

**SYLLABUS**  
**CMPS 3233: Theory of Computation**

**Catalog Description:** Study of the fundamental mathematical properties of hardware, software, and their applications. Emphasis is on the capabilities and limitation of computers, including finite automata, push-down automata, and Turing machines.

<b>Instructor:</b>	Dr. Catherine V. Stringfellow
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<b>Office Hours:</b>	MWF 10am-12pm, TR 11-12pm, 2-3pm & by appt

**Credits:** 3 (3 hour lecture)

**Course Prerequisite:** Minimum grade of C in CMPS 1063 and CMPS 2433.

**Required Textbook and Materials:**

Automata, Computability, and Complexity, by Elaine Rich (Pearson-Prentice Hall)

**General Objectives**

- 1) To familiarize students with the foundations and principles of computer science
- 2) To learn fundamental principles of the recognition and classification of formal languages

**Specific Objectives:** Upon completion of the course students should be able:

- 1) to learn how to create deterministic and non-deterministic automata to accept languages
- 2) to understand formal languages and grammars and the machines that recognize them, as well as the Chomsky hierarchy
- 3) to convert between equivalent structures, such as regular expressions to FA, NDFAs to DFAs, etc.
- 4) to understand Turing machines, and write Turing machine programs
- 5) to understand the concept of computability

**Instructional Method:** Primarily lecture and class participation. Every student will be required to present assigned problems to the class. The problems will come primarily from the homework assignments.

**Course Assignments and Evaluation:** Quizzes and homework assignments will be assigned. Quizzes may be announced or unannounced. These will consist of problems from those at the end of sections in the text and the JFLAP manual and problems provided by the instructor. Homework problems may or may not be graded. Students will be called upon to work problems on the board – if unprepared it will be a 0 for the problem.

There will be two exams and one final.

Final grades will be based on the following criteria.

<u>Activity</u>	<u>percentage of grade</u>
Boardwork and participation	20%
Homework assignments	30%
Two exams	40%
Final (Tues. May 10, 1-3pm)	20%

Grades may be determined according to this scale (approximate):

A	90% - 100%	B	80% - 89%
C	70% - 79%	D	60% - 69%

### **Course and Department Policies:**

**Behavior in the classroom:** Students are to assist in maintaining a classroom environment that is conducive to learning. This means that the presence of electronic devices other than your calculator are not to be seen, heard, or implied, ever. Questions are encouraged and discussion is acceptable, provided it is pertinent and does not distract from the lesson.

**Late Work:** [Policy for Programming Assignment](#) and grading will also be handed out. *No late programs for last programming assignment.*

**Make Up Work/Exams/Quizzes:** Students need a valid university excuse (e.g., excuse from the doctor, death in the immediate family, etc.) to make up work or tests. If you know ahead of time that you will miss a quiz or exam, please arrange to take it early. Refer to [College Policies and Procedures Manual](#).

**Computer Requirements:** Taking this class requires you to have access to a computer (with Internet access) to complete and upload your assignments. It is your responsibility to have (or have access to) a working computer in this class. ***Personal computer technical difficulties will not be considered a reason for extra time to submit assignments, tests, or online discussion postings.*** Online class material can be accessed from any computer in the world which is connected to the internet. Computers are available on campus in various areas of the buildings, as well as the Academic Success Center. Contact your instructor immediately upon having computer trouble. If you have technical difficulties in the course, there is also a student helpdesk available to you. The university cannot work directly on student computers due to both liability and resource limitations, however they are able to help you get connected to our online services. For help, log into [D2L](#).

### **Policy on Testing Process:**

The Department of Computer Science has adopted the following policy related to testing.

- All bags, purses, electronics (turned off), books, etc. will be placed in the front of the room during exams, or in an area designated by the instructor.
- Unless otherwise announced by the instructor, nothing is allowed on the desk but pen/pencil/eraser and test papers.
- A student who leaves the room during an exam must turn in the test and will not be allowed to return.

## UNIVERSITY POLICIES AND PROCEDURES

**Student with Disabilities:** Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from disability support office during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Disability Support Office has been provided. For additional information, contact the Disability Support Office in Clark Student Center 168 - Phone: (940) 397-4140

**Academic Misconduct Policy & Procedures:** Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). The Department of Computer Science had adopted the following policy related to cheating (academic misconduct). The policy will be applied to all instances of cheating on assignments and exams as determined by the instructor of the course. (See below for link to MSU definitions.)

- 1st instance of cheating in a course: The student will be assigned a non-replaceable grade of zero for the assignment, project or exam. *In addition, the student will receive a one letter grade reduction in course.*
- 2nd instance of cheating in a course: The student will receive a grade of F in course & immediately be removed from course.
- All instances of cheating will be reported to the Department Chair and, in the case of graduate students, to the Department Graduate Coordinator.

See Also: [MSU Student Handbook](#): Appendix E: Academic Misconduct Policy & Procedures  
<https://mwsu.edu/Assets/documents/student-life/2013-14-Student-Handbook.pdf>

### **Policy on Concealed Handguns on Campus:**

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at <https://mwsu.edu/campus-carry/rules-policies>. If you have questions or concerns, please contact MSU Chief of Police Patrick Coggins at [patrick.coggins@mwsu.edu](mailto:patrick.coggins@mwsu.edu).

### **Recording of Class Lectures:**

Permission must be requested in writing and obtained from the instructor before recording of class lectures. If permission is granted, the recording may only be used by the student making the recording. Recordings (or any class materials) may NOT be posted on any internet source without written permission of the instructor. Failure to adhere to the policy may result in removal from the course with a grade of F or other appropriate punishment.

## **Important Dates**

Visit MSU's Registrars website at [https://mwsu.edu/registrar/\\_assets/files/pdfs/Spring18Front1.pdf](https://mwsu.edu/registrar/_assets/files/pdfs/Spring18Front1.pdf) for important dates.

**Spring 2018**  
**TENTATIVE CS3233-ACADEMIC CALENDAR**

	Monday	Wednesday	JFLAP Assg
Jan 16    1	Course Info; CH1: Why?	Appendix: Proof Techniques	
Jan 22    2	Cont.	CH2: Alphabets, Strings and Languages	
Jan 29    3	CH5A: FSMs	CH5A: Regular Languages; Equality Algorithm?	CH1: 1, 2
Feb 5      4	CH5B: NDFSMs	Converting NDFSMs to DFSMs	CH2: 1, 2, 4
Feb 12    5	CH6: Regular Expressions	<b>REVIEW</b>	
Feb 19    6	<b>EXAM1</b>	CH7: Regular Grammars	CH4: 2, 4, *6
Feb 26    7	CH8.3: Properties of Regular Languages	CH8: Identifying non-regular languages	CH3: 1, 2, 4, 6
Mar 5      8	CH3: Hierarchy of Languages	Cont.	
<b>Spring Break</b>			
Mar 19    9	CH11: Context-Free Grammars and Languages	CFGs and Prog Langs	CH6: 1, 2, 4
Mar 26    10	CH6: Simplifying CFGs	<b>REVIEW</b>	
Apr 2      11	<b>EXAM2</b>	Cont.	
Apr 9      12	Normal Forms	CH12: PDAs: Non-det. PDAs	CH7: 1, 2, 3 CH5: 1, 5
Apr 16    13	Det. PDAs and non-det. PDAs	PDAs and CF Languages	CH6: 6, 8 NTASC
Apr 23    14	Properties of Context-free languages	CH17: Turing Machines	CH9: 1, 4, *12
Apr 30    15	CH17: Other Models of TMs	<b>Review</b>	
May 7      16	<b>FINAL EXAM</b> <b>3:30-5:30pm</b>		

\* short program assignment