COT 3100C - Introduction to Discrete Structures

Section: 0002

College of Engineering and Computer Science

Department of Computer Science

Course Information

Term: Fall 2025
Class Meeting Days: TR
Class Meeting Time: 01:30PM - 02:45PM
Class Meeting Location: NSC O101
Modality: P
Credit Hours: 3.00

Combined Course Details

This syllabus applies to COT 3100C 0002, COT 3100C 0015, COT 3100C 0016, COT 3100C 0017, COT 3100C 0018.

Instructor Information

Name: Matthew Gerber
Title: Associate Lecturer
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Course Description

COT 3100C ENGR-COMP SCI 3(3,1)Introduction to Discrete Structures: CR: MAC2311C - Calculus with Analytic Geometry I (4). Logic, sets, functions, relations, combinatorics, graphics, Boolean algebras, finite-state machines, Turing machines, unsolvability, computational complexity. Fall, Spr, Sum

Discrete mathematics is the science of mathematical reasoning about *things that are not continuous* – for example, integers, as opposed to real numbers. Subsequent generalizations make it useful for reasoning about the things computers are capable (and incapable) of.

This course will introduce you to this kind of formal reasoning about *discrete structures* like integers and sets, including techniques for proving (and disproving) conjectures about them. It will prepare you to encounter more such material in future coursework, and prepare you to think more clearly about the capabilities and operations of computers and programs in your career going forward.\

Portions of the content and schematic of this course are adapted from material graciously provided by Arup Guha.

Student Learning Outcomes

The following topics form the foundation of formal, systematic thinking about computer science. We will cover, and by the end of the course, you should be able to demonstrate an understanding of:

- Logic and Boolean Algebra
- Sets
- Number Theory
- Induction
- Counting
- Probability
- Relations

- Functions

By the end of the course, you should:

- Have a firm general understanding of logical reasoning and proof as it applies to discrete mathematics, and hence, to ordinary computational problems.
- Be familiar and capable with the relevant mathematical definitions, symbols and techniques to understand proofs and other formal, systematic material in computer science.
- Understand that while creative insight plays a role in the process of proof and formal reasoning in computer science, you do not need special creative insight to verify the correctness or falsehood of ordinary conjectures – and hence, of ordinary programs.

Required Course Materials and Resources

No Materials Required

Recommended Course Materials

Title: Discrete Math and its Applications: Special Edition for University of Central Florida
ISBN: 0-07-775885-4
Authors: Kenneth Rosen
Publisher: McGraw-Hill
Edition: Any edition of this textbook should be fine. It's not required, but it's a good textbook that will give you an additional perspective on the material.

Course Assessment and Grading Procedure

The course will have approximately seven assignments, two take-at-home quizzes, two in-class midterms and a comprehensive in-class final exam.

25	5	20	20

Assignments	Quizzes	Exam 1	Exam 2

Grading Scale

The course will be graded on a plus-minus scale:

Letter Grade	Percentage
A	94-100%
A-	90-93%
B+	87-89%
B	84-86%
B-	80-83%
C+	77-79%
C	74-76%
C-	70-73%
D+	67-69%
D	64-66%
D-	61-63%
F	0-60%

Policies for Course Grade

Makeup Work Policy and Missed/Late Assignments

In general,

- I will penalize work that is not submitted within a very short time after the due date.
- I will not accept work submitted more than a day or two after the due date.

I may make exceptions with good reason before the due date; I will make exceptions on or after the due date only in well-documented severe circumstances.

My policies for make-up tests are similar – I am **much more likely** to grant a make-up test if notified before the test date than after.

Attendance

I will not take roll and attendance is not mandatory. However:

1. This is a concept-heavy course and you are responsible, without exception, for all information from class sessions, *explicitly and specifically including* material and discussion not in the notes provided online.

2. This is one of the more difficult courses in the IT/CS curriculum. Without consistent class attendance and out-of-class effort you will have a much more difficult time succeeding.

In general you must attend the lab session you are signed up for. If you need to switch lab sessions once or twice during the semester, you don't need to ask me.

Artificial Intelligence (AI) Use Policy

Use of Generative Artificial Intelligence (GenAI) is prohibited. Use of GenAI tools via website, app, or any other access, is not permitted in this class. All components of assignments in this course must be independently and originally completed by the student. Representing work created by GenAI as your own will be treated as plagiarism.

This policy is mainly for your benefit. GenAI is *terrible* at discrete logic.

Disability Access & Accommodations

The University of Central Florida is committed to providing equal access to all students with disabilities (ADHD, learning disabilities, Autism, chronic medical conditions, physical disabilities, etc.). To receive consideration for reasonable disability-related course accommodations, disabled students must contact Student Accessibility Services (SAS) and complete the steps required for SAS to review accommodation requests. More information can be found on the UCF Student Accessibility Services website under the Start Here tab or by contacting SAS directly (Ferrell Commons 185; sas@ucf.edu; Phone - 407-823-2371).

Approved accommodations are shared with course instructors via the SAS Course Accessibility Letter. Implementing certain accommodations may require discussion about specific considerations of the course design, course learning objectives, and the individual academic and course challenges experienced by the student. While students with disabilities or chronic health needs are also encouraged to discuss any course

concerns with professors in addition to contacting SAS, professors are not required to facilitate disability-related adjustments to the course unless the professor has received a Course Accessibility Letter from SAS that outlines approved accommodations.

Academic Integrity

Students should familiarize themselves with UCF's Code of Conduct at Student Conduct and Integrity Office. According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

1. Academic misconduct is defined as any submitted work or behavior that obstructs the instructor of record's ability to accurately assess the student's understanding or completion of course materials or degree requirements (e.g., assignment, quiz, and/or exam). Examples of academic misconduct include but are not limited to: plagiarism, unauthorized assistance to complete an academic exercise; unauthorized communication with others during an examination, course assignment, or project; falsifying or misrepresenting academic work; providing misleading information to create a personal advantage to complete course/degree requirements; or multiple submission(s) of academic work without permission of the instructor of record.

2. Any student who knowingly helps another violate academic behavior standards is also in violation of the standards.

3. Commercial Use of Academic Material. Selling of course material to another person and/or uploading course material to a third-party vendor without authorization or without the express permission of the University and the instructor of record. Course materials include but are not limited to class notes, the instructor of record's slide deck, tests, quizzes, labs, instruction sheets, homework, study guides, and handouts.

4. Soliciting assistance with academic coursework and/or degree requirements. The solicitation of assistance with an assignment, lab, quiz, test, paper, etc., without authorization of the instructor of record or designee is prohibited. This includes but is not limited to asking for answers to a quiz, trading answers, or offering to pay another to complete an assignment. It is considered Academic Misconduct to solicit assistance with academic coursework and/or degree requirements, even if the

solicitation did not yield actual assistance (for example, if there was no response to the solicitation).

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, [The Golden Rule](#). UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct and Academic Integrity, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Title IX

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at [Let's Be Clear](#) and [UCF Cares](#).

For more information on access and community engagement, Title IX, accessibility, or UCF's complaint processes contact:

- Title IX – ONAC – [Office of Nondiscrimination & Accommodations Compliance](#) & [askanadvocate@ucf.edu](#)
- Disability Accommodation – Student Accessibility Services – [Student Accessibility Services](#) & [sas@ucf.edu](#)
- [Access and Community Engagement](#) (including the Ginsberg Center for Inclusion and Community Engagement, Military and Veteran Student Success, and HSI Initiatives)
- UCF Compliance and Ethics Office – [Compliance, Ethics, and Risk Office](#) & [complianceandethics@ucf.edu](#)
- The [Ombuds Office](#) is a safe place to discuss concerns.

Reporting an Incident or Issue

If you believe you have experienced discrimination by any faculty or staff member, contact the Office of Nondiscrimination & Accommodations Compliance via the [ONAC website](#) or at 407-823-1336. You can also choose to report using the UCF Integrity Line either anonymously or as yourself at 1-855-877-6049 or by using the [online form](#). UCF cares about you and takes every report seriously. For more information see the [Reporting an Incident or Issue Webpage](#).

Deployed Active-Duty Military Students

Students who are deployed active-duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make arrangements.

Campus Safety

At UCF's Public Safety and Police, safety is the top priority. Emergencies on campus are rare, but if one should arise, it's important to be familiar with some basic safety and security concepts.

- In an emergency, always dial 911.

- Every UCF Classroom has an Emergency Procedure Guide posted on a wall near the door, which will show you how to respond to a variety of situations. This guide can also be found found online [here](#).

- In the event of an active threat, remember **AVOID**, **DENY**, **DEFEND**. Choose the best course of action and act immediately. Watch the video [here](#) to learn more.

  - **AVOID**. Pay attention to your surroundings and have an exit plan. Get as much distance and as many barriers between you and the threat as quickly as possible.

  - **DENY**. When avoiding is difficult or impossible, deny the threat access to you and your space. Lockdown by creating barriers, turning the lights off and remaining quiet and out of sight. Make sure your cell phone is silenced, but do not turn it off.

  - **DEFEND**. When you are unable to put distance between yourself and the threat, be prepared to protect yourself. Commit to your actions, be aggressive and do not fight fairly. Do whatever it takes to survive.

- For emergencies on campus, UCF will utilize the [UCF Alert](#) system. All UCF students, faculty, and staff are automatically enrolled to receive these email and text alerts, however, it's a good idea to frequently ensure your [contact information is up to date](#).

Financial Aid Accountability

All instructors/faculty are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete this activity by the end of the first week of classes or as soon as possible after adding the course. Failure to do so may result in a delay in the disbursement of your financial aid.

Class Schedule

Course Schedule	
Week	**Topic**
1	Introduction and Logic
2	Logic

Week	Topic
3	Sets
4	Sets
5	Review and Exam
6	Number Theory
7	Number Theory and Induction
8	Induction
9	Induction and Counting
10	Counting
11	Review and Exam
12	Probability
13	Probability and Relations
14	Relations
15	Final Review