

Applications of Discrete Structures

COT 3100 Sections: 0926, 1096, 1097, 13BC, 2307, 3A08, 3A09

Class Numbers: 21129, 12787, 12788, 12816, 12818, 12819, 12820

Class Periods: T 2,3; R 3 | T 08:30 – 10:25 AM EST; R 09:35 – 10:25 AM EST

Location: Zoom! [see daily Module, there will be recordings]

Academic Term: Fall 2020

Instructor:

Pete Dobbins

pjd@cise.ufl.edu

352.294.6685

Virtual Office Hours [VOH]:

- Held via Zoom.
- TBD: my summer schedule is still being arranged. My hours will be formalized before the second week of classes and posted on our weekly schedule in Canvas.
- During the *first week* of classes, *Wednesday, September 2, 2020 from 10:00 – 11:00 AM EST* I will hold VOH to kick things off. If you any questions, please swing by the Zoom session and we will chat.

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Please contact through the Canvas website and refer to the daily schedule posted in canvas for individual email addresses, office locations, and office hours.

- Rebecca Boes
- Simon Kato
- Tianrui Li
- Mini Luo
- Victoria Mei
- Nicholas Miller
- Richard Musca
- George Pu
- Jason Puthusseril
- Zonshen Yu

Course Description

Covers the mathematics of discrete events; i.e., events that involve distinct elements, finite structures of distinct elements or finite sampled versions of continuous phenomena (such as movement). (M) 3 credit hours

Course Pre-Requisites / Co-Requisites

Prerequisite: MAC 2233 or MAC 2311 or MAC 3472

Corequisite: COP 3504 or COP 3503

Attributes: General Education - Mathematics

Course Objectives

The purpose of this course is to introduce students to the techniques required in order to think mathematically about how a computer operates. Included within the topics of discussion will be: propositional logic, algorithms, time complexity, mathematical reasoning, relations, and trees. Weekly discussion sessions, homework exercises, and problem solving will enable you to practice and learn the techniques discussed.

Rote memorization of terminology and definitions is strongly recommended; if you do not know the terminology, symbols, theorems, and so on, when asked to solve a problem you are not likely implement a valid solution. Due to the nature and complexity of this field of study, the course will be time consuming and requires serious dedication on the part of each student. Be careful not to fall behind, success in this course requires consistent effort and practice.

Materials and Supply Fees

There are no materials or supply fees for this course beyond the textbook and its companion Connect software. See the *Required Textbook and Software* section below for purchasing details.

Professional Component (ABET):

See the table provided in the *Relation to Program Outcomes* section that follows.

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	High
2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.	Medium
3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	
4. An ability to communicate effectively with a range of audiences	
5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	
6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.	Medium
7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty	

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

- [McGraw-Hill Connect](#)
- [Discrete Mathematics and Its Applications](#)
- [Kenneth Rosen](#)
- [McGraw-Hill Higher Education](#)
- [2018](#)
- [8th Edition](#)

The textbook comes with Connect. Purchasing through the steps provided in [MGH Connect.pdf](#) will link directly to the Canvas plugin.

Course Schedule

Here is a general schedule for the semester. Please refer to the *Canvas Announcements* and *Modules* for final details about each topic, exact dates, and the specific schedule we implement this semester. Note, under *Modules*, individual lectures are listed using the format: **year / month / day | L##: [P#] General Topic**.

Dates	Week	Topics	Chapters
2020 / 08 / 30 - 09 / 05	1	Logic	1
2020 / 09 / 06 - 09 / 12	2	Predicate Calculus, Inference	1
2020 / 09 / 13 - 09 / 19	3	Proofs, Sets	1, 2
2020 / 09 / 20 - 09 / 26	4	Functions; Exam 1 - 09/22	2
2020 / 09 / 27 - 10 / 03	5	Sequences, Series, Summations	2
2020 / 10 / 04 - 10 / 10	6	Algorithms, Searching	3
2020 / 10 / 11 - 10 / 17	7	Algorithms, Sorting	3
2020 / 10 / 18 - 10 / 24	8	Number Theory; Exam 2 - 10/20	4
2020 / 10 / 25 - 10 / 31	9	Induction	5
2020 / 11 / 01 - 11 / 07	10	Recursion	5
2020 / 11 / 08 - 11 / 14	11	Counting	6
2020 / 11 / 15 - 11 / 21	12	Probability; Exam 3 - 11/17	7
2020 / 11 / 22 - 11 / 28	13	Relations; Thanksgiving	9
2020 / 11 / 29 - 12 / 05	14	Graphs	10
2020 / 12 / 06 - 12 / 12	15	Review; Exam 4 - 12/08	
2020 / 12 / 13 - 12 / 19	16	Makeup (if necessary)	All

Attendance Policy, Class Expectations, and Make-Up Policy

This semester, our course will be delivered through Zoom and the UF Online platform.

Live lectures will be *presented synchronously via Zoom*:

- **T 2nd period [08:30 to 09:20 PM]**
- **T 3rd period [09:35 to 10:25 PM]**
- **R 3rd period [09:35 to 10:25 PM]**

Here are points of significance for our *online lecture process* this semester.

- You are responsible for all material covered during lecture.
- Lecture attendance will not be taken (attendance is not mandatory).
- Lectures will be recorded (see the disclaimers and notice that follow).

Disclaimer #1: many Zoom sessions are being held campus-wide to deliver courses and the demand for recorded materials is high. It is possible there will be delays while completing the recording process. *I will post the recording as soon as possible [under the corresponding Canvas Module]*, however if you want to ensure that you see the lecture as soon as you are able, you should participate in the synchronous live lecture.

Disclaimer #2: the Zoom platform records these sessions and I cannot guarantee they will not experience errors in the recording process. I have not observed this to be a significant problem. However, you should always be aware that attending the live lecture session is always the best way to ensure you are able to view the complete lecture content.

This semester, we will implement a hybrid of the *flipped* classroom and include collaborative learning to enhance your comprehension of the course material. Our lectures will focus on solving problems. First, I will review content and present problem solutions. Second, we will solve problems together, as a group. Next, you will be divided into groups for solving Homework exercises. Finally, there will be interactive online exercises for you to solve individually. In order to facilitate much of our lecture time being focused on group problem solving, videos covering our core lecture content will be posted through Canvas. It is expected that you watch these videos in preparation for our lectures.

Registration for our Makeup is provided given you inform me one week prior to the conflict in question and present sufficient documentation regarding absences from graded class activities, for example a note from a medical professional if you were to become ill. There are very few events which would impede your participation in a graded activity warranting an exception, that you would not be aware of well before [at least a few hours] the start of the activity. Contacting me after the graded activity may result in the exception not meeting course requirements and a makeup option no longer being available. Note, exams will be administered during our UF assigned lecture period on the dates provided in the table below. This is structured to provide our course with the simplest format for avoiding Exam conflicts. Reference the Exams section below for more details.

All excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>) and require appropriate documentation. All excused exams will be made up at the same time, on the same cumulative exam, for a 120 minute [2 hour] timeframe, and held on Thursday, December 17, 2020 between 10:00 AM EST and 12:00 PM EST. Note, this is our UF assigned final exam period block.

There is not a structured mechanism for making up: discussion attendance, homework, and reading exercises. Instead, only 10 discussion attendances [out of the 13 that will be held] are required to earn all discussion points, one homework score (your lowest) will automatically be dropped, and one reading exercise score (your lowest) will automatically be dropped. As well, extra credit is incorporated into the course, providing flexibility in situations where you might not complete an assignment on time.

Late work [such as HW, this is not applicable to in other course activities or Exams which must be completed by the assigned date/time of the activity unless the absence is excused]: No work can be accepted after the solution is posted. If the solution has not been posted and you submit one day late, there will be a penalty of up to 50% on the graded work. No work that is two days late can be accepted. Note, if the assignment is due at 11:59 PM, then at 12:00 AM the work is one day late.

Evaluation of Grades

Activity	Final Grade Percentage	Comment
Exam 1	12%	
Exam 2	15%	
Exam 3	20%	
Exam 4	20%	
Discussion Attendance	10%	10 [max] out of 13 [1 point per attendance]
Homework	15%	1 drop [lowest score]
Reading Exercises	10%	1 drop [lowest score]
Total	102%	← 2% Extra Credit

Exams

There will be four exams. **Exam 1** will be 12%, **Exam 2** will be 15%, **Exam 3** will be 20%, and **Exam 4** will be 20% of your final grade. Following UF standards during the COVID-19 online course protocol, exams will be held administered using HonorLock. Exams will be held during our UF assigned Tuesday lecture block. You will have 120 minutes [two-hours] to complete the exam, **starting at 08:25 AM EST and ending at 10:35 AM EST** on the dates given in this table.

Exam	Day	Date
1	Tuesday	2020 / 09 / 22
2	Tuesday	2020 / 10 / 20
3	Tuesday	2020 / 11 / 17
4	Tuesday	2020 / 12 / 08

Discussion Sessions

Discussion sessions **begin** on Monday, **September 14, 2020** [note September 7 is the Labor day holiday], be held via Zoom, and meet on *Mondays* every week of the semester. During discussions, we will review course material, solve problems together, and you will work with classmates to construct solutions to problems. Discussion attendance will be taken and is worth **10%** of your final grade. You are required to be present at *your UF registered* discussion session for a minimum of **30 minutes**.

UF policy requires you to attend the discussions session in which you are registered. Discussion sessions will **NOT** be video recorded. The section numbers, meeting times and locations are provided in this table.

Section	Class Number	Period	Time	Location	Discussion Leaders
0926	21129	10	05:10 – 06:00 PM	Zoom	George, Tianrui
1096	12787	3	09:35 – 10:25 AM	Zoom	Jason, Simon
1097	12788	11	06:15 – 07:05 PM	Zoom	Richard, Tianrui
13BC	12816	3	09:35 – 10:25 AM	Zoom	Rebecca, Victoria
2307	12818	9	04:05 – 04:55 PM	Zoom	Simon, Zonshen
3A08	12819	5	11:45 AM – 12:35 PM	Zoom	Richard, Victoria
3A09	12820	7	1:55 – 2:45 PM	Zoom	Mini, Zonshen

Homework [HW]

Homework activities will be **15%** of your final grade. They will be assigned and completed using the Connect software system. These activities will be more challenging than the Reading Exercises (see below). It is recommended that you complete the Reading Exercises before working on the associated Homework. You are allowed to discuss the homework with your classmates, however every student must complete their own homework activity in order to receive credit.

Reading Exercises [RE]

Reading exercises will be **10%** of your final grade. We will be using McGraw Hill's Connect system to read through the textbook. After completing each section, in addition to the homework activities, there will be exercises directly associated with the material you are reading. The Connect system will assist you as you complete the exercises. These exercises are more introductory than the Homework and it is recommended that you complete them before working on the Homework activities. Reading Exercises will be completed individually.

Grading Policy

The range used to calculate your final letter grade in our course will be no harsher than this grading scale provided in the following table. Your final point total will be calculated using the percentages given in the *Evaluation of Grades* section. The percent you earn on each activity will be multiplied by the grade points associated with that activity.

Grade Points	Letter Grade	Highest	Lowest
4.00	A	100+	92.00
3.67	A–	91.99	89.00
3.33	B+	88.99	86.00
3.00	B	85.99	82.00
2.67	B–	81.99	79.00
2.33	C+	78.99	76.00
2.00	C	75.99	72.00
1.67	C–	71.99	69.00
1.33	D+	68.99	66.00
1.00	D	65.99	62.00
0.67	D–	61.99	59.00

0.00	E	58.99	0.00
------	---	-------	------

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Re-Grade Requests

All grading/re-grading issues **must** be resolved within **1 week** of the graded work being returned. You must return exams/projects/quizzes to the person grading the activity in question, along with a **printed (not handwritten) attachment** stating the reasons for the re-grade. Do not write anything on the exam itself or detach (un-staple) the pages from each other. If you do so, your exam/project/quiz will not be re-graded. Note, when requesting a re-grade, the whole exam/project/quiz is subject to the re-grade, not just the portion you specify. We will be happy to discuss the solution and answer any questions, however no change will be made after the allotted week has passed.

Special Notes for the First Week of Classes

There are **no discussion sessions the first week of classes** [Monday, **August 31**, 2020]. During the *first week* of classes my VOH will be *Wednesday, September 2, 2020 from 10:00 - 11:00 AM EST*. The rest of our course staff will begin holding regular VOH during the second week of classes, starting Monday, September 7, 2020.

Disclaimer

This document is subject to change at the discretion of the instructor, based on unforeseen circumstances (such as pandemics, hurricanes, sub-freezing temperatures... this is Florida after all, rifts in the fabric of time, and so on) occurring during the semester. Any such change would be introduced in order to better accommodate *you* due to the circumstances being experienced.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request accommodations should connect with the Disability Resource Center <https://disability.ufl.edu/students/get-started/> (352.392.8565, <https://disability.ufl.edu/>). Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester, delaying may affect the ability to schedule the accommodation. All exams, quizzes, and so on administered through the DRC office must follow the course exam structure, being completed on the same date and time as the course exam.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluer.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every

person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.