

# CS 321 Intro to Theory of Computation

3 credits

**OSU catalog course description including pre-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 Schutfort **E-mail:** [schutfoj@engr.oregonstate.edu](mailto:schutfoj@engr.oregonstate.edu)  
**Section:** 001, MWF 12:00 – 12:50pm PST, Remote via Zoom the link is in Canvas  
**TAs:** Devin Crowley **E-mail:** [crowleyd@oregonstate.edu](mailto:crowleyd@oregonstate.edu)  
Zheng Liu **E-mail:** [liuzhen@oregonstate.edu](mailto:liuzhen@oregonstate.edu)

**Help:** Office hours via Zoom are posted in Canvas.

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

**Software:** JFLAP Software . JFLAP can be downloaded without charge from [www.jflap.org](http://www.jflap.org).

**Canvas:** Announcements, office hours, weekly homework assignments, readings, quiz reviews 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.

## **Course Policies:**

**Makeup Exams** – Makeup exams take a considerable effort to schedule, so they will not be given under normal circumstances. Any requests for makeup exams must occur in the first week of classes to be considered.

**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.



## **Grading:**

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

**Grade Evaluation:** Your course grade will be based on the following:

Homework	-----	55%
Quizzes 3 @ 15%	-----	45%
<b>TOTAL</b>	<b>-----</b>	<b>100%</b>

## **Homework:**

There are seven written homework assignments. Students can discuss the homework questions with each other but must independently write up solutions. You must use the notation presented in the class, notes and textbook to receive credit. If you use notation from other sources you will receive a 0 on that question. All homework must be completed using a word processor, text editor or typesetting software and you will submit a pdf formatted file in Canvas. Handwritten assignments will receive a 0. Your low homework score will be dropped.

## **Quizzes:**

**There are 3 quizzes for this course as listed on the class schedule.** You will have 55 minutes to complete each quiz. The quizzes are open book and will be administered in Canvas. The dates of the quizzes are on Canvas. The quizzes are NOT cumulative.

*Note: The quizzes for this class may be proctored online at the option of the instructor. This proctoring is provided by OSU and does not involve costs to students or finding your own proctor. You will receive information about the proctoring procedure in advance of the quiz.*

## **Grading Policies and Scale:**

- 1) Any requests for extensions/special accommodations must be made in advance, in writing (email).
- 2) Homework 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. All questions about grading must be placed in the "Assignment Comments" section of the Canvas submission for that assignment. If a response to your comment is not posted within 48 hours you can email a TA requesting that they review the comments.

Note: Numerical scores will be rounded to the nearest integer

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

**Students With Disabilities:** Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

**Expectations for Student Conduct:**

**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!

**Course Evaluation:**

**OSU Student Evaluation of Teaching** – Course evaluation results are extremely important and are used to help me improve this course and the learning experience of future students. Results from the multiple choice questions are tabulated anonymously and go directly to instructors and department heads. Student comments on the open-ended questions are compiled and confidentially forwarded to each instructor, per OSU procedures. The online Student Evaluation of Teaching form will be available toward the end of each term, and you will be sent instructions through ONID. You will login to “Student Online Services” to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.