

THIS SYLLABUS IS FOR THE WEB-BASED TEACHING OF THIS COURSE

CSC 4890 – Introduction to the Theory of Computation

Fall 2020

Louisiana State University

School of Electrical Engineering and of Computer Science

Division of Compute Science and Engineering

Instructor: Professor Evangelos Triantaphyllou

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Classroom: 100% WEB-BASED Teaching via ZOOM

Meeting Time: Tuesday & Thursday: 1:30 – 2:50 PM

Office hours: **Due to the current COVID-19 crisis no face-to-face meeting will take place. Any advising will be done via email, phone, or video. Please use my CSC email address given above to contact me.**

Homework Grader and TA: to be announced. **His / Her office hours are:** to be announced

Textbook (to be read all the time along with class notes):

Introduction to the Theory of Computation, by Michael Sipser, 2nd edition, PWS Publishing Company.

Prerequisite:

CSC 2259: Introduction to Discrete Structures (3) or approval by Professor Triantaphyllou.

You need to be proficient in making proofs of abstract mathematical relations. Knowledge of a programming language to write simple programs as part of small projects (any general programming language is fine).

GOAL:

The main goal of this course is to introduce the students to some fundamental theoretical issues that govern key developments in computer science and may also play a key role in future developments. Mastering the concepts listed next.

MAIN TOPICS:

- Finite Automata and Regular Languages
 - Deterministic and nondeterministic finite automata
 - Finite automata and regular expressions
 - Properties of regular languages
- Context-Free Languages
 - Context-free grammars
 - Pushdown automata
- Computation, Undecidability, and Intractability (as time permits)
 - Turing machines and computers

GRADING:

Homework assignments: 60%

(HWs will be given at the end of finishing a teaching unit, i.e., every 1-2 weeks)

Small projects: 40%

(Projects may involve writing simple programs, in any general programming language, to further enhance the learning experience of the subject matter.)

Total points: **100%** See also the comments on the next page regarding the grading policy

NOTE: All the assignments will be INDIVIDUAL.

COMMENTS:**[1]: The Grading Scale:**

SCORE	GRADE
100, 99, 98	A+
97, 96, 95, 94, 93	A
92, 91, 90	A-
89, 88, 87	B+
86, 85, 84, 83	B
82, 81, 80	B-
79, 78, 77	C+
76, 75, 74, 73	C
72, 71, 70	C-
69, 68, 67	D+
66, 65, 64, 63	D
62, 61, 60	D-
59, or less	F

An F grade (Fail) will be earned for 59 or fewer points. Note that a D grade is not a passing grade for graduate students.

[2]: If a single HW or small project assignment receives 0 points for *whatever reason*, **then the final grade for the entire course will be an F grade. If for whatever reason you cannot finish an assignment on time, please contact the instructor AHEAD of time.**

[3]: The instructor's presentations will be via ZOOM (Video) and / or digital files (such as PDFs or Power Point). An effort will be made the lectures and any presentation files to be available after they are delivered. However, any effort should be made by students to attend the video meetings as there can be more learning opportunities this way. **Always feel free to ask questions during the lectures.**

[4]: Some key dates are as follows (based on LSU's revised Academic Calendar for 2020-2021):

August 24, 2020,	Monday:	Classes begin
September 1, 2020,	Tuesday:	Final date for dropping courses without receiving a "W"
September 7, 2020,	Monday:	Labor Day Holiday
October 20, 2020,	Tuesday:	Mid-semester grades are due
October 25, 2020,	Sunday:	Course scheduling for spring semester begins
November 6, 2020,	Friday:	Final day for dropping courses, 4:30 p.m., deadline
November 25, 2020,	Wednesday:	Thanksgiving Holiday begins, 12:30 p.m.
December 5, 2020,	Saturday:	Classes end, 10:00 p.m.
December 15-16, 2020	(Tue. & Wed.):	Final grades are due (9:00 a.m. deadline)
December 18, 2020	Friday:	Commencement Day
January 11, 2020,	Monday:	<i>Spring Semester 2021 begins!</i>

[5]: **No grade curving will take place under any condition.**

Policy Statement Regarding Cheating / Academic Misconduct

A student caught cheating, plagiarizing or violating any of the guidelines described in this Policy Statement will be reported as a case of academic misconduct to the Dean of the Office of Student Advocacy and Accountability (SAA) at LSU.

LSU's Code of Student Conduct, Section 10.1 Academic Misconduct, governs all the work in this course (please check all the materials at: <https://www.lsu.edu/saa/students/codeofconduct.php>). Unless indicated otherwise, all written work that is handed in must be done only by the individual whose name appears on the document. Regarding student cooperation on the homework assignments, you are encouraged to discuss with other students the homework problems in general terms; however, what you submit must be your own answers. Your instructor and teaching assistant(s) (if TAs have been assigned to this course) are authorized and best qualified to give you help on all work (help will not be given if it provides an unfair advantage). Students are strongly encouraged to carefully study the contents of LSU's Code of Student Conduct on plagiarism and other related issues of academic misconduct. **Thus, you are strongly advised to visit the website of LSU's Office of Student Advocacy and Accountability (SAA) at: <https://www.lsu.edu/saa/>**

For specific information on LSU's definition of **what constitutes academic misconduct**, please visit the following website: <https://www.lsu.edu/deanofstudents/files/lsu-code-of-conduct.pdf>

For some other related concepts of what constitutes plagiarism, visit the following website:
<http://homeworktips.about.com/od/citationsandbibliography/a/What-Is-Plagiarism.htm>

While you are doing your assignments, **if you use material created by others and found on the web, you must indicate so very clearly.** You must list the source of that material and clearly show which part of your assignment is based on such material from the Web. **Failure to do so will be considered academic misconduct and will be reported.**

Some instructions while preparing HWs and Projects

- 1) *Make sure that you understand a given problem before you attempt to answer it. Carefully review the theory covered. Do so by checking the lecture recording (if available), your notes, and ALWAYS read the textbook.*
- 2) *You must solve **all** the problems in a given HW or project by **YOURSELF**.*
- 3) *Pay extra attention in the **organization** of your answers. Solutions should not be mixed up with scratch material in deriving them.*
- 4) *Present and staple your solutions **sequentially**. Scan them by using a scanner or create a PDF file otherwise if possible (no photos please!) and submit them via Moodle.*
- 5) *Make sure that your English is correct, clear and easy to read. Although this is not a composition course, it is very important that you present your solutions in a highly professional and scientific manner.*
- 6) *If you get confused, do not worry. Just relax, organize your thoughts, and try to see the problem from a simple, but still accurate, point of view.*
- 7) *You should have no doubt that **you** (assuming you have studied adequately) are capable of answering all the problems in the HWs and projects!*

A hint...

Next is the first problem which would have been given to you in the midterm and final exams (but we will do not have such exams this time) along with the correct answer. It is usually assigned 5 points.

PROBLEM 1: (5 points)

What is the single most important step in solving any science / engineering problem?

Answer: To define the problem **correctly** and **enjoy** the solution process.

(You must underline the right words to earn all 5 points.)