Computer Science 303
Introduction to the Theory of Computing
Syllabus

Catalog listing:	CMSC 303
Course Level:	Undergraduate
Prerequisites:	CMSC 302 with a grade of C or better
Instructor:	Dr. Caroline Budwell
Office:	Engineering East E4236
Phone:	804 828 0285
email:	ccbudwell@vcu.edu
Classroom:	Engineering West 0101
Class website:	Blackboard
Office Hours:	Tuesdays 9:30 – 10:30 am, 12:30 – 1:30 pm, Tuesday/Thursday 3:15 – 3:45 pm, or Virtual by appointment. Contact me via email or Discord to schedule a time to meet via Zoom, phone or in Discord. I will try to respond to your email within 48 hours. If I will be unavailable for a longer stretch of time, I will let the class know in an announcement.

1.0 – Overview (Catalog Course Description):

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 302 with a grade of C or better. Complexity classes, grammars, automata, formal languages, Turing machines, computability.

2.0 – Course Structure:

Lecture hours/week –	3
Lab hours/week –	0

3.0 – Course Goals

Upon successful completion of this course, the student will be able to:

- Prove that a language is regular, context-free, or recursively enumerable

- Create DFAs, NFAs, regular expressions, and convert from one to the other
- Work with Turing machines, and explain the significance of the Church-Turing Thesis
- Prove that certain languages are not regular or not recursively enumerable
- Prove certain problems are undecidable via a diagonalization argument
- Define the classes P and NP, and prove NP-hardness of certain problems

4.0 – ABET Criteria Addressed:

6. Apply computer science theory and software development fundamentals to produce computing-based solutions.

Other Criteria Addressed:

- Substantial coverage of algorithms and complexity, computer science theory, concepts of programming languages, and software development.

5.0 – Major Topics Covered:

- Discrete Mathematics
- Finite Automata
- Regular Expressions
- Context-free Grammars
- Pushdown Automata
- Turing machines and computability theory
- Complexity theory

6.0 – Textbook:

Title: Introduction to the Theory of Computation
Author: Michael Sipser
Publisher: Course Technology
ISBN-13: 978-1133187790

7.0 – Class Schedule:

Lecture: TR 2:00-3:15pm, Engineering West, Room 0101

8.0 – Evaluation:

General Instructions:

1. All assignments must be uploaded to Canvas on or before the due date specified. Only files submitted to Canvas on or before the due date will be considered for grading.
2. You will have 4 exams throughout the course. We will be using **ungrading** for these exams. Here is how it will work:
    a. For each exam, they will be "graded", but you will only see the feedback you receive on them, no score. I will record the score that I would have assigned you on a spreadsheet.
    b. Based on your work and the feedback given on the exam, you will assign the number of points that you think you earned for each question. You will discuss how you created your points in your reflection paper for this exam.
    c. Based on your point assessment and reflection I will assign your final grade. It generally will be an average of your score and my score. If, however, you come within 1 standard deviation of my overall score for your exam, you will receive an extra 5 points on your exam overall score. If your overall score is outside of 2 standard deviations of my overall score, then I will deduct 5 points from your exam. The goal is to evaluate yourself fairly based on the feedback given.
3. You will have 6 reflection papers detailing your learning journey throughout this semester. One will be at the beginning of the semester, one at the end of the semester and then four after each exam throughout the semester. Each paper will be at least 400 words, submitted through the semester in Canvas.
4. No assignments will be accepted late unless special permission has been given prior to the due date.
5. Your final exam will be cumulative and will be graded by the instructor.
6. No makeup exams will be given unless special permission has been given prior to the date of the exam.
7. Students will not be able to communicate in any way during an exam. Any perceived communication will result in the removal of the exam from the students involved. This will result in a zero as the grade with the option of a different exam being administered at the convenience of the instructor.
8. Personal computers/laptops/cell phones may be used in class only with the instructor's permission.
9. Attendance is expected from all students in the course. To encourage attendance, the instructor will use classwork, which will be graded as either acceptable or non-acceptable. While the grade for 1 or 2 of these questions will be dropped from final calculation, a student will not be allowed to complete them after class, even in the case of a justified absence.
10. There is a great deal of practice work with keys provided for you to use to study by. Please make use of this material within each Canvas Module.
11. Do your own work. **Plagiarism applies to all assessments as with any other intellectual property. Plagiarism is a form of cheating and will be treated as such.**

Grading:

Category	% weight
Exams	50
Reflections	20
Syllabus Quiz & Classwork	10
Final Exam	20

Grading scheme:

A: >= 90%
B: >= 80% and < 90%
C: >= 70% and < 80%
D: >= 60% and < 70%
F: < 60%

9.0 – Inclusive Statement:

I want to let you know that you BELONG in my class! Everyone enrolled in this class is able to master this material! This means YOU! Enrollment into VCU and completing the prerequisite courses guarantees that you have what it takes! No matter what, YOU belong here!

Students should visit http://go.vcu.edu/syllabus and thoroughly review all of the listed syllabus statement information. The full university syllabus statement includes information such as safety, registration, the VCU Honor Code, student conduct, withdrawal from courses, and more.