

# Syllabus

Villanova University

**Course:** CSC 1300 - Discrete Structures

**Term:** Fall 2026

**Instructor:** Dr. Maurício Gruppi

**Email:** mauricio.gouveagruppi@villanova.edu

**Office:** Mendel Hall, 292A

*Last updated: October 2, 2026*



## Quick links

- Course Schedule
- Textbook - Discrete Mathematics: An Open Introduction, 4th Edition



## Class time, location and structure

- In person
- **Weekly plan on LMS:** topics, readings, deliverable deadlines, and exam dates
- **Section 003:** Mon/Wed 01:55 PM - 3:10 PM, Mendel G90



## Office hours

- **Dr. Gruppi:**
  - Wed 1 PM - 1:50 PM, Mendel 292A
  - Tue 5 PM-6 PM in Mendel 292A
  - *Note: You do not have to book a time to come to office hours, but I do appreciate if you let me know in advance that you will be coming*
  - *Available at other times or via Zoom upon request*
- **TA Riquel Owusu:**
  - Tue/Thu 2:30 PM - 4:00 PM
  - On Zoom: <https://villanova.zoom.us/j/98729837113>

*\*All office hours subject to change. Updates will be posted.*

## TL;DR

-  **Be present:** Avoid phones and off-task laptop use during class; step out if you need to use your phone.
-  **Assessments:** Quizzes, homework assignments, exams.
-  **Textbook:** Discrete Mathematics: An Open Introduction, 4th Edition.
-  **Deadlines:** Communicate early if exceptional circumstances arise.
-  **AI Tools:** Do not submit AI-generated work as your own. Follow the AI guidelines below.
-  **Goal:** Your success. Reach out early and often.

---

## What will I learn?

[Back to top]

| Module                      | Description                                                                                                         |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------|
| 1. Basic structures         | Set theory, relations, functions                                                                                    |
| 2. Logic and proofs         | Propositional logic, logical equivalence, normal forms, first-order logic, rules of inference, mathematical proofs. |
| 3. Counting                 | Additive and multiplicative principles, principle of inclusion-exclusion, permutations and combinations.            |
| 4. Discrete probability     | Distributions, conditional probability, random variables, expected value, variance.                                 |
| 5. Sequences and summations | Arithmetic and geometric sequences, recurrence relations.                                                           |
| 6. Induction                | Induction and strong induction.                                                                                     |
| 7. Graphs                   | Graph definitions, trees, graph algorithms, connectivity, paths.                                                    |

## Course goals

[Back to top]

The goal of this course is to introduce the mathematical structures and reasoning techniques that form the foundation of computer science. Students will develop skills in logic, proof, counting, probability, induction, and graph theory.

Upon successful completion of the course, the student will be able to:

- a. Draw upon discrete mathematical structures to formulate solutions in computing.
- b. Read, write and typeset formal mathematical notation.

- c. Understand and formulate mathematical proof using logic and other formal techniques.
- d. Employ mathematical induction and recursion.
- e. Develop combinatorial and probabilistic arguments and solutions.
- f. Understand definitions, properties and operations of set theory.
- g. Use graphs to model real world problems and identify suitable solutions.



## How will I be graded?

[Back to top]

| Assignment           | Points      |
|----------------------|-------------|
| Quizzes              | 10%         |
| Homework             | 20%         |
| Exam 1               | 20%         |
| Exam 2               | 20%         |
| Final exam           | 30%         |
| Active participation | +5 (Bonus)% |
| <b>Total</b>         | <b>100%</b> |

| Assessment                  | Description                                                                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Quizzes</b>              | Brightspace quizzes to be completed by the deadline.                                                                                                          |
| <b>Homework</b>             | Solutions to problem sets properly typed and formatted, submitted electronically as a PDF file.                                                               |
| <b>Exams</b>                | In-class written exams.                                                                                                                                       |
| <b>Final exam</b>           | Electronic exam.                                                                                                                                              |
| <b>Active participation</b> | Points given for students who demonstrate active participation during the course, such as asking/answering questions during class and attending office hours. |

Table 1: Assessment modules

## Grade cutoffs

| Grade | Cutoff | Grade | Cutoff |
|-------|--------|-------|--------|
| A     | 95     | C     | 73     |
| A-    | 90     | C-    | 70     |
| B+    | 87     | D+    | 67     |
| B     | 83     | D     | 63     |
| B-    | 80     | D-    | 60     |
| C+    | 77     | F     | < 60   |

Table 2: Letter grade cutoff points

## Attendance

[Back to top]

Attendance is expected for a successful completion of this course. The instructor will take attendance at the beginning of every class.

As per university guidelines, if the number of unexcused absences for first year students exceeds twice the number of weekly classes (four absences for a course that meets twice a week), then such student will receive a failing grade “Y”.

## Personal Days

In addition to the attendance policy stated above, students are entitled to one excused absence for any reason that may contribute to their personal wellness. Students must advise the instructor by email before class of their intent to utilize a Personal Day as the reason for their absence. A Personal Day will not be approved retroactively. Students may, but are not required to provide additional information regarding their absence. Additionally, a Personal Day may not:

- a. be used immediately preceding or following a University holiday or break period;
- b. be used on days when exams, presentations or other major assignments are scheduled.

A Personal Day does not grant an automatic extension for items due. Students remain responsible for all assignments, exams, presentations, etc. due on that date. It is in the instructor’s discretion to determine whether any extension is appropriate given individual circumstances.

## Classes During Thanksgiving Week

As of Fall 2026, Villanova has implemented a new policy for classes offered during Thanksgiving week. Classes will be offered online during the week leading to Thanksgiving break to accommodate students and faculty who wish to travel during the holiday. Details will be available on the course LMS.

## Technology

[Back to top]

- **Required:** Laptop with Javascript-supported browser.
- Using your phone during class can be a distraction to you and those around you. ***If you need to use your phone, do it outside the classroom.***
- All homework and projects **must be typeset**, unless otherwise stated. Students should make use of a computer and a text processor (e.g. MS Word, Google Docs, LaTeX) to write reports and homework solutions and **submit them in PDF format**.



## Use of Artificial Intelligence (AI) tools

[\[Back to top\]](#)

Although AI tools (e.g.: Copilot, ChatGPT, Gemini) can be well used in supporting learning, the use of AI is discouraged in this course and may constitute an Academic Integrity violation.

For example, you may:

- Ask an ChatGPT to explain Induction.
- Check with Gemini if a mathematical expression is valid and correct.
- Ask Copilot to generate practice questions on proofs.

For example, you **cannot** use any AI tool to:

- Obtain AI-generated solutions to homework assignments.
- Obtain assistance during exams or in-class assessments.
- Have AI do your homework for you.



## Late work

[\[Back to top\]](#)

Late work will not be accepted except in cases of an excused absence or other extenuating circumstances. If extenuating circumstances arise, please contact the instructor as soon as possible to make arrangements.



## Student conduct

[\[Back to top\]](#)

As it is every member's responsibility to contribute to the creation of a healthy and safe community, students are required to comply with University health and safety directives, guidelines, rules, regulations and protocols in times of emergency and/or public health concern. Violations may be referred for action under the Code of Student Conduct.

## Office of Disabilities and Learning Support Services

[\[Back to top\]](#)

It is the policy of Villanova to make reasonable academic accommodations for qualified individuals with disabilities. All students who need accommodations should go to Clockwork for Students via myNOVA to complete the Online Intake or to send accommodation letters to professors. Go to the LSS website or the ODS website for registration guidelines and instructions. If you have any questions please contact LSS at 610-519-5176 or [learning.support.services@villanova.edu](mailto:learning.support.services@villanova.edu), or ODS at 610-519-3209 or [ods@villanova.edu](mailto:ods@villanova.edu).

## **Academic Integrity**

[Back to top]

All students are expected to uphold Villanova's Academic Integrity Policy and Code. Any incident of academic dishonesty will be reported to the Dean of the College of Liberal Arts and Sciences for disciplinary action. You may view the University's Academic Integrity Policy and Code for a detailed description.

## **Absence for Religious Holidays**

[Back to top]

Villanova University makes every reasonable effort to allow members of the community to observe their religious holidays, consistent with the University's obligations, responsibilities, and policies. Students who expect to miss a class or assignment due to the observance of a religious holiday should discuss the matter with their professors as soon as possible, normally at least two weeks in advance. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the absence. For more information, see Religious Holidays.

## **Lecture recording**

[Back to top]

This course, including your participation, will be recorded on video and may be made available to students in the course for viewing remotely. Course videos and materials belong to your instructor, the University, and/or other sources depending on the specific facts of each situation, and are protected by copyright. Do not download, copy, or share any course or student materials or videos without the explicit permission of the instructor. For questions about recording and use of videos in which you appear please contact your instructor.

## **Copyright notice**

[Back to top]

The materials on this course Website are only for the use of the course instructor and the students enrolled in this course for purposes associated with this course. Some of these Website materials may be subject to copyrights held by third parties. None of these materials may be (i) retained after the course term expires, (ii) further disseminated, or (iii) accessed by or made available to others. Students with questions about the permissibility of use of materials on this Website are advised to consult the course instructor.