



COT 4115.001 S15

Advanced Discrete Structures

TR, 12:30pm - 1:45pm, BSN 1403

Dr. Jonathan Burns  
jtburns@mail.usf.edu  
CMC 131-C  
Office Hours: MW 1:00pm -2:00pm (Tenative)

**Course Description:** Advanced topics in discrete mathematics: number theory, groups, rings and fields, finite fields, and combinatorics, as applied to computer systems. Theoretical application of mathematic concepts to coding theory and cryptology.

**Credit Hours:** 3

**Prerequisites:** EEL 4851C: Data Structures, COT 3100: Introduction to Discrete Structures.

**Note:** EEL 4851C: Data Structures, COT 3100: Introduction to Discrete Structures.

**Text:** *Introduction to Cryptography with Coding Theory*, 2<sup>nd</sup> Edition

**Authors:** W. Trappe and L. Washington; **ISBN-13:** 978-0131862395

**Course Objectives:**

Students will learn:

1. Advanced concepts in discrete Mathematics such as groups, rings, and fields
2. Applications of these algebraic structures in codes used in digital communications
3. Concepts of primality and factorization in integers and polynomials
4. Applications of these concepts in cryptology and coding theory

**Grade Distribution:**

Homework	25%	12 Assignments (Drop Lowest 2)
Project	25%	T.B.A.
Test 1	25%	Thursday, January 29
Test 2	25%	Thursday, February 26
Test 3	25%	Thursday, April 30 (10:00am - 12:00pm)
Total	100%	(Lowest Dropped)

**Letter Grade Distribution:**

100 - 96	A+	89 - 86	B+	79 - 76	C+	69 - 66	D+
95 - 93	A	85 - 83	B	75 - 73	C	65 - 60	D
92 - 90	A-	82 - 80	B-	72 - 70	C-	59 - 0	F

## Course Policies:

- **Homework**

- **No late assignments will be accepted under any circumstances.**
- Students are expected to work independently. **Offering** and **accepting** solutions from others is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the Academic Honesty Policy**. Discussion amongst students is encouraged, but when in doubt, direct your questions to the professor.

- **Exams**

- Exams are closed book and closed notes.
- Four-function calculators are permitted during exams (no cell phones, scientific calculators, or computers).
- **No makeup exams will be given.**
- Cheating on exams or class assignments will not be tolerated and will result in a grade of FF in the course.

- **Grade Dissemination**

- You can access your scores at any time using "Grades" in Canvas.
- Please note that scores returned mid-semester are unofficial grades.

- **Attendance and Absences**

- Attendance is expected, but *will not* be taken each class.
- Students are however responsible for all missed work, regardless of the reason for absence.
- All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs. If you observe religious holidays that conflict with the test date(s), you should make this known to the instructor, in writing, by the second week of class.

- **Canvas**

- This course will be offered via USF's new learning management system (LMS), Canvas.
- If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please view the following videos or consult the Canvas help guides.
- You may also contact USF's IT department at (813) 974-1222 or help@usf.edu.

## College Policies:

- **Students with Disabilities**

Any student with a disability should be encouraged to meet with the instructor privately during the first week of class to discuss. Each student must bring a current Memorandum of Accommodations from the Office of Student Disability Services that is prerequisite for receiving accommodations. Accommodated examinations through the Office of Student Disability Services require two weeks notice.

- **Grades of "Incomplete"**

Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the end of the subsequent semester or the I will automatically be recorded as an F on your transcript.

- **Important Notice for USF Students**

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to Canvas and email messaging and/or an alternate schedule. It is the responsibility of the student to monitor the Canvas site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.