CSC 2710: Foundations of Computer Science
Sec. 001, Spring 2018, MW 9:30 - 10:60, Bruner Hall 406
Sec. 002, Spring 2018, MW 3:35 - 4:55, Bruner Hall 406

Instructor Information:

Name: Dr. David Elizandro	Office: Prescott Hall 323	Email: delizandro@tntech.edu
Office hours:	MW 1:00–3:00 and other times by appointment	

Course Prerequisite(s): Junior standing, SPCH 2410 or PC 2500, and C or better in CSC 2110, CSC 2111

Text(s): Languages and Machines, 3rd Edition, by Thomas A. Sudkamp, Addison-Wesley, 2006.

Course Topics: Application of discrete structures to model computational processes; techniques for analysis of algorithms; and automata and concepts of language theory.

Course (Outcome) Objectives:
Upon successful completion of this course, the student will have the ability to:
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1. Perform regular expression operations.
2. Determine the language generated by a grammar and grammars for a given language.
3. Convert context-free grammars to Normal Forms and implement the CYK Algorithm.
4. Construct a DFA/NFA-λ automata and determine the acceptor language of the automata.
5. Convert an NFA-λ to an equivalent minimum state DFA.
6. Construct deterministic/nondeterministic pushdown automatons (PDA/NPDA).
7. Construct the graph of a grammar and perform top-down/bottom-up/LA parsing.

Major Teaching Methods: The course is taught is an interactive lecture format. Numerous solutions to exercises will be presented and discussed in class. To verify your understanding of class discussions, homework problems are assigned.

Grading Policy:
Course grade is determined by three exams and a comprehensive final. Each of the first two exams account for 20% of the final grade; the 3rd and 4th exam each account for 30% of the final grade. Makeup exams are scheduled for only exceptional circumstances (with approval prior to the regularly scheduled exam). The grading scale is: A: 90-100, B: 80-89, C: 70-79, D: 60-69, F: below 60.

Academic Integrity:
A core value of the Department of Computer Science is academic integrity. Violations include, but is not limited to sharing information on an exam, plagiarizing another’s work, or unauthorized collaboration. For the first offense, a student will receive a 0 on the assignment and an ‘F’ for the course on the second offense.

Attendance policy
You are expected (but not required) to attend class. However, you are responsible for all assignments and material covered during your absence.

Course Participation (including exams):

Conciseness: A long and/or meandering answer to questions show that a person is nervous or may have missed the point of the question. Do not substitute volume for substance. Such an answer is discourteous.
Logical Flow of Information: Logical answers provide reasoned arguments to connect ideas and draw conclusions. To demonstrate command of the subject matter, ensure that someone can follow your logic and arrive at your conclusions.
Presentation: The quality of handwriting can have a profound impact upon learning and acceptance of ideas
To emphasize the importance of effective communications, illegible responses will not be graded; Illegible is defined as difficult to decipher because of poor handwriting, small print, faded print, excessive erasure marks, or fragmented solutions. When not sure, ask!!!.

Class email policy:

To ensure that you receive course related email correspondence, please add (delizandro@tntech.edu) to your approved recipients list. The instructor is **not** responsible for communications directed to your spam folder.

Disability accommodations

Students requiring accommodations must contact the Office of Disability Services (ODS). An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of class. The ODS is in the Roaden University Center, Room 112; phone 372-6119.

Events Schedule:

Date		**Event**
1/16	T	First Day of Classes
1/29	M	Last Day to Drop without a Grade
2/21	***W***	***Exam I* (Chapter 2-3)***
3/05	M	Spring Break begins
3/29	***W***	***Exam II* (Chapter 4)***
3/30	F	Last Day to Drop with W
4/20	***F***	***Exam III* (Chapter 5-7)***
4/27	F	Last Day of Classes
4/30	***M***	***Section 001 Comprehensive Final Exam (8:00-10:00)***
5/03	***T***	***Section 002 Comprehensive Final Exam (1:00-3:00)***

****Tentative dates***

Weekly Schedule	***Dates***	**Event**
1	1/15-1/19	Course Introduction
2	1/22-1/26	Strings and Languages (4 classes)
3	1/29-2/02	Regular Expressions (4 classes)
4	2/05-2/09	Context-free and regular grammars (6 classes)
5	2/12-2/16	
6	2/19-2/23	Leftmost derivations, ambiguity, Chomsky normal form (3 classes)
7	2/26-3/02	Deterministic Finite Automata (DFA's) (3 classes)
8	3/05-3/09	Spring Break
9	3/12-3/16	Nondeterministic Finite Automata (NFA's) (3 classes)
10	3/19-3/23	DFA minimization; relations between DFA's, NFA's, regular expressions (5 classes)
11	3/26-3/30	
12	4/02-4/06	Nondeterministic pushdown automata (4 classes)
13	4/09-4/13	
14	4/16-4/20	Parsing: top-down, bottom-up, LA(), LL(1) (7 classes)
15	4/23-4/27	

Actual CSC 2710 Course Strategies
(Each student made an A in the Course)

First off, get the book. The tests are open book so having the book as a quick reference and to look how to format an answer is great. However, having the book for the test does not mean you don't have to study. You HAVE to study to do well in this class, and you can NOT learn the material while you are taking the test. So in order to prepare yourself for the test I would first get a study partner/group because having another person's input on how to solve something is very important. Next, I would start studying AT LEAST one week in advance for the tests. I would normally go over the homework and when something does not make sense either look at the slides and try to follow the colors to see how to get to the next step, or try to look up a YouTube video. As far as coming to class and taking notes I recommend to come to class every day. Yes, he does not take attendance, but when you show up to class you are learning how to read the symbols (which is more important than you probably realize at this point), steps to solving a problem, and when tests dates are. Personally, I only took notes at the beginning of the semester and the notes I did take were mainly vocabulary so you can probably just show up and listen and do fine. This course builds on itself so the stuff you are doing in one chapter you will see some of it later in the book. So if/when you feel lost do not worry because the same basic concepts are repeated constantly throughout the course. So, just stick to it and you will do well.

Take notes in class, especially of points Dr. Elizandro makes that aren't on the slides. As you finish chapters/sections in class, read them in the book and take a few notes there, too. Starting about a week before the exam, go through every slide and work the examples and take a few notes. Writing information down really helps with retention. Work homework problems multiple times. It is important to always attend class, as well, as lectures are not recorded. Don't wait until after the first exam to start studying, as I did.

I printed out all chapter notes at the beginning of the semester and wrote any useful information down on the sides. In the days leading up to a test, I would review the homework problems using the book and my notes. Once I felt confident enough with the material, I would restrict myself to the book as reference and become familiar with any tables or pages that may be useful for tests. Overall, this class is super easy to pass if you attend all the lectures and complete the homework questions.

My approach is to follow along with the in-class examples using the textbook so I can quickly look up things I need to remember. This helps me fully understand what we're doing and why. I also work the examples until I can perfectly reproduce the solutions without looking anything up.