



CSCI, 465, 61E, Smart Things Security

COURSE SYLLABUS: Spring 2024

INSTRUCTOR INFORMATION

Instructor:	Shreyas Kumar
Office Location:	ACB2 #208
Office Hours:	TBD
Office Phone:	TBD
Office Fax:	N/A
University Email Address:	shreyas dot kumar at tamu dot edu (note it is tamu)
Preferred Form of Communication:	EMAIL subject must begin with CSCI-345 ...
Communication Response Time:	Email response within 1~2 business days

COURSE INFORMATION

Location/time: Tuesday/Thursday, 9:10 AM – 10:25 PM, ACB1-121

Text book: None required. Use any text book of your choice for reference or look up information on internet.

Course Description

This course will provide measures and tools used to guard both the data and analytics processes from attacks, theft, or other malicious activities that could harm or negatively affect them from both online and offline aspects. It includes protection of data in rest, data in transit, data in processing, big data analytical models, and machine learning techniques.

Prerequisites: None

The syllabus/schedule are subject to change.

Student Learning Outcomes

By the end of this course, students will be able to:

1. **Understand and Explain the Fundamentals of Smart Device Security**
2. **Identify and Assess Security Risks**
3. **Implement Security Measures and Best Practices**
4. **Develop Secure Smart Device Applications**
5. **Analyze and Respond to Security Incidents**
6. **Stay Updated with Emerging Trends and Technologies**
7. **Ethical and Legal Considerations**
8. **Communicate Security Information Effectively**
9. **Collaborate and Work in Teams**
10. **Critically Evaluate Security Solutions**

Upon successful completion of this course, students will be well-prepared to contribute to the security of smart devices in a professional setting, whether in a technical, advisory, or managerial capacity.

COURSE REQUIREMENTS

Minimal Technical Skills Needed

Students should be able to study independently and have strong implementation skills. Students should be also familiar with basic Linux shell commands and system skills. Students are expected to have strong background in both mathematics and computer systems.

Student Responsibilities or Tips for Success in the Course

Assignments will be announced on myLeoOnline. It is students' responsibility to keep up with the schedule. No makeup exams or assignments.

GRADING

Final grades in this course will be based on the following scale:

- A = 90%-100%
- B = 80%-89%
- C = 70%-79%
- D = 60%-69%

The syllabus/schedule are subject to change.

F = 59% or Below

Assessments

Basis for Evaluation:

Participation	–	10%
Assignments	–	30%
Quizzes	–	20%
Project	–	20%
Finals	-	20%

TECHNOLOGY REQUIREMENTS

LMS

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-SystemRequirements>

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

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COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

Interaction with Instructor Statement

The instructor will make an effort to answer questions in a timely manner.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures/Policies

You should do your own work on exams and for programming assignments. Copying another student's work is not acceptable. Any indication of cheating or plagiarism on an exam/assignment will result in an automatic 0 (zero) for the exam/assignment for all students involved. Yet, based on cheating and plagiarism activity in any section of class, instructor holds the right to give F grade to the identified student(s). Regarding codes in assignments, you may be required to explain the code you submitted. In case of discursive explanation, the instructor holds the right to lower your grade. No makeup exams or assignments unless documents explaining emergency are provided.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx).
<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

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Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:

<https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Academic Integrity and Artificial Intelligence

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

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In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty
13.99.99.R0.10 Graduate Student Academic Dishonesty

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

The syllabus/schedule are subject to change.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

AI use policy [Draft 2, May 25, 2023]

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13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

COURSE OUTLINE / CALENDAR

Week 1: Introduction to Smart Device Security

- Course Introduction
- Overview of Smart Devices and IoT

The syllabus/schedule are subject to change.

- Significance of Security in Smart Devices

Week 2: Understanding Smart Device Ecosystems

- Components of Smart Device Ecosystems
- Operating Systems and Firmware
- Communication Protocols and Network Interfaces

Week 3: Security Fundamentals for Smart Devices

- Confidentiality, Integrity, and Availability (CIA) Triad
- Security Layers and Defense in Depth
- Authentication, Authorization, and Accounting (AAA)

Week 4: Identifying Security Risks in Smart Devices

- Threat Modeling for Smart Devices
- Common Vulnerabilities and Exposure Analysis
- Risk Assessment Methodologies

Week 5: Practical Risk Assessment Workshops

- Case Studies of Real-world Vulnerabilities
- Risk Assessment Tools and Techniques
- Interactive Risk Assessment Exercise

Week 6: Implementing Security Measures

- Security Configuration and Hardening
- Encryption and Secure Communication
- Update Management and Patching

Week 7: Best Practices for Smart Device Security

- Secure Boot and Trusted Execution
- Security by Design
- Privacy Considerations in Smart Devices

Week 8: Secure Smart Device Application Development

The syllabus/schedule are subject to change.

- Secure Coding Practices
- Security in the Software Development Lifecycle (SDLC)
- Security Testing: Static and Dynamic Analysis

Week 9: Responding to Security Incidents

- Incident Detection and Analysis
- Incident Response Planning
- Post-Incident Recovery and Forensics

Week 10: Emerging Trends and Technologies

- Advanced Persistent Threats (APTs) and Smart Devices
- Machine Learning and AI in Security
- Future Challenges in Smart Device Security

Week 11: Ethical and Legal Considerations

- Ethical Hacking and Responsible Disclosure
- Data Protection Laws and Compliance
- Intellectual Property and Open Source Software

Week 12: Communication and Collaboration in Security

- Communicating Security with Stakeholders
- Team-based Security Strategy Development
- Course Review and Final Project Presentation

The schedule is **tentative** and may be adjusted to fit the actual class progress.

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