SYLLABUS

Instructor: **Dr. Charles E. Hughes**
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Class: **TR   6:00PM – 7:15PM; HEC 118**
Office Hours: **TR   3:30PM – 4:45PM**
Texts: Course notes
> **Recommended Reading:**
> Garey & Johnson, *Computers and Intractability: A guide to the Theory of NP-Completeness*, W. H. Freeman &
> Co., 1979.
> Papadimitriou & Lewis, *Elements of the Theory of Computation*, Prentice-Hall, 1997.
> Hopcroft, Motwani&Ullman, *Intro to Automata Theory, Languages and Computation 2nd Ed.*, Addison-Wesley,
> 2001
> Davis, Sigal and Weyuker, *Computability, Complexity and Languages 2nd Ed.*, Academic Press (Morgan
> Kaufmann), 1994.
> Sipser, *Introduction to the Theory of Computation 2nd Ed.*, Course Technologies, 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 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 – 100 points ; Final Exam – 150 points
- Assignments – Up to 100 points; Paper and Presentation – 50 points
- Total Available: About 400
- Grading will be A >= 90%, B+ >= 85%, B >= 80%, C+ >= 75%, C >= 70%, D >= 50%, F < 50%

Grading of Assignments
I will grade harder than my actual expectations run. In general, I will award everyone 110% of the grade they are assigned on the returned papers when it comes to final grade computation.

Exam Weights
The weights of exams will be adjusted to your personal benefits, as I weigh the exam you do well in more than one in which you do less well.

The Z designation
UCF faculty members have a responsibility for your education and the value of a UCF degree, and so seek to prevent unethical behavior and when necessary respond to infringements of academic integrity. Penalties can include a failing grade in an assignment or in the course, suspension or expulsion from the university, and/or a "Z Designation" on a student's official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z. For more information about the Z Designation, see http://z.ucf.edu/.

Attendance: I do not take attendance but I expect it, and I expect you to arrive on lime. If people begin arriving late or missing class as a matter of habit, I will 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.

Expected Outcomes
• You will gain an understanding of various types of computational models and their relation to each other.
• 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 of the classes of problems known as P, NP, co-NP, NP-complete and NP-Hard.
• You will (hopefully) come away with stronger formal proof skills and a better appreciation of the importance of discrete mathematics to all aspects of CS.

Brief Outline
Introduce Theory of Computation, including
•   Various models of computation
  –   Turing Machines and other equivalent models
  –   Deterministic versus non-deterministic models
•   Limits of computation
  –   Undecidable problems
  –   The technique of reducibility
  –   The ubiquity of undecidability, including Rice's Theorem
  –   The notion of semi-decidable (re) and of co-re sets
•   Complexity theory
  –   Order notation (this should be a review)
  –   Polynomial reducibility
  –   Time complexity, the sets P, NP, co-NP, NP-complete, NP-hard, etc., and the question does P=NP?
  –   Various NP complete problems

Important dates
  •Exam#1 – Tuesday, October 5 (tentative)
  •Withdraw Deadline – Friday, October 15
  •Veterans Day – Thursday, November 11
  •Thanksgiving – Thursday, November 25
  Final – Tues., Dec. 7, 4:00PM–6:50PM