SYLLABUS

Instructor: **Dr. Charles E. Hughes**
                         Office: HEC247C; charles.e.hughes@knights.ucf.edu; Use Subject COT4210
Class: **TR   4:30pm – 5:45pm in BA1-119**
Office Hours: **TR   2:00pm – 3:30pm in HEC-247C**
TA hours: **Stephen Powell; Office Hours: MW1500-1630 (3:00PM-4:30PM)**
                         Office: HEC-308; stephenmpowell@knights.ucf.edu; Use Subject COT4210
                         Trevor Bland; Office Hours: F1000-1200 (10:00AM-12:00PM)
                         Office: HEC-308; tbland96@knights.ucf.edu; Use Subject COT4210

Texts: Course notes at http://www.cs.ucf.edu/courses/cot4210/Fall2019/COT4210Fall2019.html
                   Sipser, *Introduction to the Theory of Computation 3rd Ed*., Cengage Learning, 2013
or   Sipser, *Introduction to the Theory of Computation 2nd Ed*., Cengage Learning, 2005

Rules to Abide by
- Do Your Own Work
  – When you turn in an assignment, you are implicitly telling me that these are the fruits of your labor. Do not copy anyone else's homework or let anyone else copy yours. In contrast, working together to understand lecture material and solutions to problems not posed as assignments is encouraged. Cheating on an assignment will result in an F on that assignment for the first infraction and an F for the course on the second. This can also lead to administrative action at the university level.
- Late Assignments
  – I will accept no late assignments, except under very unusual conditions, and those exceptions must be arranged with me or one of the GTAs in advance unless associated with some tragic event.
- Exams
  – No communication during exams, except with me or a designated proctor, will be tolerated. A single offense will lead to termination of your participation in the class, the assignment of a failing grade and probable administrative action at the university level.

Grading Policy:
- Mid Term – 150 points
- Final Exam – 200 points
- Quizzes and Assignments – 75 points
- Bonus – best exam weighed +75 points (Note: This is a weighting change, not a free 75 points)
- Total Available: 500
- Grading will be A $\geq$ 90%, A- $\geq$ 88%, B+ $\geq$ 85%, B $\geq$ 80%, B- $\geq$78%, C+ $\geq$ 75%, C $\geq$ 70%, C- $\geq$ 60%, D $\geq$ 50%, F < 50%

Attendance: I do not take attendance, but I expect it, and I expect you to arrive on time. If people begin arriving late or missing class as a matter of habit, I may begin having unannounced quizzes. If you have legitimate reasons for arriving late or leaving early, please inform me ahead of time, and please enter or leave the classroom as unobtrusively as reasonable.

Financial Aid.
As of Fall 2014, all faculty members are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete the following academic activity by the end of the first week of classes. Failure to do so will result in a delay in the disbursement of your financial aid.
To meet the above requirement, complete Assignment#1 at Webcourses:
The assignment needs to be submitted through Webcourses.
            Do this by one minute before midnight Friday, 8/30/2019.

Important Dates
- Midterm – Tentatively Thursday, October 17
- Withdraw Deadline – Friday, November 1
- Final – Thursday, Dec. 5, 4:00PM–6:50PM
- Days off: 08/29 (UCF-FAMU game); 11/28 (Thanksgiving)
- Midterm Exam date is subject to change with appropriate notice. Final exam is, of course, fixed in stone.

Expected Outcomes
- You will gain knowledge of various types of automata and other computational models and their relation to formal languages.
- You will have a strong sense of the limits that are imposed by the very nature of computation, and the ubiquity of unsolvable problems throughout CS.
- You will understand the notion of computational complexity and especially the classes of problems P, NP, NP-complete and NP-Hard.
- You will come away with stronger formal proof skills and (I hope) a better appreciation of the importance of discrete mathematics to CS.

Brief Outline
Introduce Theory of Computation, including
• Various models of computation
  – Finite State Automata and their relation to regular expressions, regular grammars and regular equations
  – Push Down Automata and their relation to context-free languages and parsing of programming languages
  – Techniques for showing languages are NOT in particular language classes
  – Closure and non-closure problems
  – Decision procedures for solvable problems related to automata and languages
• Limits of computation
  – Turing Machines and other equivalent models
  – Undecidable problems
  – The technique of reducibility
  – Rice's Theorem and the ubiquity of undecidability
  – Undecidability of certain properties of formal languages
• Complexity theory
  – Order notation (this should be a review)
  – Time complexity, the sets P, NP, NP-Hard, NP-Complete, Co-NP, and the question does P=NP?
  – Reduction techniques applied to problems to show they are NP-Hard and NP-Complete.

Course Accessibility Statement
The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. This syllabus is available in alternate formats upon request. Students with disabilities who need specific access in this course, such as accommodations, should contact the professor as soon as possible to discuss various access options. Students should also connect with Student Accessibility Services (Ferrell Commons, 7F, Room 185, sas@ucf.edu, phone (407) 823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable.

Campus Safety Statement
Emergencies on campus are rare, but if one should arise in our class, we will all need to work together. Everyone should be aware of the surroundings and familiar with some basic safety and security concepts.
• In case of an emergency, dial 911 for assistance.
• Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Please make a note of the guide's physical location and consider reviewing the online version at http://emergency.ucf.edu/emergency_guide.html.
• Familiarize yourself with evacuation routes from each of your classrooms and have a plan for finding safety in case of an emergency. (Insert class-specific details if appropriate)
• If there is a medical emergency during class, we may need to access a first aid kit or AED (Automated External Defibrillator). To learn where those items are located in this building, see http://www.ehs.ucf.edu/AEDlocations-UCF (click on link from menu on left). (insert class specific information if appropriate)
• To stay informed about emergency situations, sign up to receive UCF text alerts by going to my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the tool bar, scroll down to the blue "Personal Information" heading on your Student Center screen, click on "UCF Alert", fill out the information, including your e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
• If you have a special need related to emergency situations, please speak with me during office hours.
• Consider viewing this video (https://youtu.be/NIKYajEx4pk) about how to manage an active shooter situation on campus or elsewhere.

Deployed Active Duty Military Students
If you are a deployed active duty military student and feel that you may need a special accommodation due to that unique status, please contact me to discuss your circumstances.

University Approved Participation in Academic Conferences and Competitions
If you are presenting a paper at a conference or are going to be out of town representing the university at an event like a programming competition or a cyber competition and feel that you may need a special accommodation due to those occurrences, please contact me to discuss your circumstances.