

COT3210–Computability and Automata

Theory of Computation

Syllabus for Spring 2018 (01/09/2018–04/24/2018)

Instructor	Asai Asaithambi, Ph. D.
Office	Building 15, Room 3119
Office Hours	Tue, Thu 09:30-10:45 am, 04:30-05:45 pm, and Wed 09:00-10:00 am
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Course Description	This 3-credit course will cover applications of automata and language theory to Computing and Information Sciences. Topics include finite automata and regular expressions; formal languages and syntactic analysis; context-free languages; pushdown automata and Turing machines; and computational complexity.
Course Delivery	The course will be delivered via classroom lectures. Supplementary material available via Canvas may include links to short video clips on the Internet, images, and PowerPoint Slides.
Required Textbook	The following textbook is required for this course: <i>Introduction to the Theory of Computation</i> , Third Edition, by Michael Sipser, Cengage Learning, 2013 (ISBN-13: 978-1-133-18779-0).
Expected Outcomes	Upon successful completion of this course, you should be able to:* <ol style="list-style-type: none">1. Construct the basic kinds of finite automata and describe their formal representations (Sec. 1.1–1.2);2. Construct finite automata corresponding to given regular expressions and vice versa (Sec. 1.3);3. Construct context-free grammars for given context-free languages and vice versa (Sec. 2.1);4. Construct pushdown automata to recognize context-free languages (Sec. 2.2);5. Describe Turing Machines and explain their relation to language recognition and simple computations (Sec. 3.1); and6. Discuss concepts of computability and complexity (Sec. 7.1–7.4). <p>*Specific textbook sections related to each outcome are also indicated.</p>

Attendance

Your attendance will not be monitored, but it will be measured as a function of your efforts in completing the course activities on schedule. All religious observances cited in the UNF Student Handbook will be followed. However, if, after you've reviewed the course schedule, you feel there may be a conflict preventing you from participating or engaging in the course, the UNF Student Handbook indicates to contact and inform the instructor at the beginning of the term regarding the potential conflict and make alternate arrangements.

Homework

- This course is mathematically and computationally intensive and the material covered cannot be understood or mastered by watching me or anyone else do the problems and/or explain the solutions to you alone. You need to solve problems by yourself as well. In order to facilitate enough practice on solving problems, several homework problem sets have been compiled and are included at the end of this syllabus. These sets consist of specific problems selected from the textbook from the exercises at the end of each chapter that are relevant to the section covered in the course.
 - Solutions to these homework problems will be posted on Canvas as the semester progresses. Additional problems (with solutions), created by the instructor, may also be provided on Canvas.
 - There will also be discussion sessions during the class period immediately preceding each test.
 - Thus, it is important that you practice solving problems by yourself as soon as the coverage of topics represented in a homework set begins in the classroom, and be prepared with specific items that you may wish to be discussed in class.
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Tests

There will be four tests, and a final. The tests will not be cumulative, but the final will be cumulative. No makeup tests will be given.

Grading

Your course grade will be determined based on your performance on the tests and the final, using a point system as shown in the table below:

Component	Points
Tests (4 × 50)	200
Final (Cumulative)	100
Total	300

**Course
Grades**

Your final letter grade for the course will be assigned according to the percentage of points you obtain in the course. Your percentage may be calculated by dividing the total number of points you obtained by the total number of points possible. Percentages are rounded up or down to the nearest whole number. Use the scale below to determine your letter grade.

Points	90–100	80–89	70–79	60–69	0–59
Grade	A	B	C	D	F

No incomplete grades will be given.

Academic Integrity

The Free and Open Pursuit of Knowledge. The University of North Florida encourages the free and open pursuit of knowledge; we consider this to be a fundamental principle and strength of a democratic people. To this end, the University of North Florida expects its students, its faculty, its administrators, and its staff to uphold the highest standards of academic integrity. The University of North Florida expects all members of the University community to both honor and protect one another's individual and collective rights.

Course Content. A course may deal with subjects, issues, or perspectives to which some might object. Such objections will not exempt a student from course requirements. The University of North Florida stands behind the right of its instructors to include material that is challenging in any number of ways. The faculty urges students to discuss any concerns they might have concerning the content of their courses with their instructors.

Claiming One's Own Work. Each student is honor-bound to submit under his or her name or signature only his or her own work; to fully acknowledge his or her use of any information, ideas, or other matter belonging to someone else, and to properly document the source in question; and to offer for credit only that work which he or she has completed in relation to the current course. Please review the University policy on academic integrity.

ADA Statement

- If you have a disability, as defined by the Americans with Disabilities Act (ADA), which requires a classroom accommodation or auxiliary aid(s), please inform me of your needs during the first week of class so that I may take appropriate action. You should also notify the Office of Disabled Services Programs at 620-2769, e-mail drc@unf.edu, or visit the **DRC website** concerning any needs you may have.
 - Military and veteran students may need both physical and academic accommodations. Contact Military and Veterans Resource Center by phone (904) 620-5131 or e-mail mvrvc@unf.edu.
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Emails

- I will be sending all Email messages about this course only to your UNF email address. If you choose to forward your UNF mail to another system (e.g. AOL, BellSouth, HotMail, etc.), UNF cannot guarantee delivery and if you do not receive important news because that other mail system was not working you will not be excused.
 - It is important that you respond to my Email messages using only your UNF email account. If you send email from another email system you will not receive a reply. When sending me any Email, you **MUST** include "COT3210" in the subject line so that I can prioritize those emails.
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Other General Information

All policies are derived from the UNF Student Handbook:

http://www.unf.edu/deanofstudents/student_handbook.aspx

The course schedule, policies, and assessments in this course are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students.

Tentative Course Schedule for Spring 2018

Week	Tuesday		Thursday	
	Date	Textbook Sections	Date	Textbook Sections
01	01/09	Overview	01/11	1.1
02	01/16	1.1	01/18	HW1 Discussion
03	01/23	TEST 1	01/25	1.2
04	01/30	1.2	02/01	1.3
05	02/06	1.3	02/08	HW2 Discussion
06	02/13	TEST 2	02/15	2.1
07	02/20	2.1	02/22	2.2
08	02/27	2.2	03/01	HW3 Discussion
09	03/06	TEST 3	03/08	3.1
10	03/13	3.1	03/15	7.1
11	03/20	SPRING BREAK	03/22	SPRING BREAK
12	03/27	7.1	03/29	HW4 Discussion
13	04/03	TEST 4	04/05	HANDOUT
14	04/10	7.2	04/12	7.3
15	04/17	7.4	04/19	HW5 Discussion/Review

Homework Problem Sets for Spring 2018

No.	Section	Pages	Exercises ^{*†}
01	1.1	83–84	1.1–1.6
02	1.2	84–86	1.7–1.12, 1.14, 1.16–1.17
	1.3	86–86	1.18–1.21, 1.24–1.28
03	2.1	154–155	2.1, 2.3, 2.4, 2.6, 2.8, 2.14
	2.2	155–156	2.5, 2.7, 2.11, 2.12
04	3.1	187–188	3.1, 3.2, 3.5
	7.1	322–322	7.1–7.2
05	7.2	322–323	7.3–7.4, 7.8–7.9, 7.12
	7.3	322–323	7.5

*Supplementary exercises will also be posted on Canvas.

†Supplementary exercises may be over multiple textbook sections.