

SYLLABUS: INTRODUCTION TO GRAPH THEORY
MATH 4084/6084 SPRING 2021

1. COURSE DETAILS

Instructor: Associate Professor Dr. David J. Gryniewicz
Office: Dunn Hall 367
Office Hours: MWF by appointment (either in person or by zoom)
Webpage: www.diambri.org/graphtheory
University of Memphis Email: djgrynk@...
Time and Location: DH 249 MW 12:40 – 14:05
Final Exam: Wednesday May 5, 10:00 – 12:00
Textbook: *Graph Theory*, 5th edition, by Reinhard Diestel, GTM 173.

2. COURSE DESCRIPTION

This is a rigorous (proof based) first course in Graph Theory at the Masters/Advanced Undergraduate level. I aim to cover Ch. 1 (Sec. 1.1–1.8), Ch. 2 (Sec. 2.1), Ch. 3 (Sec. 3.1 and 3.3), Ch. 4 (Sec. 4.1–4.2, 4.4), Ch. 5 (Sec. 5.1– 5.3), and Ch. 6 (Sec. 6.1–6.2). Topic-wise, we will cover basic definitions and notation, Matchings and Hall’s Theorem, Connectivity and Menger’s Theorem, Planar Graphs and Kuratowski’s Theorem, vertex and edge colorings, and Flows and the Max Flow Min Cut Theorem. As time permits, we will cover additional topics, either going into more depth in these topics or covering select material from Extremal Graph Theory, Ramsey Theory and Hamiltonian Cycles (Student Input may influence the topic choice).

3. COVID-19 CONSIDERATIONS

This course will be taught in hybrid mode. I will live stream lectures via zoom from the university. Recordings of the lectures will be uploaded to the Microsoft cloud with access links sent to students afterwards. Links to the zoom meeting will be sent beforehand, and students will need to login using their university account to verify identity. Remote Attendance for those attending remotely will be drawn from user statistics on the zoom platform. While conditions allow, some (or all) students will also be allowed to attend the lectures at university in person.

If class size remains small enough, any student who wishes may opt to attend lectures/tests in person. To do so, simply email me that you wish to be put on the in-person roster. If the demand for in-person instruction exceeds safe and allowed restrictions due to CoVid-19, students wishing to attend in-person will be put on an alternating rotating schedule. However, based on the current size of enrollment and CoVid restrictions in place, this is not necessary at this time (but is subject to change). If CoVid restrictions increase, or I am forced to quarantine, the class may be taught fully remotely via zoom for a temporary portion of the semester.

While on campus, all students and myself will be required to wear a **mask/facial covering** that covers the nose and mouth whenever in the presence of others, and follow basic social distancing guidelines. Violators may be banned from campus or face more serious penalties.

Please see the university website for the latest updates regarding CoVid-19 related policies and requirements which are subject to change during the course of the semester. The disability office can assist with students who are at high risk if exposed to CoVid-19. If you test positive or experience symptoms that lead you to believe you have contracted CoVid-19, please do not attend in-person lectures. Report all instances of positive tests for CoVid-19 to the university. A testing site for the university is available at the corner of Central and Patterson.

4. COURSE ASSESSMENT

Grading for the course will be based upon regular Homework Assignments, a Midterm Exam and a Final Exam according to the following formula:

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| HW: Homework Average (lowest score dropped) | 20% |
| MT: Midterm | 30% |
| F: Final | 50% |

- Homework will be posted on the course website or via email on a regular, roughly bi-weekly, basis.
- Students may collaborate on the HW by talking with each other about general ideas, in person or via electronic means. However, no written solutions should be shared, and copying solutions, whether from another student or other (written) source, will be treated as cheating and comes with potentially serious consequences. Students are expected to write their solutions by themselves and unaided by others after having discussed questions with someone else.
- Both tests will be done in-class (CoVid Allowing) and/or via Zoom. Students testing remotely via zoom will take the test at the same time as all other students and will need a stable internet connection as well as a computer/laptop with **WebCam** required. The camera should be positioned so that the student's work area (desk or table top) is visible, as well as the upper portion of the student themselves, during the entirety of the exam. Students coordinating with the disability office should alert me to their circumstances so that arrangements can be made.
- When turning in a HW assignment or test via email, please include in the subject your Full Name and the assignment name (e.g, HW1, HW2, MT, Final, etc.). Also be sure to include this information written on the assignment/test itself.
- Homework and any remotely taken tests all need to be submitted as a *Single pdf file* emailed to my university email address. There are freely available apps for converting photos to pdf, as well as other freely available conversion software online. Students may also turn in Homework or tests in person, when this option is available.