

CSE 303 – Introduction to the Theory of Computation

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Course Information

All info on Web:

<https://mycourses.stonybrook.edu/d2l/home/168998>
(*Brightspace*)

(Or, start from my home page on CS Department server and follow links to the course page.)

Please check the course page frequently.

Course Resources

- **Brightspace:**

<https://mycourses.stonybrook.edu/d2l/home/168998>

- Course announcements
- Homework handouts, submission, grading, discussion
- Grades

- **Office Hours:**

- Prof. Stark: Tu, Th, 3:30PM - 5:30PM (via Zoom)
- TA's: TBA

CSE 303 Official Bulletin Description

An introduction to the abstract notions encountered in machine computation. Topics include finite automata, regular expressions, and formal languages, with emphasis on regular and context-free grammars. Questions relating to what can and cannot be done by machines are covered by considering various models of computation, including Turing machines, recursive functions, and universal machines.

Prerequisites: C or higher: CSE160 or CSE 214; CSE150 or CSE 215; CSE major

CSE 303 Official Course Objectives

- An ability to define and use abstract models of computation such as finite and push-down automata, and analyze their relative expressive power.
- An ability to define, use, and convert between abstract machine models and formal languages.
- Understanding of the power and inherent limitations of algorithmic computation.

I expect to stay close to the official description and objectives.

Course Organization

- **Lectures:** [attendance is assumed]
- **Homework:** [15% of grade]
- **Midterm Exam 1:** [25% of grade]
- **Midterm Exam 2:** [25% of grade]
- **Final Exam:** [35% of grade]

Textbooks

Required

- Michael Sipser,
Introduction to the Theory of Computation,
(3rd edition: June 27, 2012)
Cengage Learning.

Other Useful References

- Ding-Zhu Du and Ker-I Ko,
Problem Solving in Automata, Languages and Complexity
(1st edition: September 15, 2001)
Wiley-Interscience.
- Harry R. Lewis and Christos H. Papadimitriou,
Elements of the Theory of Computation
(2nd edition: August 7, 1997)
Prentice-Hall.

Policies: Lectures

The course delivery mode for this semester is *in-person*.

- Presence during lectures;
 - *voluntary*
 - *recommended*
 - *assumed*
- Lectures will *not* be recorded.

Asking me to repeat things because you didn't attend tends to ruffle my feathers. (Asking for further explanation of difficult points is something else and is OK.)

Policies: Homework

There will be regular homework assignments, hopefully weekly.

- Homework will be submitted on Brightspace.
(PDF only, please)
Either typeset your homework or write *neatly* and scan.
- The level of grading will depend on available teaching assistant support.
- Regardless of the grading, the homework will be very important to help you learn the material.

- Homeworks are to be *your own work*:
 - You are expected to attempt to solve the problems yourself *by thinking, using your own brain*.
This is how you learn a mathematical subject.
 - If you are not able to solve a problem after a serious attempt, then there is still some value in writing down what ideas you thought about and describing where you got stuck.
 - *It is pointless (and silly) to “do” the homework by looking up and transcribing barely intelligible answers from some website.*

After attempting the homework, you are welcome to ask questions about it in class.