CS4783 Advanced Software Engineering
Course Syllabus – Spring 2022

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Note: Click on underlined text throughout the syllabus to access additional web linked sources.

Spring 2022 Attendance: The first 3 weeks of this course will be held online via Zoom; a link will be posted on Blackboard. On February 7, this is class will move to a **Face-to-Face course.** This means we will be meeting on campus in BB 3.01.12 on M-W-F 2:00 PM – 2:50 PM. If you are unable to attend, please contact me to excuse you from attendance on the day of class. If you do not contact me, you will receive a 0 (zero) for that day's attendance. Content delivered in the face-to-face modality are not required to be available online and may not be posted on Blackboard. I will advise how to stay on track with your course if you miss a lesson. For the health and safety of students and faculty, this course may be moved fully online at any time during the semester. The instructor will provide detailed instructions if this move to fully online learning occurs.

Public Health Considerations – Spring 2022

The health and safety of our campus community is a shared responsibility of all Roadrunners. It is important to note that none of us can guarantee a COVID-19 free environment. We all must, however, follow the guidelines outlined in the UTSA Public Health Task Force Report ("Report") and any other applicable policies as may be communicated by the University from time to time. This will include regulating behaviors outlined in the Report including:

- Encouraging the use of face coverings,
- Self-monitoring for symptoms using the Daily Health Check before coming to campus,
- Getting tested for COVID-19 if showing symptoms or after a close contact with a COVID-19 positive individual (if you are not already fully vaccinated and are not symptomatic),
- Following proper hygiene practices, including frequent hand sanitization, using cleansing wipes to disinfect surfaces, and minimizing the use of shared devices, tools and equipment,
- Avoid congregating (i.e. bottlenecking) near the entrances and exits before and after class – keeping your distance to reduce possible transmission from symptomatic or asymptomatic individuals.
- Communicating any COVID-19 related health concern to your supervisor or professor, and
- Submitting a self-report to report your positive test results or exposure (if not fully vaccinated and are also symptomatic for COVID-19 infection).

In turn, faculty members or supervisors will submit a COVID Case Referral to alert the COVID Response Team about positive COVID-19 cases for operational action. Failure to abide by these guidelines and requirements may result in disciplinary action in accordance with the Student Code of Conduct or applicable employment policies and procedures. Violations should be reported to the Office of Institutional Compliance via the UTSA Hotline for appropriate action.

For Face-to-Face Classroom and Other Academic Sessions

Face coverings/masks are recommended in indoor public and common spaces, especially for those individuals who are high risk and/or not vaccinated. For the latest information, please review the Roadrunner Roadmap.

Contact Information

Instructor Name: Juan M. Valadez, Computer Science Department

Office Location: NPB 3.302

Student Hours: **T-Th 2:30-4:30PM only via Zoom by appointment**

> The time I have listed as student hours is for you. It is a time I have dedicated to being available to you to provide assistance, asks questions or talk about the department, graduate school, career options, etc.

Phone Numbers: 210-378-4467

Email Address: juan.valadez@utsa.edu

Note: Refer to the Student Resources section of this syllabus for technical support, Student Disability Services accommodations, academic support and other resources. Contact the instructor ASAP if you are in need of additional resources to be successful in this course.

Instructor Bio

I am an industry professional with years of experience in large scale ERP implementations, software development, DevOps, and Cyber Security. I previously taught at the University of the Incarnate Word for 2.5 years. This is my second semester at UTSA and so far, I think I have gotten used to such large class sizes. I received my degrees from St. Mary's University San Antonio in Computer Engineering (BS 2003), Computer Science/Electrical Engineering (MS 2006), Master of Business Administration (2010).

Teaching Philosophy

Over the course of two decades, I have seen this industry grow and mature; have had the pleasure of working on cutting edge and challenging projects. I use my industry experience to help bridge the gap between theory and practice. My goal is to help prepare the next generation of IT professionals.

Communication Plan

There are several ways you can communicate with the instructor during this course:

1. UTSA offices, staff and faculty are not permitted to share student-related information to a non-UTSA email address. After October 4 2021, faculty and staff should **no longer** send student-related information to a non-UTSA email address. General discussions via non-university email addresses may happen but should not be deemed official communication (see HOP 8.15 Section IX D).
2. Use the "Send Email" tool. This has the same result as sending a direct email, but it comes from Blackboard instead of your personal email account.
3. Post a question in the "Course Q&A" forum. This is a public forum provided for content- and course-related questions when the answer can benefit the entire class. Everyone in the class can see the questions and answers posted here.
4. Use the "Course Messages" tool to send a private message about grades. This communication stays in Blackboard and is the only secure way to discuss your grade. You will have to log in to Blackboard to send and receive these course messages.

The instructor will generally respond to all messages within 24 hours. Office hours will be offered virtually in Blackboard Collaborate Ultra and hours will be announced during the first week of class.

Course Description

Application of software engineering principles to develop a working, security-hardened software product as a team project. Real-world case studies and perspectives will accompany lecture to provide students with an industry-level viewpoint.

Credit hours: 3

Prerequisites/co-requisites: Prerequisite: CS 3743 and CS 3773

Course Goals

Students will design and build a RESTful web service middle tier, using Gitlab's CI/CD pipelines to deploy containers to Kubernetes. We will cover writing integration/system tests. We will use security scanners to scan our web services for vulnerabilities. We will try out an open-source DevOps tool to monitor web service performance. Students must select from the JavaScript, Python, PHP, or other languages to implement their web service layer.

Course Format

This course will be offered online for the first 3 weeks via Zoom after which it will move to face-to-face.

Course Navigation Instructions

Click on the underlined text throughout this syllabus to access additional web linked sources. When you log in to Blackboard you will arrive at the "**Announcements**" page. Use the course menu to go to other locations in the course. Blackboard course links will open in the current window or tab. Files and other external web links will open in a new window or tab. You can access support services from the Blackboard course menu as well.

Course Materials

Required Textbook

No textbooks are required for this course

Technology Requirements and Support

- Basic computer skills.
- Computer with a web camera and speakers/earbuds/headphones. You can use your own personal device (laptop or desktop). If you need to borrow a device, contact the Tech Café (see contact information below) to inquire about checking out a laptop for the semester.
- For more information on accessing desktop computers on campus in the labs and the library, visit the UTSA Student Connect Computer Lab information page.
- Internet access. Wired or reliable connection recommended for online exams and assignments.
- Google Chrome is the recommended browser. Issues may happen if using Internet Explorer or Safari, especially with Blackboard Collaborate.
- Access to the Microsoft Office suite and Adobe Creative Cloud suite. These tools are provided free of charge to UTSA students and you can learn more about this software, including instructions on how to access these programs by visiting the Digital Tool Resources page.
- Review the Blackboard Self Help Portal.

- Review the [Minimum Technical Requirements for Online Learning](#) page.

If you have a problem with Blackboard and you have already **cleared the cache** and tried with a **different browser**, please submit a ticket to University Technology Solutions (UTS) Tech Café. Be ready with your course ID and section. A screenshot of the issue will accelerate the troubleshooting process. Always notify the instructor about the issue you are encountering.

University Technology Solutions (UTS) Contact Information
- Email UTS Tech Café at techcafe@utsa.edu
- Call UTS Tech Café at 210.458.5555
- Visit the [UTS Tech Café website](#)

Grading Information

Grading Distribution

Assignments	75%
Attendance/Participation	25%
Total	**100%**

Grading Schema
Final grades will be based on the following grading scale:

Percentage	Grade
97 – 100%	A+
94 – 96%	A
90 – 93%	A-
87 – 89%	B+
84 – 86%	B
80 – 83%	B-
77 – 79%	C+
74 – 76%	C
70 – 73%	C-
67 – 69%	D+
64 – 66%	D
60 – 63%	D-
<60%	F

Assignments & Assessments

Homework

Homework assignments will be due 2 weeks from the date they are assigned and submitted via Blackboard. It is your responsibility to check the appropriate file has been submitted. Because of the nature of web technology, you will have specific instructions on how to complete and turn in assignments. Not following these instructions correctly may result in reduced or no credit.

Exams

No exams in this course

Course Expectations & Policies

Announcements

All information you need for this course will be posted in Blackboard in the syllabus or schedule, or as an assignment, item, or announcement. It is your responsibility to check in and participate every week in the course and complete all listed activities and assignments. It is recommended that you check announcements daily.

Submission of Coursework

All assignments are due at 11:59 pm on the designated day unless otherwise noted. All assignments will be submitted online through the UTSA Blackboard course site on or before the specified due date and submitted to the location designated in the assignment description. Make sure you save your assignment somewhere that you can easily retrieve it later (e.g., on a travel drive, your personal computer, email, etc.). If something goes wrong with your submission, you will want to be able to retrieve your assignment for resubmission. Always notify the instructor about any issues you encounter.

Also, you will be surprised at how many assignments you will refer to later in your college career. I suggest you save all your assignments until well after you graduate. Some employers ask for examples of college work as part of the interview/selection process. Trust me, you will not be sorry. Be aware that Blackboard goes down occasionally for maintenance, and you cannot get on the Blackboard system or send documents during those times. It is always a good idea to submit assignments early to account for times the Blackboard system might be down.

Quality of Work

All work must be of professional quality, neatly presented, grammatically correct, and free of spelling and punctuation errors.

Grading and Feedback

To view your grades on Blackboard, click on the "Grades" tab on the sidebar menu of our course in Blackboard. If additional feedback has been included with your grade, a speech-bubble icon will appear next to your grade. Clicking on this icon will open an additional window on your screen providing you with feedback.

Expect assignments to be graded within 1 week of submission deadline. Blackboard based exams are auto graded and should be available readily.

Video and Audio Recording

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. You are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless Student Disability Services has approved the recording of the instruction as part of your accommodation, you are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Student Disability Service accommodation. If the instructor or a UTSA office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. For more information on your privacy and class recordings, review Student Privacy (FERPA) in Virtual Classrooms and Other Educational Recordings and the Guide to Secure Video Conferencing Tools.

Course Evaluation

The instructor uses the feedback provided by their students in course evaluations to improve their teaching. Additionally, course evaluations are a strategy used by the university as one factor in evaluating an instructor's effectiveness. As a faculty member, the instructor encourages you to complete the course evaluation during the availability period later in the semester so that they can make improvements for the next group of students.

Late Work

Late work is allowed under some circumstances and with prior approval from the instructor. Points will be deducted at a rate of 10 percentage points per day, including weekends and holidays. Work is accepted up to 7 days after the due date. At that time, the grade will be zero.

Extra Credit

Extra credit may be assigned throughout the semester and is meant to be challenging. It is not required and the deadline for submission and points are at the sole discretion of the instructor.

Incompletes

Course incompletes will be given only in extreme cases. If you feel you have extenuating circumstances that warrant an incomplete for the course, contact the instructor as soon as possible.

Interpersonal Interactions and Online Netiquette

We will discuss ideas and topics in class with which you may not agree with. It is also possible you will present ideas and topics in class with which others will not agree with. It is vital that all opinions are respected and that all interactions and class discussions take place in a respectful and safe environment, whether online or in person. To that end, be prepared to back up any opinion you may have with facts rather than emotions. At UTSA, we encourage everyone to openly share their ideas and opinions without penalty or judgment, but learning should always be based on facts and research. It is possible to disagree without being disagreeable.

Netiquette represents proper manners and behaviors online. Netiquette refers to the social expectations and behavior norms for online interactions and communications. In the online learning environment, you should follow common social standards. You are expected to be scholarly, polite, respectful, and professional. For additional information on those expectations, visit the Digital Learning Netiquette page.

Copyright and Fair Use

It is important to understand the issue of intellectual property rights. You may not use the images or thoughts of others for profit or gain without their written permission. The UTSA library has a Copyright Laws and Public Performance Rights (PPR) page.

UTSA Student Resources

Tech Support

- For technical assistance with Blackboard Learn, visit the Blackboard Self Help Portal. Blackboard provides support 24 hours a day, 7 days a week for UTSA faculty and students by phone, email, chat and live virtual consultations.
- Review the Minimum Technical Requirements for required technical specifications for learning online.
- Additional technical support can be accessed by visiting the UTS Tech Café page.
- Chrome is the recommended browser. Issues may happen if using Internet Explorer or Safari, especially with Blackboard Collaborate Ultra. In case you are having trouble opening or accessing content, clear the cache and try a different browser. You can run the Blackboard Browser Checker.
- To learn about all of the digital tools available to you as a UTSA student visit the Digital Tool Resources page.

Accommodations for Students with Disabilities

The University of Texas at San Antonio in compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act provides "reasonable accommodations" to students with disabilities. Only those students who have officially registered with Student Disability Services and requested accommodations for this course will be eligible for disability accommodations. Instructors at UTSA must be provided an official confidential notification of accommodation through Student Disability Services. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found on the Student Disability Services webpage or by calling their office at (210) 458-4157. Accommodations are not retroactive.

Additional Assistance

If you have issues that we are unable to resolve together, you can contact your department chair (see the List of Department Chairs,) then the course's associate dean (see the List of UTSA Colleges,) or UTSA's Equal Opportunity Services & Title IX Office.

Academic Support

Supplemental Instruction

Supplemental Instruction (SI) offers student-led study groups using collaborative learning for historically difficult classes. Supported courses and schedules can be found on the Tomás Rivera Center website. You can call the SI office if you have questions or for more information at (210) 458-7251.

Tutoring Services

Tomás Rivera Center (TRC) may assist in building study skills and tutoring in course content. The TRC has several locations at the Main Campus and is also located at the Downtown Campus. For more information, visit the Tutoring Services website or call (210) 458-4694 on the Main Campus and (210) 458-2838 on the Downtown Campus.

Academic Success Coaching

The Tomas Rivera Center (TRC) Academic Success Coaching Program offers one-on-one study skills assistance through Academic Coaching. Students meet by appointment with a professional to develop more effective study strategies and techniques that can be used across courses. Group workshops are also offered each semester to help students defeat common academic challenges. Find out more information on Academic Success Coaching website or call (210) 458-4694.

The Writing Center

The Judith G. Gardner Center for Writing Excellence helps the entire UTSA Community with various writing projects, questions, and challenges. Our experienced tutors provide assistance to current undergraduates, graduate students, and faculty/'staff members with each step of the writing process. Services are located at the Main Campus in the JPL building (2.01.12D) and at the Downtown Campus in the Frio Street Building (FS 4.432). They also offer online tutoring seven days a week by appointment so that you can chat live with a tutor. Visit The Writing Center's website to learn more and to schedule an appointment.

UTSA Libraries

UTSA has three libraries for students to use. The main library, the John Peace Library (JPL) and the Applied Engineering and Technology library are located on main campus. There is also a library located at the downtown campus as well. You can access UTSA Library services and resources using your abc123 and passphrase. You can also contact the research librarian assigned to your college/department for additional help.

Student Services

UTSA Mobile App

Make sure you download the UTSA mobile app to stay connected. Visit the UTSA Mobile App website to access the app download and learn about app features.

UTSA Social Media Channels

You can follow UTSA departments and organizations on social media. Visit our Social Media Directory page to find your favorite accounts to follow.

Support for Learning Online

If you haven't had an online course before, Learning Online Student Resources is a good website to help answer all of your questions.

Student Affairs Comprehensive Student Resource List

UTSA has an extensive amount of resources, tools, programs, and offices. The Student Affairs Student Resources webpage can help you access campus services and general information on most topics.

Counseling Services

Counseling Services provides confidential, professional services by staff psychologists, social workers, counselors, and psychiatrists to help meet the personal and developmental needs of currently enrolled students. Services include individual brief therapy for personal and educational concerns, couples/relationship counseling, and group therapy on topics such as college adaptation, relationship concerns, sexual orientation, depression, and anxiety. Counseling Services also screens for possible learning disabilities and has limited psychiatric services. Visit the Counseling and Mental Health Services website or call (210) 458-4140 (Main Campus) or (210) 458-2930 (Downtown Campus).

Student Health Services

UTSA's Student Health Services offers appointments and resources for students related to health education and services. You can find out more about the services offered by visiting the Student Health Services website.

Student Wellbeing Resources

UTSA is committed to the wellbeing of each member of the campus community and recognizes that numerous factors contribute to overall wellness: physical and mental health, diet and nutrition, physical activity, stress management and self-care, social behaviors and more. In addition to the services listed above, UTSA offers the following:

- Student Assistance Services (Student Ombudsperson)
- Behavioral Intervention Team (BIT)
- UTSA Police Department
- UTSA Campus Recreation
- UTSA Center for Civic Engagement
- UTSA Campus Climate Team
- Office of Inclusive Excellence
- Equal Opportunity Services & Title IX Office (Sexual Harassment and Sexual Misconduct)
- The PEACE Center - Prevention, Education, Advocacy, Consultation and Empowerment

The instructor highly encourages you to click on and skim these links, so that you are aware of these services should you ever find you need them. If there are any issues, events, or resources you would like to discuss,

please reach out to the instructor. They are happy to listen and help you find the right resources for your situation.

Additional UTSA Policies

Visit this website for a full listing of Student Policies A-Z Index. The link provides information on policies and procedures that apply to all students. It includes residence requirements, policies on grades and the grade point average, credit by examination, adding and dropping courses and withdrawal from UTSA, and scholastic probation and dismissal. The most important policies for you are highlighted below.

Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is the federal law that protects the privacy of students' education records. This law prohibits Financial Aid, Registrar, Fiscal Services, and many other UTSA departments from releasing any specific student education information without the student's written permission. Parents, guardians, spouses, etc., cannot have access to the student's education records, including account information unless the student has granted authorization through a FERPA/Proxy account in ASAP. Learn more about your student privacy rights by viewing the Family Educational Rights and Privacy Act page by the Office of the Registrar.

Campus Carry

Pursuant to HOP 9.48, Carrying of Concealed Handguns on Campus, there are specific guidelines provided by the state of Texas in the presence of weapons on campus. The latest information can be accessed at the UTSA Campus Carry page.

Student Code of Conduct and Scholastic Dishonesty

The Student Code of Conduct is Section B of the Appendices in the Student Information Bulletin. Scholastic Dishonesty is listed in the Student Code of Conduct (Sec. B of the Appendices) under Sec. 203 for more information. For more information on the Student Code of Conduct, contact the Student Conduct and Community Standards team.

Transitory/Minor Medical Issues

In situations where a student experiences a transitory/minor medical condition (e.g. broken limb, acute illness, minor surgery; COVID or COVID quarantine) that impacts their ability to access classes or perform tasks within the class over a limited period of time, the student should reach out to the faculty member. In addition, please refer to HOP 5.09 Class Attendance and Participation for further information.

Sexual Harassment and Sexual Misconduct

UTSA is committed to providing an environment free from all forms of discrimination and sexual harassment, including sexual misconduct, sexual assault, domestic violence, dating violence, and stalking. If a student has experienced or experiences any of these incidents, know that UTSA has resources to help.

UTSA faculty have the responsibility to create a learning environment that is safe and free from hostility. State and federal law as well as UTSA's Handbook of Operating Procedures (HOP 9.24) require that instructors must report incidents of sexual harassment and sexual misconduct they learn about to the Title IX Coordinator or a Deputy Title IX Coordinator. This means that if a student tells their instructor about a situation (including classroom discussions, written work and/or one-on-one meetings) involving sexual harassment, sexual assault,

dating violence, domestic violence, or stalking, the instructor must report it to the Equal Opportunity Services & Title IX Office. Although the faculty member must report the situation, the student will still have options about how their case will be handled, including whether or not the student wishes to pursue a formal complaint. The university's goal is to make sure students are aware of the range of options available to them and have access to the resources they need.

If a student wishes to speak to someone confidentially, they can contact any of the following on-campus resources, who are not required to report the incident to the EOS/Title IX Office: (1) Counseling Services at 210-458-4140; (2) Student Health Services at 210-458-4142; or (3) The PEACE Center at 210-458-4077.

Campus Safety & Emergency Preparedness

UTSA is committed to providing a safe campus environment for students, faculty, staff, and visitors. As members of the community, we encourage you to take the following actions to be better prepared in case of an emergency:

- Alerts: Ensure you are signed up for UTSA Alerts through your ASAP.utsa.edu account.
- Emergency Procedures: Read through the information related to emergency preparedness on the UTSA Alerts page.
- Safety App: Download the LiveSafe App on your phone through the Apple store or Google Play; visit the LiveSafe App website for details.
- Important Numbers: UTSA Police - Emergency: (210) 458-4911; Non-Emergency: (210) 458-4242

Each one of us play a critical role in making sure ALL ROADRUNNERS are safe, know what to do, and how to stay informed during a campus crisis. Don't be scared, be prepared! #UTSAprepared

Inclusivity Statement

The University of Texas at San Antonio, a Hispanic Serving Institution situated in a global city that has been a crossroads of peoples and cultures for centuries, values diversity and inclusion in all aspects of university life. As an institution expressly founded to advance the education of Mexican Americans and other underserved communities, our university is committed to ending generations of discrimination and inequity. UTSA, a premier public research university, fosters academic excellence through a community of dialogue, discovery, and innovation that embraces the uniqueness of each voice.
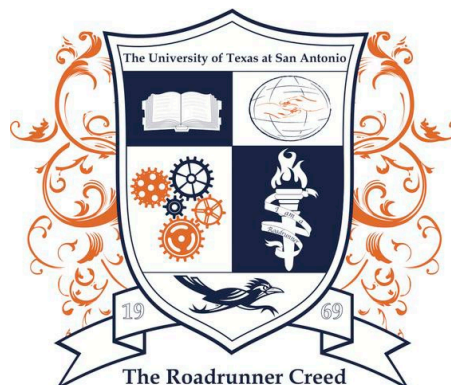
The Roadrunner Creed

Figure 1. Roadrunner Crest

The University of Texas at San Antonio is a community of scholars, where integrity, excellence, inclusiveness, respect, collaboration, and innovation are fostered.

As a Roadrunner, I will:

- Uphold the highest standards of academic and personal integrity by practicing and expecting fair and ethical conduct;
- Respect and accept individual differences, recognizing the inherent dignity of each person;
- Contribute to campus life and the larger community through my active engagement; and
- Support the fearless exploration of dreams and ideas in the advancement of ingenuity, creativity, and discovery.

Guided by these principles now and forever, I am a Roadrunner!

Changes

The syllabus is subject to change at the discretion of the instructor. Any changes/corrections to the course materials, assignment dates, or other updates will be communicated to the students ahead of time. It is your responsibility to check Blackboard for corrections or updates to the syllabus.

Course Schedule

UTSA Important Dates
For a list of important university-wide dates, review [One Stop's academic calendar](#).

	Date	Topic	Assignment
Week 1			
	1/19/2022	Introduction and Syllabus	
	1/21/2022	Dev Ops and Code Management	
Week 2	1/24/2022	Dev Ops and Code Management	
	1/26/2022	Dev Ops and Code Management	
	1/28/2022	Servers and Traditional Software	
Week 3	1/31/2022	Virtual Servers	HW 1: Create your VM
	2/2/2022		
	2/4/2022		
Week 4	2/7/2022	Cloud VMs	
	2/9/2022		
	2/11/2022		
Week 5	2/14/2022	Building Web Services	HW2: Build a cloud web service
	2/16/2022		
	2/18/2022		
Week 6	2/21/2022	Front End vs Back End	
	2/23/2022		
	2/25/2022		
Week 7	2/28/2022	Testing Web Services	
	3/2/2022		
	3/4/2022		
Week 8	3/7/2022	Working with RESTful APIs	HW3: Build an API
	3/9/2022		
	3/11/2022		
Week 9	*3/14/2022*	*Spring Break - No Class*	
	3/16/2022	*Spring Break - No Class*	
	3/18/2022	*Spring Break - No Class*	
Week 10	3/21/2022	Converting web applications to APIs	

	3/23/2022		
	3/25/2022		
Week 11	3/28/2022	Into to Containers	HW 4: VM to a Container
	3/30/2022		
	4/1/2022		
Week 12	4/4/2022	Docker	
	4/6/2022		
	4/8/2022		
Week 13	4/11/2022	Kubernetes	
	413/2022		
	4/15/2022		
Week 14	4/18/2022	Securing APIs	HW5: Add Security to your Web App
	4/20/2022		
	4/22/2022		
Week 15	4/25/2022		
	4/27/2022	CI/CD	
	4/29/2022		
Week 16	5/2/2022		
	5/4/2022	**Student Study Day - No Classes**	
		NO Final Exam	