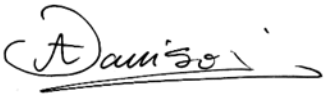
Approved by Chair:



Sep 6, 2020

Signature

COURSE SECTION INFORMATION

DevOps

Teacher's Name Pritesh.Patel

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Phone

Office

Out of Class Assistance

Course Code COMP 3104

Course Section: All

Academic Year 2020-2021

Term Fall 2020

LIST OF TEXTBOOKS AND OTHER TEACHING AIDS:

Required:

None

Recommended Resources:

1. https://github.com
2. https://travis-ci.com
3. https://docker.com
4. https://kubernetes.io
5. https://www.sonarqube.org

Detailed Evaluation System

Assessment Tool:	Description:	Outcome(s) assessed:	EES assessed:	Date / Week:	% of Final Grade:
Lecture Quizzes 8 x 1%	The best eight quizzes mark out of all given will count.	1,2,3,4,5,6,7,8	2,3,4,5,6,7,10,11	Within weeks 1-7 and weeks 10-14	8
Lab Exercises 8 x 2%	Completion of lab exercises 8 out of 10	1,2,3,4,5,6,7	1,2,4,5,6,7,8,9,10,11	TBA	16
Assignment	Individual assignment	1,2,3,4,5,6,7	1,2,4,5,6,7,8,9,10,	12	10

			11		
Assignment	**Group assignment**	**1,2,3,4,5,6,7**	**1,2,4,5,6, 7,8,9,10, 11**	**TBA**	**16**
Mid-term exam	**Mid-term exam**	**1, 2, 3,4,5,6**	**1,2,4,5,6, 7,10,11**	**9**	**20**
Final exam	**Final exam**	**1,2,3,4,5,6,7 ,8**	**1,2,4,5,6, 7,10,11**	**15**	**30**

Learning Schedule / Topical Outline (subject to change with notification)

TOPICAL OUTLINE:

Week	Topic / Task	Outcomes	Content / Activities	Resources
1	Intro, BASH & The CLI	1-2	- Why DevOps? - Future of DevOps - What is a build pipeline? - Introduction to course material - Project Assignment Overview - BASH Commands 101 - Installing Course Dependencies	Lab, Lecture, Exercise & Supplementary Material

2	Git, GitHub & more BASH	1-2	- Version Control Systems
			- Utilization of VCS
			- VCS Terminology
			- Role of VCS in build pipelines
			- CVCS vs DVCS
			- GitHub Overview
			- More BASH commands and shell script
			- Asymmetric crypto, SSH and Access token
			- CLI Text Editors
			- Configuring your local environment for VCS
			  o GitHub Desktop
			  o SourceTree
				Lab, Lecture, Exercise & Supplementary Material

3	Version Control for DevOps	1-2, 5	- Leveraging VCS for DevOps - Application Architectures, then & now - Monolith vs Microservice architecture - Vertical & horizontal scaling - Tech stack behind reliable applications - Remote VCS repositories - Creating remote repositories - Git CLI	Lab, Lecture, Exercise & Supplementary Material
4	Developer Operations Landscape	1-3, 6	- DevOps roles & responsibilities - Tools & techniques in the DevOps sphere - DevOps culture and lifecycle - Core DevOps principles - Career opportunities in DevOps - Demand & compensation for	Lab, Lecture, & Supplementary Material

			engineers - VCS workflows - Working with Travis for CI - Configuring Travis - Generating test scripts - GitHub & Travis communications	
5	Hosting High Geared Single Page Applications & Work tracking tools	1-6	- The anatomy of a Single Page App - Lightning fast deploys with SPAs - Hosting SPAs - Working with front-end developers - Front end tooling found for build sequencing - Introduction to build tools - Gradle and Maven - Work tracking using Jira	Lab, Lecture & Supplementary Material
6	Continuous Integration / Continuous Deployment	1-6	- Mechanisms to integrate and validate source code changes - Installing and configuring Jenkins for CI/CD pipeline - Deploying to infrastructure environments - How CI improves collaboration and code quality - Continuous Testing - How CI/CD increases deployment velocity - Working with markdown for GitHub documentation	Lab, Lecture, Exercise & Supplementary Material
7	CI/CD Pipeline Sequences	1-6	- Building pipelines for failures - Monitoring pipeline sequences - Phases in a CD pipeline - Branch deployments in CI/CD pipelines - Running feature branches - Git hooks to notify changes to external apps - CI/CD tooling - Writing Declarative and Scripted pipeline in Jenkins - Achieving low risk releases with deployment strategies	Lab, Lecture, Exercise & Supplementary Material
8	*INTERSESSION WEEK*			
9	Mid-term Exam			
10	Working with Cloud Infrastructure	1-7	- How does ‘The Cloud’ work? - Different types of cloud computing - Why the cloud matters for DevOps - XaaS and services supporting infrastructure - Popular examples of cloud computing	Lab, Lecture, Exercise & Supplementary Material

			- Cloud storage and how it's utilized through DevOps - Associated risks of cloud computing - Characteristics of Cloud computing - Analyzing the benefits of cloud computing - Serverless and cloud formation - Consider security working with cloud services / DevOps security best practices (SAST/DAST)	
11	Automating DevOps & Quality assurance	1-7	- How much automation is too much? - Balancing tasks intelligently - Breaking down automation processes - Common use cases and problems solved - The role of performance testing - Test automation to enhance strategies - Introduction to BDD & TDD - Source Code Quality Check using SonarQube - Testing tools like Selenium and Appium - Test reports	Lab, Lecture, Exercise & Supplementary Material -
12	DevOps Assembly Lines	1-7	- Differentiating between CI pipelines and assembly lines - Managing and maintaining an assembly line - Maturing CI pipelines - Gluing activities together - Getting ready for AI and ML - DevOps & beyond	Lab, Lecture, Exercise & Supplementary Material
13	Commonly Used DevOps Tech Exposed	1-7	– Remote server automation with Capistrano – Infrastructure Configuration, provisioning and Monitoring tools like Ansible, Puppet, Chef and Nagios – Visibility with New Relic – Working with ELK – Application containerization – Architecture and Components of Docker architecture – Writing Vagrant, YAML and Dockerfile scripts	Lab, Lecture, Exercise & Supplementary Material
14	Transitioning into the role of DevOps	1-8	– Getting a foot in the DevOps door – Focusing on the mindset of an engineer – Market demand for a DevOps	Lab, Lecture & Supplementary material

			engineer – Must have skills to penetrate DevOps market – Global market predictions – Average salary expectations for entry level positions – Typical interview questions – Additional resources & certification opportunities	
15	Final exam			

Please note: this schedule may change as resources and circumstances require.

For information on withdrawing from this course without academic penalty, please refer to the College Academic Calendar:

http://www.georgebrown.ca/Admin/Registr/PSCal.aspx