CS 4700/5700 Computability, Automata and Formal Languages
Spring 2014 Syllabus and Course Policies

Instructor	Chuan Yue
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Phone	719-255-5155
Course Day & Time	M, W 03:05pm – 04:20pm 01/21/2014 – 05/16/2014
Lecture Location	Engineering Building (ENGR) Room 107
Office	Engineering Building (ENGR) Room 194
Office Hours	M, W 01:30pm - 03:00pm, or by appointment

COURSE DESCRIPTION

Finite automata and regular expressions, context-free grammars, context-free languages, and pushdown automata, Turing machines, undecidability, the Chomsky hierarchy of formal languages, computational complexity and intractable problems.

PREREQUISITES

MATH 2150 (Discrete Mathematics), MATH 3130 (Linear Algebra), or instructor consent.

COURSE MATERIALS

Required Textbook:
Introduction to the Theory of Computation, 2nd (or 3rd) edition, by Michael Sipser
ISBN-10: 0534950973, ISBN-13: 978-0534950972
(for 3rd edition: ISBN-10: 113318779X, ISBN-13: 978-1133187790)

Additional Class Handouts (as we go along, if possible distributed via Blackboard)
Blackboard Course Site: https://bb.uccs.edu

EMAIL COMMUNICATION

Students are expected to check their UCCS campus e-mail account on a regular basis (at least twice in a week). Students may forward their campus e-mail to a private e-mail account, but are expected to assure the forwarding of messages is working properly so they do not miss important email communications.

COURSE SCHEDULE (TENTATIVE)

I reserve the right to amend this syllabus at any time and the course schedule only represents my best estimate.
The latest version is updated on the Blackboard Course Site: https://bb.uccs.edu

Week#	Date	Reading	Topics	Homework
1	M 01/20	Chap 0	Martin Luther King Holiday (No class, no office hour)	
1	W 01/22		Introduction	
2	M 01/27		Introduction	HW 1 assigned
2	W 01/29	Chap 1	Deterministic finite automata (DFAs)	
3	M 02/03		Deterministic finite automata (DFAs)	HW 1 due
3	W 02/05		Nondeterministic finite automata (NFAs)	Reading 1 assigned
4	M 02/10		Nondeterministic finite automata (NFAs)	HW 2 assigned
4	W 02/12		Regular expressions (REs)	Reading 1 due
5	M 02/17		Regular expressions (REs)	HW 2 due
5	W 02/19		Non-regular languages (Non-RLs)	Reading 2 assigned
6	M 02/24		Non-regular languages (Non-RLs)	HW 3 assigned
6	W 02/26	Chap 2	Context-free grammars and context-free languages (CFGs and CFLs)	Reading 2 due
7	M 03/03		Context-free grammars and context-free languages (CFGs and CFLs)	HW 3 due
7	W 03/05		Context-free grammars and context-free languages (CFGs and CFLs)	HW 4 assigned
8	M 03/10		Pushdown automata (PDAs)	Reading 3 assigned
8	W 03/12		Pushdown automata (PDAs)	HW 4 due
9	M 03/17		Non-CFLs	Reading 3 due
9	W 03/19		**Midterm Exam (03:05pm – 04:20pm)**	
10	M 03/24		Spring Break (No class, no office hour)	
10	W 03/26		Spring Break (No class, no office hour)	
11	M 03/31	Chap 3	Turing machines	Reading 4 assigned
11	W 04/02		Turing machines	HW 5 assigned
12	M 04/07	Chap 4	Decidability	Reading 4 due
12	W 04/09		Decidability	
13	M 04/14		Decidability	HW 5 due
13	W 04/16	Chap 5	Reducibility and undecidability	
14	M 04/21		Reducibility and undecidability	HW 6 assigned
14	W 04/23		Reducibility and undecidability	
15	M 04/28	Chap 7	Complexity classes	HW 6 due
15	W 04/30		Complexity classes	HW 7 assigned
16	M 05/05		Complexity classes	Reading 5 assigned
16	W 05/07		NP-completeness	HW 7 due
17	M 05/12		Exam Week (No class, but has office hours)	
17	W 05/14		**Final Exam (01:40pm – 04:10pm)**	Reading 5 due

GRADING POLICY

- You'll attend class and participate in each class.
- You'll participate in one co-lecturing activity.
- You'll complete homework/reading assignments and submit them in time.
- You'll complete 2 exams.

Final grades are computed using the following weights:

Class Attendance and Participation	3%
Student Instructor Co-lecturing	4%
Homework Assignments	28%
Reading Summaries	10%
Midterm Exam (open-textbook and open-notes)	20%
Final Exam (open-textbook and open-notes)	35%

All grades are based on a scale from 0-100 as follows:

$93 \leq \{A\};$ $90 \leq \{A\text{-}\} < 93;$
$87 \leq \{B+\} < 90;$ $83 \leq \{B\} < 87;$ $80 \leq \{B\text{-}\} < 83;$
$77 \leq \{C+\} < 80;$ $73 \leq \{C\} < 77;$ $70 \leq \{C\text{-}\} < 73;$
$67 \leq \{D+\} < 70;$ $60 \leq \{D\} < 67;$
$60 > \{F\};$

A linear shift may be applied to **final** grade averages as a one-time scale at the professor's discretion.

CLASS ATTENDANCE AND PARTICIPATION

Your class attendance and participation will be a combination of attendance and discussion, etc. Class attendance/participation counts for 3% of your grade. Even if you have an excused absence from class (we'll work excused absences on a case-by-case basis), you are 100% responsible for all material and announcements covered in class.

STUDENT INSTRUCTOR CO-LECTURING

Each student is required to participate in one 10~15-minute co-lecturing activity with the instructor during the semester. Basically, the student will (1) choose a piece of content that will be discussed in the class in a particular day, (2) meet with the instructor in advance to confirm that piece of content and get necessary help, and (3) present that piece of content in the class. The instructor may supplement or correct the student's presentation if necessary. Each student also needs to complete two short surveys in order to claim this 4% of the overall grade.

HOMEWORK ASSIGNMENTS

Assignments are to be completed on your own unless explicitly noted by your instructor. You may discuss any component of the assignment with your classmates, but there cannot be a physical or electronic record of your conversation (no paper, files, disks, or code of any form) taken away from the conversation. While you are encouraged to discuss with each other students, **you must write your own answers, in whole.** You cannot directly use the answers that you have found on the Internet. **Copying any portion of the answers will result in an automatic zero for the assignments for all students involved. Two or more instances of this in the course will result in an automatic failure for the course.**

To turn in your assignment:
Assignments are due at the beginning of class on the specified due day. You can use any high-quality typesetting software such as Word or LaTex to type and prepare for your answer. No hand-written answer will be accepted, but you can embed hand-drawn figures in your answer. You should submit your PDF version answer to the Blackboard.

Late homework submissions: In case you cannot complete a homework assignment by the beginning of class on the due date, you can take **three** additional days to turn it in with the penalty of 10% for each additional day.

Beyond three days from the specified due date, the homework shall NOT be graded, except for justifiable reasons with written evidence, such as an illness with a doctor's written note.

READING SUMMARIES

Five documents/research papers will be reviewed by you, and you need to write a summary for each of them. In each summary (between 150 and 300 words), you should concisely highlight the key points or ideas of the document/paper and provide your thoughts. You should submit your PDF version summaries to the Blackboard. No hand-written submission will be accepted.

EXAMS

Exams in this class are in-class, open-textbook, open-notes (must be your own), and written.

There will not be any makeup exam, unless you provide convincing evidences in advance and get a pre-approval from both the instructor and our CS Program Assistant Trish Patricia Rea (prea@uccs.edu).

PLAGIARISM & CHEATING

Absolutely no cheating, copying, or plagiarizing on homework assignments, exams, and summaries.
Cheating will result in an AUTOMATIC ZERO (0) for the entire homework, exam, or summary. For further details on academic honesty the student is referred to the University Catalog.

LATE DROP

Dropping of a class after the deadline listed in the UCCS Course Calendar (http://www.uccs.edu/~cic/) is governed by departmental and college policy. The student must show documented evidence supporting reasons for a request to drop a class after the deadline. Each request is considered on an individual basis for determining acceptance.

GETTING HELP

I'll be available during my official office hours and by appointment. If you stop by my office outside my official office hours without an appointment, I may have time to talk with you immediately, but I may also have the right to schedule an appointment with you for a later time. You can always contact me **anytime by e-mail**; I'll reply you as soon as I can.

CAMPUS POLICIES

- UCCS Course Calendar: http://www.uccs.edu/~cic/
- UCCS Student Code of Conduct http://www.uccs.edu/dos/student-conduct.html

DISABILITIES SERVICES

Students with disabilities should turn in their disability verification letters within the first two weeks of class. For further information, contact Disability Services, Main Hall 105, 255-3354. For more information, see the Disability Services page: http://www.uccs.edu/~dservice

MILITARY STUDENTS

If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact your UCCS course instructor no later than the first week of class to discuss the class attendance policy. Please see the Military Students website for more information: http://www.uccs.edu/~military