade Replacement/Forgiveness and Census Date Policies

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit

<https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

Student Absence for University-Sponsored Events and Activities

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Student Standards of Academic Conduct

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

- i. "Cheating" includes, but is not limited to:
 - copying from another student's test paper;
 - using, during a test, materials not authorized by the person giving the test;
 - failure to comply with instructions given by the person administering the test;
 - possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
 - using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
 - collaborating with or seeking aid from another student during a test or other assignment without authority;
 - discussing the contents of an examination with another student who will take the examination;
 - divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
 - substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
 - paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
 - falsifying research data, laboratory reports, and/or other academic work offered for credit;
 - taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
 - misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.
- iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- iv. All written work that is submitted will be subject to review by plagiarism software.

UT Tyler Resources for Students

- [UT Tyler Writing Center](#) (903.565.5995), writingcenter@uttyler.edu
- [UT Tyler Tutoring Center](#) (903.565.5964), tutoring@uttyler.edu
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- [UT Tyler Counseling Center](#) (903.566.7254)