

CS 3613: Theoretical Foundations of Computing
Term Spring 2020
Meetings Tuesday 4.30 -7.10 pm, NCB 244

Instructor Contact Information

Name: Rekha Bhowmik
Office Phone: (918) 594 8441
Office Location: North Hall 324
Email: rekha.bhowmik@okstate.edu
Office Hours: Tuesday 3:00-4:00 pm

TA Contact Information

Name:
Office Phone:
Office Location:
Email:
Office Hours:

General Course Information

Pre-requisites, Co-requisites: Prerequisite(s): 2133, 3653

Course Description:

Introduction to the classical theory of computer science. Sequential machines and their applications to devices, processes, and programming. Models of computation: finite-state automata, push-down automata, Turing machines. The role of non-determinism. Limits of digital computation. Computability and unsolvability. The Church-Turing Thesis.

Required Text:

M. Sipser: *Introduction to the Theory of Computation*. 2013 Cengage Learning, Third Edition, ISBN: 978-1-133-18779-0.

References:

Peter Linz: *An Introduction to Formal Languages and Automata*. Jones & Bartlett, Fifth Edition ISBN: 978-1-449-61552-9

John C. Martin: *Introduction to Languages and the Theory of Computation*. McGraw Hill, Third Edition, ISBN: 978-0-072-32200-2

Assignments & Tentative Academic Calendar

Week #	Date	Material to be Covered	Reading
1	Jan 14	Introductory Material Regular Languages	Chap 0 Chap 1
2	Jan 21	Regular Languages 1.1 Finite Automata 1.2 NonDeterminism 1.3 Regular Expressions 1.4 NonRegular Languages	Chap 1
3	Jan 28	Regular Languages	Chap 1
4	Feb 4	Context - Free Languages 2.1 Context-Free Grammars 2.2 Pushdown Automata 2.3 Non-Context-Free Languages Quiz 1	Chap 2
5	Feb 11	Context - Free Languages	Chap 2
6	Feb 18	Context - Free Languages	Chap 2
7	Feb 25	Test 1	
8	Mar 3	The Church-Turing Thesis 3.1 Turing Machines 3.2 Variants Of Turing Machines	Chap 3
9	Mar 10	The Church-Turing Thesis 3.1 Turing Machines 3.2 Variants Of Turing Machines	Chap 3
10	Mar 16- Mar 20	Spring Break	
11	Mar 24	Decidability 4.1 Decidable Languages 4.2 Undecidability	Chap 4
12	Mar 31	Test 2	
13	Apr 7	Decidability, 4.1 Decidable Languages 4.2 Undecidability	Chap 4
14	Apr 14	Reducibility Quiz 2 5.1 Undecidable Problems From Language Theory 5.2 A Simple Undecidable Problem 5.3 Mapping Reducibility	Chap 5
15	Apr 21	Reducibility	Chap 5
16	Apr 28	Reducibility	Chap 5
	May 5	Final Exam	

Exams

There will be two Quizzes, two Tests, as well as a Final Exam.

Quiz #1: Feb 4, 2020
 Quiz #2: Apr 14, 2020
 Test #1: Feb 25, 2020
 Test #2: Mar 31, 2020
 Final Exam: May 5, 2020

Grading (credit) Criteria	<p>There will be <u>eight</u> assignments. The grade will be determined as described below.</p> <p>Quizzes: 10% Test #1: 15% Test #2: 20% Final Exam: 15% Homework 35% Attendance: 5%</p> <p>Grades are assigned according to the following scale: [>= 90%] A [80-90%] B [70-80%] C [60-70%] D [0-60%] F</p>
Make-up Exams	Make-up exams are only given to those students who coordinate the missing of an exam prior to the originally scheduled exam date and time.
Extra Credit	
Late Work	Assignments are due in class/ online on the dates given. If a student submits an assignment after the due date without having made arrangements with the instructor, a minimum of 15 points (based on an assignment grading scale of 100 points) or 15 percent of the total points will be deducted for each day, or part thereof, that the assignment is late.
Class Attendance	Class attendance will be documented

OSU Academic Integrity Policy:

OSU is committed to maintaining the highest standards of integrity and ethical conduct. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and altering academic records) will result in an official academic sanction. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. You have the right to appeal the charge. Go to <http://academicintegrity.okstate.edu/> for a video on OSU's academic integrity policy and additional information.