

Math 314: Graph theory

Spring 2023

Course information

Times: TR 11:00am–12:15pm.
Location: 001 Carver Hall.
Webpage: www.gsanmarco.com/graph-theory

Instructors information

Instructor: Guillermo Sanmarco (he\him\his).
Email: sanmarco@iastate.edu
Office: 343 Carver Hall.
Office hours: Tuesdays 1:15pm–2:15pm and Thursdays 9:00am–11:00am.

Grader: Matthew Veldt.
Email: mnveldt@iastate.edu

Textbook

A first course in graph theory, by Gary Chartrand and Ping Zhang.

Course topics

Structural and extremal properties of graphs. Topics are selected from: trees, networks, colorings, paths and cycles, connectivity, planarity, directed graphs, matchings, Ramsey theory, forbidden structures, enumeration, applications.

Course format

The course will consist of lectures guided by worksheets, which will be posted on the course webpage. There will be 13 homework assignments, a midterm, and a final exam (details below).

Homework

There will be 13 weekly homework assignments, except the first week and the week of the midterm. These will be due on **Tuesdays by the beginning of class**. Your lowest homework score will be dropped, and the remaining 12 scores will be averaged to compute your final homework score. Assignments and their solutions will be posted on the course webpage.

If you cannot attend class on the day an assignment is due, you can email it to me. The submission should consist of a single .pdf file. The assignment must be in my inbox by the time the class begins to earn full credit.

Late-work submissions will incur a 1% penalty per minute of being late. For example, an assignment submitted at 11:10am (be it in-person or by email) that would have received a 70% will instead receive a 60%.

Collaborative work and study groups are strongly encouraged. These are great tools to help you polish your own ideas and also to take a glimpse at lines of thought that you might not have considered. However, you are not allowed to write down your answers during group sessions, and copying any part of another person's homework will be considered plagiarism. Write down your solutions once you are alone. Take the appropriate time to reflect on your strategies and carefully explain the logic behind your arguments. This class will build upon itself, and consciously walking through homework exercises is necessary for the learning process.

Exams

This course will have two exams: a midterm and a final. Topics covered in the midterm will not be explicitly tested on the final. However, to pass the final, you will need to understand all the material covered in the course.

The **midterm** will take place on **Thursday, March 9** during the regular class location and time. For the **final exam**, the location and time will be scheduled by the University Registrar's Office; I will communicate it to you once it has been scheduled.

For the exams, you are permitted to come equipped with one standard-size **sheet of paper with notes**, which can take up both the front and back of the paper. Collaborations on what to include are encouraged. Nonetheless, reproducing or photocopying other person's notes is not allowed. In particular, you must hand-write your own notes. These sheets are the only materials permitted on the exams.

Participation and discussion sessions

We will have discussion sessions on **March 7** and **May 4**, instead of the usual lectures. During the discussion sessions, you will split into groups to work on a worksheet containing questions related to the upcoming exam. Your participation in these discussions **constitutes 4% of your grade**: 2% for each session. These sessions will allow you to discuss the material with your classmates and me. The worksheets will not be graded.

Besides discussion sessions, participation in this class is encouraged and welcomed. You will have plenty of opportunities to interact with me and your classmates during lectures. I enjoy addressing any doubts or questions during lectures; please don't hesitate to ask. We are all responsible for creating a learning environment that is welcoming, inclusive, equitable, and respectful.

Grading

Homework	66%
Midterm	15%
Final	15%
Participation	4%

Your instructor cares about your well-being

You may experience stressors that can impact both your academic experience and your personal well-being. These may include academic pressure and challenges associated with relationships, mental health, alcohol or other drugs, identities, finances, etc.

If you are experiencing concerns, seeking help is a courageous thing to do for yourself and those who care about you. Asking for support sooner rather than later is often helpful. Many helpful

resources are available on campus, and an important part of the college experience is learning how to ask for help. If you encounter stressors of any kind, please contact me so that we can find solutions together.

Makeup exams

The Mathematics Department has very specific guidelines regarding the opportunity to make up an exam. The categories designated by the [Faculty Handbook](#) (section 10.4.3) and requiring official documentation are:

1. Extracurricular activities as a representative of ISU.
2. Military service.
3. Officially mandated court appearances.

At the discretion of the instructor and with official documentation whenever possible, the other potential situations for a make-up exam are:

4. Medical excuse.
5. Family emergency.
6. Religious observations and practices.

See the [Mathematics Department Make-up Exam Policy](#) for the full policy. Please note that conflicts arising due to employment are not normally grounds to request a make-up exam. More information on the University's final exam policies and procedures may be found at the [Registrar's website](#).

Statement on Free Expression

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Statement on Accessibility

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard copy every semester. Students and instructors are encouraged to review the contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Statement on Discrimination and Harassment

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. Veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email eooffice@iastate.edu.

Statement on Religious Accommodation

Iowa State University welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. In all cases, you must put your request in writing. The instructor will review the situation in an effort to provide a reasonable accommodation when possible to do so without fundamentally altering a course. For students, you should first discuss the conflict and your requested accommodation with your professor at the earliest possible time. You or your instructor may also seek assistance from the [Dean of Students Office](#) at 515-294-1020 or the [Office of Equal Opportunity](#) at 515-294-7612.

Statement on Academic Dishonesty

Academic misconduct is a violation of the behavior expected of a student in an academic setting as well as a student conduct violation. A student found responsible for academic misconduct is subject to the appropriate academic penalty, determined by the instructor of the course, as well as sanctions under the university [Student Disciplinary Regulations](#). Depending on the act, a student could receive an F grade on the test/assignment, an F grade for the course, and could face suspension from the University. See the Student Disciplinary Regulations at <http://www.policy.iastate.edu/policy/SDR> for more details and a full explanation of the policy on Academic and Research Misconduct by students.