

Applications of Discrete Structures

COT 3100 Sections: 0926, 4G19

Class Periods: T // R, 2-3 // 3, 08:30 – 10:25 // 09:35 – 10:25;

Location: CSE E220

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

Class Periods: T // R, 8-9 // 9, 15:00 – 16:55 // 16:05 – 16:55;

Location: TUR L007

Academic Term: Fall 2019

Instructor:

Pete Dobbins

pjd@cise.ufl.edu

352.294.6685

Office Hours: T 11:00 – 11:45, R 11:00 – 12:30, F 9:35 – 10:25, CSE E474

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.

- Blake Anderson
- Chris Dizenzo
- Silian Hu
- Asher Johnson
- Nicholas Miller
- Hamish Pierpont
- Jason Puthusseril
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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 [https://www.cise.ufl.edu/~pjd/courses/3100/admin/MGH_Connect.pdf]
- Discrete Mathematics and Its Applications
- Kenneth Rosen
- McGraw-Hill Higher Education
- 2018
- 8th Edition
- ISBN number

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 announcements, course website, and calendar for final details about each topic, exact dates, and the specific schedule we implement this semester.

Dates	Week	Topics	Chapters
2019 / 08 / 18 – 08 / 24	1	Logic	1

2019 / 08 / 25 - 08 / 31	2	Proofs	1
2019 / 09 / 01 - 09 / 07	3	Sets	2
2019 / 09 / 08 - 09 / 14	4	Functions	2
2019 / 09 / 15 - 09 / 21	5	Algorithms; Exam #1	3
2019 / 09 / 22 - 09 / 28	6	Algorithms	3
2019 / 09 / 29 - 10 / 05	7	Number Theory	4
2019 / 10 / 06 - 10 / 12	8	Induction; Exam #2	5
2019 / 10 / 13 - 10 / 19	9	Induction; Recursion	5
2019 / 10 / 20 - 10 / 26	10	Counting	6
2019 / 10 / 27 - 11 / 02	11	Probability	7
2019 / 11 / 03 - 11 / 09	12	Relations; Exam #3	9
2019 / 11 / 10 - 11 / 16	13	Graphs	10
2019 / 11 / 17 - 11 / 23	14	Trees	11
2019 / 11 / 24 - 11 / 30	15	Review	All
2019 / 12 / 01 - 12 / 07	16	Exam #3	
2019 / 12 / 08 - 12 / 14	17	Final Exams	

Attendance Policy, Class Expectations, and Make-Up Policy

This semester, we will use implement a hybrid of the flipped classroom and include collaborative learning to enhance your comprehension of the course material. The first period of our two-period Tuesday block will review content and I will present problem solutions. During the second period Tuesday and the Thursday lecture, we will have class activities where you solve and present solutions to the class. 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.

You will be divided into groups and together solve problems, presenting your solutions to the class on assigned dates. The structure will be that a block of groups will be assigned to present a set of problems on a given period/date, then at random [or through you volunteering] a solution to the assigned problems will be presented.

Attendance will be taken for all groups assigned to present on the given period/date. You are only *required* to attend on the dates when your group is a part of the presentation set. However, exam questions will be drawn from the presentation problem sets, so attendance is highly recommended. Please see the course staff early and often [through office hours and discussion sessions] so that we can assist you in the preparation of the solution to your assigned problem set.

Make ups are 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 make up option no longer being available.

There is no way to make up participation activities. This semester, we have 14 discussions sessions [note, over the 17 weeks in the semester, there is not discussion week #1, week #13 - Veterans day, and week #17 - Final Exams]. You are automatically excused without penalty from 4 discussion sessions. Similarly, there is no method for making up lecture absences. Therefore, extra credit has been incorporated into the grade calculation and will allow for missing lecture.

Similarly, there is not a structured mechanism for making up homework. Again, extra credit incorporated into the course, providing flexibility in situations where you might not complete an assignment on time.

Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

This semester, all make up exams will be administered during our University assigned final exam periods:

- Sections: 1096, 1097, 13BC, 2307, 3A08, 3A09 [class numbers: 13144, 13145, 13173, 13175, 13176, 13177] on Tuesday, December 10, 2019 from 07:30 to 09:30 [note, that is 7:30 AM].
- Sections: 0926, 4G19 [class numbers: 23529, 13178] on Wednesday, December 11, 2019 from 15:00 to 17:00 [note, that is 3 PM].

Evaluation of Grades

Activity	Final Grade Percentage
Exams [4]	80% [20% each]
Homework	15%
Participation	10%
Total	105%

← 5% Extra Credit

Homework

Homework will be assigned and completed using the Connect software system. Connect provides activities to be completed while reading through chapters of the textbook. Homework will be completed individually [and not in groups].

Participation

Participation will be evaluated based upon your attendance on the dates assigned to your problem solving group, the presentations you provide, and your attendance in discussion sessions.

Exams

There will be four exams. Each exam will be 20% of the final grade, combined totaling 80% of your grade. Exams will be held during the UF evening assembly exam periods [periods: E2 and E3; 20:20 – 22:10]. The exam schedule is given on the next table and room assignments are given on the table that follow.

Exam	Day	Date
I	Wednesday	2019 / 09 / 18
II	Tuesday	2019 / 10 / 08
III	Wednesday	2019 / 11 / 06
IV	Wednesday	2019 / 12 / 04

Section	Class Number	Exam Room Locations			
		I	II	III	IV
0926	23529	PUGH 170	FLG 0230	FLG 0210	FLG 0210
1096	13144	PUGH 170	FLG 0280	FLG 0280	FAB 0103
1097	13145	PUGH 170	FLG 0260	FLG 0210	FLG 0210
13BC	13173	PUGH 170	FLG 0280	FLG 0280	FAB 0103
2307	13175	CLB C130	FLG 0230	CLB C130	MAEB 0211
3A08	13176	CLB C130	FLG 0210	CLB C130	MCCB G086
3A09	13177	CLB C130	MCCB G086	CLB C130	LIT 0113
4G19	13178	CLB C130	FLG 0260	CLB C130	FLG 0265

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/ugrad/current/regulations/info/grades.aspx>

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 will be no office hours the first week of classes. If you need to see me, do so after lecture or schedule an individual appointment.

Discussion Sessions

Discussion sessions begin on Monday, August 26, 2019 and meet on *Mondays* every week of the semester. During discussions, we will review course material, solve problems together, and you will work with your problem solving group to construct solution presentations to your assigned problem sets.

UF policy requires you to attend the discussions session in which you are registered. Discussion attendance will be recorded. The section numbers, meeting times and locations are provided in this table.

Section	Class Number	Period	Time	Location
0926	23529	2 nd	08:30 – 09:20	TUR 2306
1096	13144	10 th	17:10 – 16:00	CSE E220
1097	13145	11 th	18:15 – 19:05	CSE E220
13BC	13173	3 rd	09:35 – 10:25	CSE E221
2307	13175	4 th	10:40 – 11:30	CSE E220
3A08	13176	5 th	11:45 – 12:35	CSE E220
3A09	13177	7 th	13:55 – 14:45	MCCA 2196
4G19	13178	8 th	15:00 – 15:50	CSE E220

Disclaimer

This document is subject to change at the discretion of the instructor, based on unforeseen circumstances (such as hurricanes, sub-freezing temperatures... this is Florida after all, rifts in the fabric of time, and so on) occurring during the semester.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. 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.

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.aa.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.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.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:

Applications of Discrete Structures, COT 3100
Pete Dobbins, FA19

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>.