

**CSCI/CSIS 690: Special Topics in Computing**  
**Software Deployment and Operations (DevOps)**  
Extended Summer (CofC)/First Summer (Citadel) 2022  
3 Credit Hours

**Instructor:** Michael Verdicchio  
**Office:** Thompson Hall 226, The Citadel  
**Office Hours:** TBD

**Class Time(s):** Tuesdays 530-815, and online.  
**Classroom:** Thompson Hall 303  
**Email:** mv@citadel.edu

---

**COURSE OVERVIEW**

**New Course Disclaimer:** *This special topic course is being offered for the very first time. Your experience and feedback will be a valuable contribution to the eventual permanent course on this topic. The instructor may need to adjust or change elements of this syllabus as this initial offering takes shape. Any updates/changes will be announced in class and listed on Canvas. Thank you for participating in the launch of this new course.*

**Prerequisites:** Admission to graduate program. Exposure to agile software engineering principles and practices will be helpful but is not required.

**Course Description:** This course provides an overview of the theories and techniques of development, deployment, and operations for software engineers. Beginning with the framework of agile software development, this course will explore organizational and cultural requirements for the successful implementation of DevOps practices. Contemporary practices and tools for DevOps will be explored. Students will apply gained knowledge by implementing a deployment and operation pipeline, and by performing risk and security assessments.

**MS Program Emphases/Concentrations**

This course will count toward the Software Engineering, Cybersecurity, Information Systems, or Computer Science areas of concentration. Students will work with the instructor to approve a final project appropriate to their area.

**Course Learning Outcomes:**

1. Describe key components of agile software engineering
2. Define key terminology in DevOps, e.g., continuous integration, deployment, and delivery (CI/CD)
3. Describe organizational culture and mindset required for successful implementation of DevOps practices
4. Implement a software deployment pipeline using CI/CD processes
5. Analyze existing deployment pipelines and recommend improvements
6. Perform risk assessment for a deployment pipeline
7. Describe best practices for information security in the context of DevOps

**Required Textbook/Materials:**

None. Materials provided by instructor.

## Software Deployment and Operations (Verdicchio)

### Recommended Textbook/ Materials:

Deployment and Operations for Software Engineers by Len Bass and John Klein

**Course Format:** Hybrid 50% online with 50% face-to-face lectures. Citadel term is 5/9/22 – 6/24/22. CofC term is 5/16/22 – 6/27/22. CofC students will follow the Citadel calendar and are responsible for attending all class meetings (virtual and/or in-person), especially the week of 5/9/22 – 5/13/22.

### Assignments:

Readings with class discussions, technical homework assignments, midterm exam, final project with presentation.

### Course Grades:

Assignments 40%

Quizzes 10%

Exam 20%

Discussions 10%

Final Project 20%

### Grading Scale:

#### *Graduate Grading Scale*

A= 90-100%

B+= 87-89%

B=80-86%

C+= 77-79%%

C=70-76%

F=69 and below

### COURSE SCHEDULE

*Note: Schedule subject to change. Additional reading/activities will be assigned as needed.*

#### Modules:

1. Review of agile software engineering
2. Agile business culture changes
3. DevOps concepts and terms
4. Organizational culture and mindset required for DevOps
5. Basics of cloud computing and connection to agile/DevOps
6. Midterm exam
7. Building a DevOps pipeline from scratch
8. From DevOps to DevSecOps
9. Assessing and improving an existing pipeline
10. Projects/Presentations

Commented [MV1]: IaC IaaS

### COURSE RESOURCES

**Canvas /Citadel's Approved Learning Management System:** Over the course of the semester, I may post reading notes, lesson plans, discussion prompts, self-guided lectures, grades, and other

administrative information on the course Canvas site. Students must check Canvas each lesson for pertinent updates and other critical information.

#### **COURSE POLICIES, EXPECTATIONS, AND REQUIREMENTS**

**Updated Contact Information:** Students must update contact information at the start of each semester to ensure instructor-student communication outside of Canvas, if required.

**Course Material:** Course material is for the sole use of students currently enrolled in the course and not for redistribution to electronic file sharing sites (share drives, Chegg, etc.).

**Disability Policy:** The Citadel complies with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Students with disabilities who seek accommodations must make their request through Services for Students with Disabilities in the Student Success Center (117 Thompson Hall, 843-953-6877) to verify their eligibility and to identify appropriate accommodations. Students should speak to his/her professor and also make requests for academic accommodations to services for students with disabilities so we can ensure these accommodations and facilitate student success. If you have an immediate access need, please reach out to your faculty immediately in person, via email, or during office hours. Students with short-term disabilities, such as a broken arm, can often work with instructors to minimize classroom barriers. In situations where additional assistance is needed, students should contact the Services for Students with Disabilities as noted above. Please know that accommodations are not retroactive, so avoid any delays.

**Privacy Statement:** The Citadel is committed to safeguarding and maintaining the privacy of your personal information. Please see privacy statements below related to technology used in this course.  
Canvas Privacy Policy: <https://www.instructure.com/policies/privacy>  
Zoom Privacy Policy: <https://zoom.us/privacy>  
LockDown Browser Privacy Policy: <https://web.respondus.com/privacy-policy/>

**Weather & Campus Emergencies:** In case of adverse weather, or other campus emergency, critical information will be posted on the Bulldog Alert homepage, as well as pushed to email addresses and phone numbers of those people who have updated their contact information within the Bulldog Alerts section of the Lesesne Gateway (or Canvas).

If you have not yet updated your contact information, or set up course notifications within Canvas, you should do so immediately.

**Continuity of Instruction (COI):** During a pandemic or catastrophic event, and after all face-to-face instruction has been suspended, communication for our class will continue to take place through Citadel email and Canvas. In the event of such an emergency, check your Citadel email account and Canvas course announcements for instructions.

#### **Course Requirements**

- Computer
- Reliable Internet connection and software (DSL, LAN, or cable connection desirable)
- Access to Canvas
- Webcam
- Scanning (possibly with smartphone)

**Virtual Conferencing:** Zoom may be used as the virtual conferencing platform in this class. Your participation in live Zoom sessions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. The use of all recordings will be in keeping with The Citadel's Privacy Policy.

**Zoom Expectations:** *If you do not follow these expectations, you may be removed from the Zoom meeting and marked as absent.*

1. Cameras must be on and you must remain in view during the Zoom sessions. Classes may be recorded, conduct yourself appropriately.
2. Remain on mute while your professor and/or classmates are speaking.
3. Class materials (books, notes etc.) should be out and accessible throughout the class.
4. Honor Code and Code of Conduct apply even in the virtual environment.
5. Taking photos, screenshots or recordings during class is prohibited.
6. Uniform or the appropriate attire is required at all times.
7. All classroom norms and rules apply when in a Zoom meeting. No sleeping, eating, leaving the virtual meeting without permission, being on your phone, playing video games, working on another class, etc.
8. Electronic backgrounds on your Zoom platform must be appropriate and you cannot have any inappropriate items behind you in the room while on a Zoom meeting.

**Technical Assistance:** If you need technical assistance at any time during the course or to report a problem you can:

- Email the Center for Excellence and Innovation in Teaching, Learning, and Distance Education (CEITL & DE) at [ceitlde@citadel.edu](mailto:ceitlde@citadel.edu)
- Visit the Canvas tutorials found in your Citadel Online Student Resource course, or visit the HELP MENU in your course navigation bar.

**Email:** I will use Canvas to send emails to your Citadel email account. Please check your Citadel email at least once daily. Assignments will not be accepted via email.

**Student Use of Electronic Devices:** (optional) Students may use laptop computers or tablets for taking notes so long as they do so in a manner that does not interfere with the learning of others. Students may not play games, work on other assignments, or use their electronic devices during class except for taking notes and/or completing instructor-assigned work.

**Code of Conduct:** Responsibility for professional conduct rests with students as adult individuals and as members of The Citadel community. CGC students and cadets are expected to conduct themselves as responsible adults. All members of the campus community are expected to use reasonable judgement in all aspects of campus life and activity and to show due concern for the welfare and rights of others. Students are expected to adhere to all federal, state, and local laws. The Citadel protects freedom of action and speech, so long as the exercise of this freedom is not of an inflammatory or demeaning nature and does not interfere with the operation of the College. The Citadel's Conduct Policy prohibits the possession of drugs, destruction of property, making false statements of emergency situations, physical or verbal abuse, or harassment of any sort. Students who violate the rules and regulations of The Citadel are subject to expulsion or lesser sanctions. These rules and regulations are published in "Regulations for Non-Cadet Students for Fall and Spring Semester And All Students, Including Cadets, for Maymester or Summer School," which can be found online at:

[http://www.citadel.edu/root/images/cgc/cgc\\_catalog/cgc-academic-catalog.pdf](http://www.citadel.edu/root/images/cgc/cgc_catalog/cgc-academic-catalog.pdf)

**Academic Integrity Statement:** Students will submit only their own work for evaluation in this course, except as appropriately documented. All rules and stipulations of The Citadel's Honor Manual and Honor Code apply to this course, including its definitions and policies related to cheating, lying, stealing, and non-tolerance. Cheating or evidence of academic dishonesty on any work submitted for evaluation will result in an "F" for both the assignment and the course. To ensure academic integrity, you must abide by both the letter and spirit of all honor, documentation, and citation requirements. Plagiarism in any form is unacceptable, as it fails to meet any standard of academic work. It is your responsibility to read and understand what constitutes intentional and negligent plagiarism. Plagiarism, intentional or negligent, may be referred as an honor violation. The complete Honor Manual may be found at: <http://krausecenter.citadel.edu/honor-manual> and the Honor Code can be found in the CGC Course Catalog: <http://www.citadel.edu/root/images/cgc/cgc-academic-catalog.pdf>

**Complete Assignments:** Assignments must be submitted by the given deadline or special permission must be requested from instructor before the due date. Extensions will not be given beyond the next assignment except under extreme circumstances. Late or missing assignments and discussions will affect the student's grade.

**Missed or Late Work Policy:** Late work is not accepted without a documented excuse or prior arrangement.

**Attendance and Participation Requirements:**

- Class attendance is mandatory (Live Streaming, Zoom, in-person).
- Students may miss class only for authorized reasons (athletic events, academic travel, special ceremonies, guard duties, etc.)
- Illness and personal emergencies may also cause students to be absent for legitimate reasons.
- Should a student miss class for any reason, he/she will make every reasonable effort to notify the professor in advance of the absence.
- The student will be responsible for any material covered in class.
- If a student knows he/she will be absent for an examination or on the due date of a major graded requirement, that student will coordinate with his/her instructor for completion/submission requirements.
- Active participation in class discussions and activities is an expectation of this course.