

## CSCI 3236 Theoretical Foundations, Fall 2022

- Professor:** Dr. Lixin Li  
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Phone: (912) 478-7646  
Email: lli@georgiasouthern.edu
- Teaching Assistant:** Temitope Jegede  
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- Lecture Class:** TR 9:30am -10:45am
- Office Hours:** Tuesday 10:45am – 1:45pm; Thursday, 10:45am – 12:15pm; Monday 8:00am – 9:00am, 10:00am – 10:30am; or by appointment
- Folio:** Course materials (such as syllabus, slides, and homework descriptions) will be available in Folio.
- Textbook:** None.

**Important Dates:** **August 11, Attendance Verification (the first day of classes)**  
August 10-15, Drop/Add  
September 5, Labor Day Holiday – No classes  
**October 7, Last day to withdraw without academic penalty**  
November 21-26, Thanksgiving Holidays for students – No classes  
November 30, Last day of classes  
**December 6 (Tuesday) - Final exam, 10:00am - 12:00pm**

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### Objective

This course is an introduction to theoretical computer science including formal languages, automata theory, Turing machines, and computability. Materials include concepts of languages and grammars, context-free grammars, Chomsky normal forms, finite automata, regular languages, pushdown automata, and Turing machines. The goal of the Theoretical Foundations is to provide a mathematically sound presentation of the theory of computer science. Upon successful completion of Theoretical Foundations, students will be able to understand fundamentals of programming of automata theory, formal languages, Turing machines and computability.

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## Policies

- Academic Honesty: Homework assignments and exams must be done individually. Failure to do so will result in an F. Honor Code<sup>1</sup>
    - “I will be academically honest in all my course work and will not tolerate the academic dishonesty of others. I also pledge to engage in ethical behavior on-campus and off-campus, to live an honorable lifestyle, and to create a campus environment that is characterized by individual responsibility, civility, and integrity.”
  - Attendance: Attendance is expected at all times.
  - Late Assignments: Homework assignments must be turned in at the beginning of class on the due day. **Late homework submission will not be accepted.**
  - Make-up work/tests: **No make-up work and/or tests will be given** except under extraordinary situations such as documented illness or injury.
  - Reporting illness or injury: If you miss class, tests, or labs due to illness or injury please see me. Although I believe most students are honest and trustworthy, as a matter of policy I must ask you to verify an illness or injury with a doctor’s certificate. Please note that other **family or personal issues will not be accepted as a justification for absence.**
  - Accommodations (see faculty or student handbook) — Georgia Southern University is an Equal Opportunity and Affirmative Action institution committed to providing reasonable accommodations for any person with a disability who meets the definition of disabled as described in the Americans with Disabilities Act. Students requiring academic accommodation should contact the Director of the Student Disability Resource Center for assistance at (912) 478-5136 or TDD: 912-478-0273.
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## Covid-19 Related Policies

- **Illnesses**

We want you to take appropriate precautions for your health as well as the well-being of your classmates. If you become ill during the term, please contact me immediately. We will work through what you will need to do, to either continue working in class or make up work that might have been missed during your absence. If you have an illness that would result in an extended absence, you will need to contact the Dean of Students office. In the event of serious illness, injury, or extenuating circumstances, the DOS office will notify professors at your request.

- **ADA Accommodations**

In compliance with the Americans with Disabilities Act (ADA), this course will honor requests for reasonable accommodations made by individuals with disabilities or demonstrating appropriate need for learning environment adjustments. Students must self-

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<sup>1</sup> See Georgia Southern’s “Faculty Handbook” at <http://academics.georgiasouthern.edu/provost/handbook/facultyhandbook.pdf>

disclose their disability to the Student Accessibility Resource Center (SARC) before academic accommodations can be implemented. Students requesting alternative educational arrangements must submit a completed COVID-19 Alternative Educational Arrangement Request Form to [the SARC office](#). For additional information, please call the SARC office at (912) 478-1566 on the Statesboro campus, or at (912) 344-2572 on the Armstrong and Liberty campuses.

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## Grading Policy

*Evaluation is based on homework, midterm exam, final exam, project/presentation, and participation in the class.*

Homework assignments and exams must be done individually.

You are encouraged to team up with other students in class for the final project. Group size should not exceed four. Full participation of each member in a team is expected.

Homework	30%
Midterm Exam	20%
Final Exam	30%
Project and Presentation	20%

Grade	Points
A	$\geq 90.0$
B	$\geq 80.0$
C	$\geq 70.0$
D	$\geq 60.0$
F	$< 60.0$

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## Tentative Course Schedule

TOPIC	READINGS
Mathematical preliminaries	Chapter 1
Languages	Chapter 2

Context-free grammars	Chapters 3&4
Finite Automata	Chapter 5
Review and <b>Midterm</b>	
Regular languages	Chapter 6
Pushdown automata and context-free languages	Chapter 7
Turing machines	Chapter 9
Matrix operations, and analytic geometry in three dimensional spaces for the purpose of computer graphics applications. Introduction to Time/space complexity.	
Review, <b>project presentation</b>	

Enjoy the Course!