CS5383, THEORY of AUTOMATA, Spring 2016

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Course Objectives: to provide an introduction to the theoretical foundations of computer science. We will discuss different models of computation and their limitations.

Learning Outcomes: Students are expected to learn:

- Several formal languages used to define infinite sets of strings by finite means
- Classification of these languages according to their expressive power
- Algorithms which, given a string $X$ and a representation of a set $S$ in one of those languages, check if $X \in S$
- General definition of an algorithm, arguments in its favor (Church-Turing thesis), and existence of undecidable sets
- Basic notions of complexity theory
- Some history of the subject and of the interaction between computer science and several other sciences including logic, foundations of mathematics, philosophy, linguistics, and software engineering.
- Standard proof methods of Automata Theory.

Methods of Assessment:
Two Tests - 100 points each
Final exam (comprehensive) - 150 points
Homework - 50 points

Tests: Tests will include questions checking the students understanding of definitions and theorems (including precise formulations and some proofs). Students will be expected to demonstrate mastery of the use of specification languages discussed in class, and of the corresponding decidability algorithms. Some questions may test understanding of relative importance of the results and their history.

Homework Policy: Normally homework will be given once a week. Some of it will be collected and graded. Questions about the homework (as well as other questions related to the subject material) are encouraged. Students are expected to spend at least two hours preparing for each class.

Attendance Policy: You are expected to attend every lecture.

Academic Conduct: Policy of the Department and the University will be followed.

Students with Disabilities ADA Statement: Any student who because of a disability may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make any necessary accommodations. Student should present appropriate verification from AccessTECH. No requirement exists that accommodations be made prior to completion of this approved university procedure.