

Programme: MCA

Course code: CSC-304

Title of course: Modern Development Platforms Lab

Number of credits: 3 (0L-0T-3P)

Total contact hours: 72 hours (0L-0T-72P)

Effective from AY: 2021-22

<u>Prerequisites for the course</u>	Hands-on experience in programming(Program Prerequisites), web development(CSC-201;CSC-205); A source and version control tool (CSC-204); Knowledge of OS(CSC-103) ; Networks(CSC-104)	
<u>Objectives</u>	This course will focus on the practical use and aspects of modern development technologies, tools and platforms prevalent in the software development industry	
<u>Content</u>	Development at scale ● Introduction to ELK stack ○ Assignments should be based on use of ELK stack. ● Introduction to API Query ○ Assignments should be based on querying API using tools like Graph QL	8 hours
	Cloud Services ● Assignments should be based on <i>(using one of: Amazon AWS/ Google Cloud/ MS Azure)</i> ○ Storage service (e.g. AWS S3) ○ Database service (e.g. AWS RDS) ○ Virtual Server service (e.g. AWS EC2) ○ Server-less service (e.g. AWS Lambda) ○ CDN service (e.g. AWS CloudFront) ○ Authentication (e.g AWS Cognito) ○ Load Balancing services (e.g. AWS Elastic Load Balancing)	30 hours
	DevOps ● CI/CD ○ Assignments should be based on constructing a CI/CD Pipeline using Git, Maven, Jenkins/CircleCI ● Configuration Management ○ Assignments should be based on configuration Management using tools like Ansible, Chef etc. ● Containerization (e.g. Docker)	28 hours

	○ Assignments should be based on creating containers from pre-existing images using tools like Docker, creating own container images and pushing container images to Docker Hub. ● Continuous monitoring for Infrastructure, Application & Network ○ Assignments should be based on continuous monitoring for Infrastructure, Application & Network using tools like (e.g. Nagios, Prometheus)	
	Mini-Project <i>Ideally done in a group. Concepts and tools (or similar) learnt in the course will need to be implemented/incorporated.</i>	6 hours
<u>Pedagogy</u>	Hands-on assignments / tutorials / peer-teaching Assignments may combine topics from Cloud Services and DevOps	
<u>References/ Readings</u>	1. Joakim Verona, “Practical DevOps” 2. Gene Kim , Patrick Debois , et al., “The DevOPS Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations” 3. https://www.elastic.co/guide/index.html 4. https://docs.aws.amazon.com/ 5. https://cloud.google.com/docs 6. https://docs.microsoft.com/en-us/azure/?product=featured 7. https://docs.docker.com	
<u>Learning Outcomes</u>	1. Learner will get hands-on experience working with the ELK stack and API Query 2. Learner will be able to configure and use different cloud services 3. Learner will get hands-on experience working with the Devops tools and platforms	