Syllabus
Computer Science 600.271
AUTOMATA and COMPUTATION THEORY
Spring, 2016
(3 credits, EQ)

Description
This course is an introduction to the theory of computing. Topics include design of finite state automata, pushdown automata, linear bounded automata, Turing machines and phrase structure grammars; correspondence between automata and grammars; computable functions, decidable and undecidable problems, P and NP problems, NP-completeness, and randomization. Students may not receive credit for 600.271 and 600.471 for the same degree.

Prerequisites
Discrete Math or permission.

Instructor
Professor Xin Li, lixints@cs.jhu.edu, www.cs.jhu.edu/~lixints
Office: Malone Hall 215, 410-516-5847
Office hours: Fridays 11:00 am–12:30 pm or by appointment

Teaching Assistant
Kuan Cheng, kcheng17@jhu.edu, Office hours: Wednesdays 3:30–5:00 pm. Malone Hall 260.

Meetings
Tuesday and Thursday, 1:30–2:45 pm, Shaffer 100

Textbook

Online Resources
Any related online material will be posted at the course website http://www.cs.jhu.edu/~lixints/class/spring16.html.

Tentative List of Topics
Finite automata and regular languages; push-down automata and context-free languages; Turing machines and computability; Time complexity; Diagonalization; Space complexity.

Grading
There will be about eight homework problem sets, one mid-term exam and one final exam. Grading will be based on the following rule:

- Homework: 40%.
- Mid-term exam: 30%.
- Final exam: 30%.
Key Dates
The mid-term exam will be held in class on March 10. The final exam will be cumulative and will take place from 9am to 12pm on May 6. No make-up exams will be given, so plan accordingly. For the midterm, you may bring a single, 8.5x11 inch, handwritten sheet of paper (you may use both sides). For the final exam you may bring two sheets. No calculators are allowed (they won’t be necessary).

Ethics
The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful, abiding by the Computer Science Academic Integrity Policy:

Cheating is wrong. Cheating hurts our community by undermining academic integrity, creating mistrust, and fostering unfair competition. The university will punish cheaters with failure on an assignment, failure in a course, permanent transcript notation, suspension, and/or expulsion. Offenses may be reported to medical, law or other professional or graduate schools when a cheater applies.

Violations can include cheating on exams, plagiarism, reuse of assignments without permission, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition. Ignorance of these rules is not an excuse.

Academic honesty is required in all work you submit to be graded. Except where the instructor specifies group work, you must solve all homework and programming assignments without the help of others. For example, you must not look at anyone else’s solutions (including program code) to your homework problems. However, you may discuss assignment specifications (not solutions) with others to be sure you understand what is required by the assignment.

If your instructor permits using fragments of source code from outside sources, such as your textbook or on-line resources, you must properly cite the source. Not citing it constitutes plagiarism. Similarly, your group projects must list everyone who participated.

Falsifying program output or results is prohibited.

Your instructor is free to override parts of this policy for particular assignments. To protect yourself: (1) Ask the instructor if you are not sure what is permissible. (2) Seek help from the instructor, TA or CAs, as you are always encouraged to do, rather than from other students. (3) Cite any questionable sources of help you may have received.

On every exam, you will sign the following pledge: “I agree to complete this exam without unauthorized assistance from any person, materials or device. [Signed and dated]”. Your course instructors will let you know where to find copies of old exams, if they are available.

In addition, the specific ethics guidelines for this course are:

(1) Collaboration policy: While you should first think about homework problems on your own, I encourage you to discuss homework problems with your classmates. However, you must write up your own solutions. Any two students found sharing the same paragraph in their homework will both receive 0 point for that problem, and risk further punishment such as automatic failure and report to the University. Furthermore, you must acknowledge any collaboration by writing the names of your collaborators on the front page of the assignment. You don’t lose points by having collaborators.

(2) Citation policy: Try to solve the problems without reading any published literature or websites, besides the class text. If, however, you do use a solution or part of a solution that you found in the literature or on the web, you must cite it. Furthermore, you must write up the solution in your own words. You will get at most half credit for solutions found in the literature or on the web. Using solutions from other resources without citation is considered plagiarism and will result in 0 point and potential further punishment as in (1).

(3) Late Policy: Homeworks are due at the beginning of the class. Late homeworks will not be accepted.
Report any violations you witness to the instructor.
You can find more information about university misconduct policies on the web at these sites:
- Undergraduates: e-catalog.jhu.edu/undergrad-students/student-life-policies/
- Graduate students: e-catalog.jhu.edu/grad-students/graduate-specific-policies/

Students with Disabilities
Any student with a disability who may need accommodations in this class must obtain an accommodation letter from Student Disability Services, 385 Garland, (410) 516–4720, studentdisabilityservices@jhu.edu.