

CS 321H Intro to Theory of Computation

3 credits

OSU catalog course description including pre-requisites/co-requisites: Survey of models of computation including finite automata, formal grammars, and Turing machines. **PREREQS:** CS 261 [C] and (CS 225 [C] or MTH 231 [C])

Courses that require this as a prerequisite: CS 480.

Instructor: Julianne Coffman

Meetings: MWF 2:00 – 2:50pm in Kidder Hall 236

Office: KEC 1103

Office Hours: Via Zoom and posted on Canvas weekly

E-mail: coffmaju@engr.oregonstate.edu

Learning Resources:

An Introduction to Formal Languages and Automata by Peter Linz, Sixth Edition.

JFLAP Software . JFLAP can be downloaded without charge from www.jflap.org.

Canvas: Announcements, office hours, weekly homework assignments, group activities, readings and other course information will be placed on Canvas.

Course Content:

- Regular languages,
- Context-free languages and
- Turing Machines

Course Learning Outcomes:

At the completion of this course, students will be able to:

1. Convert between finite automata, regular grammars, and regular expression representations of regular languages.
2. Apply the pumping lemma for regular languages to determine if a language is regular.
3. Convert between grammars and push-down automata for context-free languages.
4. Determine if a language is regular or context-free.
5. Demonstrate that a grammar is ambiguous.
6. Translate a context-free grammar from one form to another.
7. Produce simple programs for a Turing Machine
8. Explain the concept of undecidability
9. List examples of undecidable problems.

Evaluation of Student Performance:

Scores for coursework items will be posted on Canvas as they are graded.

Your course grade will be based on the following:

Homework	-----	35%
Activities	-----	25%
Projects	-----	40%
TOTAL	-----	100%

Homework:

There are six written homework assignments. Students can discuss the homework questions with each other but must independently write up a solution. Homework assignments are to be individually submitted by 11:59pm on the due date. Assignments may be submitted up to 24 hours late for a 10% penalty.

In-Class Activities:

In-Class activities will be completed in small groups during class and due at the end of class. No make-up activities are allowed. Your lowest activity score will be dropped.

Projects:

There are two projects for this course as listed on the class schedule. A list of project topics will be provided in Week 2. Projects may include programming, research, proofs and presentations.

Grading Policies and Scale:

- 1) Any requests for extensions/special accommodations must be made in advance, in writing (email).
- 2) Homework and projects will be accepted up to 1 day late for a 10% penalty.
- 3) Any **disagreement in scoring** must be addressed within one week of the work being graded.

Note: Numerical scores will be rounded to the nearest integer

Grade	Average
A	93 or greater
A-	90 - 92
B+	87 - 89
B	83 - 86
B-	80 - 82
C+	77 - 79
C	73 - 76
C-	70 - 72
D+	67 - 69
D	63 - 66
D-	60 - 62
F	less than 60

Incompletes –I will only consider giving an incomplete grade for emergency cases such as a death in the family, major disease, or child birth, while also having a passing grade. If you have a situation that may prevent you from completing the coursework, let me know as soon as you can.

The Honors College and its members strive to create an equitable and inclusive community in which all members are welcome, heard, and treated with respect. We uphold these values and take the opportunity to learn from each other. Our greatest strengths and most innovative ideas come from disagreements and collaborations among people with diverse perspectives, lived experiences, and expertise.

Course Policies

Academic Calendar

All students are subject to the registration and refund deadlines as stated in the Academic Calendar: <https://registrar.oregonstate.edu/osu-academic-calendar>.

Students With Disabilities

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations..

Face Covering Guidance & Public Health Policy

The University's guidance for face coverings will be upheld in the classroom. Since the policy may change as the situation evolves please refer to the following link: <https://covid.oregonstate.edu/face-covering-guidance-public-health-policy>

Expectations for Student Conduct

<https://beav.es/codeofconduct>

Academic Integrity: Students in academic studies are expected to demonstrate their own knowledge and capabilities. This means that a student will be graded on the work that is clearly their own work and that additional materials will be excluded from consideration of the grading of that submission. Work that is not created by the student or cited by the student, but still submitted will be considered plagiarized material and may result in a failed submission and may result in administrative action.

- You May openly discuss the presented learning materials and participation category materials at any time with any party as long as they explicitly know that it is for an academic assignment,
- You May openly discuss the demonstration category of coursework and exams category of coursework after grading of the item is complete with any party as long as they explicitly know that it is an academic assignment and that the discussion is accompanied by an explanation of any materials presented,
- You MAY openly discuss the meaning of assignments, general approaches, and strategies with other students in the course; you may do this even before the grading date of the assignment has passed.

- You MAY (and should) use the Internet and other resources to research how to solve a problem, and you should share what you find for others in the course to learn from, but be sure to cite your sources!

Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)