

# Computer Science 302

## Introduction to Discrete Structures

### Syllabus

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<b>Catalog listing:</b>	CMSC 302
<b>Course Level:</b>	Undergraduate
<b>Prerequisites:</b>	CMSC 255 with a grade C or higher
<b>Instructor:</b>	
<b>Office:</b>	Engineering East
<b>Phone:</b>	
<b>email:</b>	
<b>Classroom:</b>	Engineering East
<b>Class website:</b>	Canvas
<b>Office Hours:</b>	Tuesdays 2:00 – 3:00 pm, Wednesdays 10:30 am – 12:00 pm or Virtual by appointment. Contact me via email or Discord to schedule a time to meet via Zoom, phone or in Discord. I will try to respond to your email within 48 hours. If I will be unavailable for a longer stretch of time, I will let the class know in an announcement.

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#### 1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits. Introduction to discrete structures: logic, sets, functions, sequences, sums, counting, probability, relations, matrices, graphs, trees, inductions and recursion.

#### 2.0 – Course Structure:

Lecture hours/week – 3.0

#### 3.0 – Course Goals

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

- Write and solve various logic problems
- Read and write various set notation
- Recognize and solve various functions
- Create and find the solution to a given recurrence relations and summations
- Find the probability that a given event will occur using various counting strategies

- f. Determine the properties of a relation and represent relation as graphs and matrices
- g. Use proofs to prove mathematical concepts

#### **4.0 – ABET Criteria Addressed:**

The ability to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

Other Requirements:

- Coverage of algorithms
- The study of computing-based systems at varying levels of abstraction

#### **5.0 – Major Topics Covered:**

Logic, Set Theory, Functions, Sequences, Summations, Relations, Proofs, Recurrences, Algebra & Matrices, Counting and Probability, Graphs and Trees

#### **6.0 – Course Structure / Campus Requirements**

- This class is both in Canvas and in the classroom. The course has been flipped. You will be expected to view and read the material within the course. Assignments and projects will be submitted online. The classroom portion will incorporate activities, review lectures and POGILS to further reinforce the material.
- We will meet twice a week at 11:00 am – 12:15pm Tuesday & Thursday in room to get an overview of the notes and to complete practice problems.
- Quizzes will be given about every other week online. They will be conducted through Canvas and Gradescope using Respondus Lockdown Monitor. You will need access to a webcam for your computer.
- A midterm and final will be given in this course through Canvas using Respondus Lockdown Monitor or in-person.
- This is a 15-week course that will require participation and collaboration with fellow classmates. Be prepared to complete assignments as well as participate in group discussions on topics related to the course material.
- Follow the course schedule to be sure you are keeping up with class meetings, activities and assignments.
- Extra credit is available by doing the optional Harmonize discussions located in each Canvas Chapter Module. This extra credit will be taken into consideration at the end of the course.

#### **7.0 - Schedule:**

The schedule for this course is posted in the Canvas Syllabus area as a separate document.

#### **8.0 – Textbook:**

Required Text:

Title: Discrete Mathematics and its Applications, 7<sup>th</sup> Edition  
Author: Kenneth H. Rosen  
Publisher: McGraw-Hill  
ISBN: 9780073383095

This text is provided as a PDF in our classroom site. You do not need to purchase this book.

## 9.0 – Technology Support

### Engineering & VCU Resources:

- **Personal Computer Requirement:** For our current system requirements and recommendations, see: <https://egr.vcu.edu/admissions/accepted/computer-recommendations/>
- **Remote Access to Public Lab computers:** To provide remote access, we use the Citrix App2Go environment to provide full and exclusive control over "the next available" computer in the lab. See this link for more details: <https://wiki.vcu.edu/x/Oa0tBg>
- **VCU provides a lot of software available for students to download to their personal computers.** For a list of software and the specifics for each, see: <https://ts.vcu.edu/software-center/>. In particular, [Microsoft Office](#) is available free to students.
- **VCU is transitioning to Canvas.** See the Canvas Student Guide at this link: <https://community.canvaslms.com/t5/Student-Guide/tkb-p/student>
- **For IT help in the College of Engineering,** see our Wikipedia for "student" help at: <https://wiki.vcu.edu/display/EGRITHELP>
- **VCU's Technology Services (TS) provides support for "central IT" services.** If you have a technical issue with any of the following services, please submit a ticket with VCU Technology Services at <https://itsupport.vcu.edu/> or call (804) 828-2227. VCU TS maintains and supports these services and will be able to provide assistance to you.
  - VCU Cisco VPN
  - 2Factor or Dual Authentication (DUO)
  - Blackboard/Canvas
  - Gmail or other Google Apps
  - Zoom videoconferencing
  - VCU App2Go (Application server)
  - Resetting VCU password
- **For IT issues related to College of Engineering teaching and research,** email [egrfixit@vcu.edu](mailto:egrfixit@vcu.edu)
- **For loaner Chromebooks for emergency purposes:** See this link for more details: <https://vcutsmpc.getconnect2.com/>

### General Instructions:

1. Clear your browser's cache.

2. Shutdown and restart your computer.
3. If your problems persist, contact the IT support center [itsc@vcu.edu](mailto:itsc@vcu.edu) or 804-828-2227.

## 10.0 – Technology Usage

- We will be using Canvas as our classroom environment. In addition to Canvas, we will also be using the following technologies:
  - Zoom for virtual class meetings
  - Discord for engagement with one another and with me.
  - Gradescope for interactive quiz/exam questions
  - Respondus Lockdown Browser & Monitor (webcam needed)

## 11.0 Evaluation:

### General Instructions:

1. All assignments must be uploaded to Canvas or Gradescope on or before the due date specified. Only files submitted to Canvas/Gradescope on or before the due date will be considered for grading. Requests to re-grade assignments must be made with two weeks from the date the grade is posted in Canvas, requests after this time will be denied.
2. No assignments will be accepted late unless special permission has been given prior to the due date. If you find yourself falling behind, please contact me.
3. No makeup exams or quizzes will be given unless special permission has been given prior to the date of the test. Request to adjust scores or re-grade exams or quizzes must be made at the end of the class meeting in which the exam or quiz is returned, requests after this time will be denied.
4. Students will not be allowed to communicate in any way during an exam or quiz, **nor use a calculator**, their notes, or an Internet or classroom search. Any perceived communication or search will result in an academic integrity violation.
5. Do your own work. **Plagiarism in any form applies to all assessments as with any other intellectual property. Plagiarism is a form of cheating and will be treated as such.**

## 12.0 – Course Grading Policy

Category	% weight
Quizzes	30
Assignments	20
Midterm Exam	25
Final Exam	25

## 13.0 Grading scheme:

- A:  $\geq 90\%$
- B:  $\geq 80\%$  and  $< 90\%$
- C:  $\geq 70\%$  and  $< 80\%$
- D:  $\geq 60\%$  and  $< 70\%$
- F:  $< 60\%$

Assignments will be graded within a week of their due date.

#### **14.0 Inclusive Statement:**

I want to let you know that you BELONG in my class! Everyone enrolled in this class is able to master this material! This means YOU! Enrollment into VCU and completing the prerequisite courses guarantees that you have what it takes! No matter what, YOU belong here!

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## Health and safety

### **Public health information**

Health advisories, including information about COVID-19 testing, vaccination, supplies and other public health measures, can be found at [go.vcu.edu/publichealth](https://go.vcu.edu/publichealth). Visit this site to stay informed about recommendations for VCU and surrounding communities. Additional links to health, wellness and safety information are on the [Life at VCU webpage](#).

### **Campus emergency information**

[Sign up to receive at VCU Alerts](#). It is essential to keep your information up-to-date within VCU Alert and to keep your permanent address and emergency contact information current in [eServices](#). VCU uses a variety of communication methods to alert the campus community about emergency situations and safety threats. Learn more about [types of alerts](#) online. Know the emergency phone number for the VCU Police (828-1234), and report suspicious activities and objects.

### **Managing stress**

Students may experience situations or challenges that can interfere with learning and interpersonal functioning including stress, anxiety, depression, alcohol and/or other drug use, concern for a friend or family member, loss, sleep difficulties, feeling hopeless or relationship problems. There are numerous campus resources available to students including [University Counseling Services](#) (804-828-6200 MPC Campus,

804-828-3964 MCV Campus) which provides brief therapy treatment, [University Student Health Services](#) (MPC 804 828-8828, MCV Campus 804 828-9220) and the [Department of Recreation & Well-Being \(RecWell\)](#) (804-828-9355). 24 hour emergency mental health support is available by calling (804) 828-6200 or utilizing the [National Suicide Prevention Lifeline](#) (dial 988).

### **Mandatory responsibility of faculty members to report incidents of sexual misconduct**

All VCU faculty members are Responsible Employees as defined by University policy. Responsible employees have a duty to report alleged policy violations to the Title IX Coordinator. This includes incidents of sexual harassment, sexual assault, dating & domestic violence, stalking, sexual exploitation, and related retaliation. Responsible employees may report information through this form or by emailing [titleix@vcu.edu](mailto:titleix@vcu.edu). For confidential support, contact [University Counseling Services](#), (804-828-6200 for MP Campus/804-828-3964 for MCV Campus) For more information, visit [our Title IX webpage](#).

### **Reading Days**

No classes or exams are held on Reading Day (Friday, Oct. 21, 2022) except in instances where a student is involved in clinical and field placements, practica, co-ops, internships and other work-related experiential learning activities. Faculty may not give an examination or an assignment on those days. Instead, students are encouraged to use these days for relaxation, study and/or review of class materials.

## **Academic Success and Integrity**

### **Honor System: upholding academic integrity**

The VCU Honor System policy describes the responsibilities of students, faculty and administration in upholding academic integrity. According to this policy, "Members of the academic community are required to conduct themselves in accordance with the highest standards of academic honesty, ethics and integrity at all times." [Students are expected to read the policy in full and learn about requirements.](#)

### **Early academic alerts**

VCU's [Early Notification Program](#) supports student success. If as an instructor I am concerned about your academic engagement or performance in the first few weeks of class, you may receive a Progress Report email encouraging you to reach out to me after class or during student hours (office hours) for additional support. As a community of

care, your [academic advisor](#), the [Writing Center](#), and the [Campus Learning Center](#) may also follow up to provide additional layers of support.

### **Students with disabilities**

VCU is committed to ensuring that all students maintain equal access to all aspects of the university, including educational experiences through the provision of reasonable accommodations and academic adjustments. In addition to being a requirement under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, this speaks directly to VCU's mission of inclusion, equity, and access. To receive accommodations or other disability-related supports, students must register with the Office of Student Accessibility and Educational Opportunity on the Monroe Park Campus (828-2253) or the Division for Academic Success on the MCV campus (828-9782). Students and faculty can visit the [Student Accessibility and Educational Opportunity website](#) and/or the [Division for Academic Success website](#) for additional information. Once students have completed the registration process, they will be provided with a letter of accommodation. They should provide a copy to their instructor(s) and attempt to schedule a meeting to discuss the implementation of accommodations as early in the semester as possible.

### **Career Services**

Looking for ways to tie what you are learning in your class to your future career or professional goals? [VCU Career Services](#) provides career planning services for all current VCU students and alumni. Career Services can help students with finding a work-study job on/off campus, resume writing, internship development, interviewing, preparing for graduate school, networking, or job searching. Students are invited to attend career events and workshops, and schedule individualized career advising appointments.

## Registration, Attendance and Financial Responsibilities

### **Class registration required for attendance**

Students may attend only those classes for which they have registered. Faculty may not add students to class rosters. If students are attending a class for which they have not registered, they must stop attending.

### **Attendance and consequences of poor attendance**

The instructional programs at VCU are based upon a series of class

meetings involving lectures, discussions, field experiences, special readings and reporting assignments. Therefore it is important for each student to be in attendance on a regular basis. A student who misses a class session is responsible for completing all material covered or assignments made during the absence.

- Students having attendance problems should contact their instructor to explain the reasons for nonattendance and to discuss the feasibility of continuing in the course. If the student has fallen so far behind that the successful completion of the course is impossible, the student should withdraw from the course before the end of the first 10 weeks of classes (by Oct. 28, 2022).
- If the student continues to miss class and does not officially withdraw from the course, the instructor may withdraw the student for nonattendance with a mark of "W" before the end of the first 10 weeks of classes or may assign an academic grade at the end. Withdrawals are not permitted after the end of the first 10 weeks of classes. For classes that do not conform to the semester calendar, the final withdrawal date occurs when half of the course has been completed.

### **Withdrawal from classes**

Before withdrawing from classes, students should consult their instructor as well as other appropriate university offices. Withdrawing from classes may negatively impact a student's financial aid award and his or her semester charges. To discuss financial aid and the student bill, contact the [Student Financial Management Center \(RAMQ\)](#) regarding the impact on your financial aid.

### **Military short-term training or deployment**

If military students receive orders for short-term training or for deployment/mobilization, they should inform and present their orders to Military Student Services and to their professor(s). For further information on policies and procedures contact [Military Student Services](#) at 828-5993.

### **Students representing the university – excused absences**

Students who represent the university (athletes and others) do not choose their schedules. All student athletes should provide their schedules to their instructors at the beginning of the semester. The Intercollegiate Athletic Council strongly encourages faculty to treat



missed classes or exams (because of a scheduling conflict) as excused absences and urges faculty to work with the students to make up the work or exam.

### **Student financial responsibility**

[Students assume the responsibility of full payment](#) of tuition and fees generated from their registration, all charges for housing and dining services and other applicable miscellaneous charges. Students are ultimately responsible for any unpaid balance on their account as a result of the University Financial Aid Office or their third party sponsor canceling or reducing their award(s).

## **Technology**

### **Computer and network use**

All students are expected to know and comply with [VCU's Computer and Network Use policy](#).

### **Student email standard**

Email is considered an official method for communication at VCU. Students are expected to check their official VCU email on a frequent and consistent basis (the university recommends daily) in order to remain informed of university-related communications. Students are responsible for the consequences of not reading, in a timely fashion, university-related communications sent to their official VCU student email account. Mail sent to the VCU email address may include notification of university-related actions, including disciplinary action. [Students must read this standard in its entirety](#).

### **Faculty communication about students**

VCU instructional faculty, administrators and staff maintain confidentiality of student records and disclose information in accordance with the Family Educational Rights and Privacy Act (FERPA). This means that VCU officials may disclose student record information without the consent of the student in certain situations. To support university operations, for example, VCU officials share information about students with other educational officials as necessary to perform their job duties. FERPA permits this disclosure to school officials who have a legitimate educational interest in the student information. In addition, VCU officials have obligations to report information shared by a student depending on the content of that information, for example, in compliance with VCU's policy on the duty to report. Unless FERPA permits a certain disclosure, VCU generally requires consent from a

student to disclose information from their education record to another individual. You may find additional information on the [VCU FERPA website](#).

## Important dates

Important dates for the current and future semesters are listed in the [VCU Academic Calendar](#).

## VCU Libraries

Use VCU Libraries to find and access library resources, spaces, technology and services that support and enhance all learning opportunities at the university. (<https://www.library.vcu.edu/>)