CSC 442/542: Introduction to Cyber Security
CYEN 301: Computer Network Security

Course Description: 442: Overview of cyber security; provides students with practical cyber security experience based on theoretical foundations. Topics include: computer network defense, computer network attack, wireless security. 301: Overview of computer network security, broad coverage of cyber security concepts, computer network defense, computer network attack, and wireless security.

Course Outcomes: Upon **successful completion** of this course, students should:

1. Use problem solving and critical thinking skills to develop software that solves some cyber security related problem;
2. Understand and apply computer network defense concepts (e.g., physical security, firewalls, defense in depth/breadth);
3. Understand and apply network attack concepts (e.g., reconnaissance, footprinting, enumeration);
4. Implement various hashing and cryptographic algorithms (e.g., MD5, RSA, Vigenere);
5. Implement various cyber security related applications (e.g., steganography, time locking);
6. Understand professional, ethical, legal, security, and social issues and responsibilities in cyberspace, including their global impacts; and
7. Work in groups on a significant computing project to accomplish a common goal.

Prerequisite(s): CSC 220 (with a **C** or better).

Textbook: None.

Grades: Your grade for this class will be determined by dividing your total earned points by the total points possible. In general, graded components will fall into the following categories:

Programs:	~40%
Challenges:	~35%
Cyber Storm:	~20%
Other:	~5%

Labs/Challenges: Labs are class periods where students individually follow along on a laptop as the prof is leading a demonstration. Challenges are class periods where teams of students work toward a stated goal. Labs/challenges are typically held on Fridays during normal class time. **You must bring your laptop to all labs/challenges!** Note that there may be other class periods where a laptop will be extremely beneficial.

Programs: Programs are group programming assignments (unless explicitly stated otherwise). Only single submission per group is required. **Plagiarism** (sharing source code) and **cheating** is a violation of the Academic Honor Code that results in a failing grade for the assignment and may result in failing the course or expulsion from the university

Submitting programs after the due date results in reduced points

- 0 – 24 hours: - 25% points
- 24 – 48 hours: - 50% points
- 48+ hours: - 100% points

Office Hours: Dr. Kiremire: (kiremire@latech.edu): MTWRF 8:30 – 10:30am or by appointment. IESB 221/discord/zoom.

Dr. Timofeyev: (andtimo@latech.edu): MWF 3:15 – 5pm (by appt.), TR 8:30 – 10am, 1 – 2pm. IESB 215/discord/zoom.

Students needing testing or classroom accommodations based on a disability are encouraged to discuss those needs with me as soon as possible. For more information, please visit www.latech.edu/ods.

If you are ill, you can get treatment at the Wellness Center in the Lambright Intramural Center building. The nurses there can treat minor illnesses and can give vouchers to see doctors in town for more serious illnesses. Since you have already paid for this service through your fees, there is usually no additional charge. Also, if you sign a HIPPA release form at the time of your visit, they can verify that you were ill and thus you will have an excused absence for missing class.

In accordance with the Academic Honor Code, students pledge the following: "Being a student of higher standards, I pledge to embody the principles of academic integrity." For the Academic Honor Code, please visit http://www.latech.edu/documents/honor-code.pdf.

All Louisiana Tech students are strongly encouraged to enroll and update their contact information in the Emergency Notification System. It takes just a few seconds to ensure you're able to receive important text and voice alerts in the event of a campus emergency. For more information on the Emergency Notification System, please visit http://ert.latech.edu.

TOPICS COVERED:

- What is cyberspace? What is Cyber Storm?
- Introduction to computer networks and cyber security
- Introduction to cryptography
- An overview of computer network defense
- Introduction to covert channels
- Introduction to reverse engineering
- Introduction to steganography
- Introduction to database management systems and exploits
- Introduction to biometric authentication and keystroke dynamics
- Introduction to access control
- Introduction to web site exploitation
- Cyber Storm (final exam)