GUJARAT TECHNOLOGICAL UNIVERSITY
Syllabus for Bachelor of Vocation (B.Voc.), 4th Semester
Branch: Information Technology
Subject Name: Application Developer
Subject Code: 1140508

Type of subject: On-Job Training (Elective)

Prerequisite: NA

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
0	0	15	15	0	0	100	100	200

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA-Progressive Assessment

OJT Hands on Exercise/Training:

Sr. No.	Content	Total Hrs.	Weightage (%)
1	Implement DevSecOps or continuous integration/continuous delivery practices for continuous deployment of applications **Version control** PC1. maintain and secure the repository for managing application source code PC2. manage changes to the application code/ source code through a version control system PC3. implement the procedures & policies for code tagging, branching, merger and integration PC4. integrate version control systems with the project management tools **Build and test automation** PC5. manage application environment variables and configuration for the target environment. PC6. automate application build testing/security through scripts and test automation tools PC7. test, identify, notify and fix build failure issues along with continuous integration **Deployment** PC8. implement application deployment policies and adhere to processes defined in the organization PC9. push applications to their appropriate services (such as web servers, API services, and database services etc.) PC10. leverage appropriate automation tools to manage the CI/CD pipeline	45	25
2	Develop tests or simulations for end-to-end QA of systems **Define requirements** PC1. define functional requirements of the autonomous system PC2. establish the type of testing and testing requirements such as unit, sub-system, system etc. PC3. identify any issues with the requirements for testing and clarify	35	15

	these with appropriate people PC4. access reusable scenarios, test cases, scripts and tools from your organization's knowledge base **Create test cases** PC5. create or modify test scenarios relevant to the requirements PC6. create or modify software test cases relevant to the requirements PC7. create or modify hardware test cases relevant to the requirements PC8. identify test cases that can be automated feasibly PC9. create or modify automated scripts relevant to the requirements PC10. access or create test data relevant to the requirements PC11. create a test plan to cover all the requirements **Run test cases** PC12. run the simulated test cases and evaluate the outcomes PC13. communicate the outcomes of the tests or simulations with appropriate people and iterate PC14. create documentation on the tests or simulations for appropriate people PC15. validate the test plan, test cases and/or automated scripts with appropriate people		
3	Fix application bugs and improve application performance **Record the bug** PC1. record the bug or enter it in the case tracking system PC2. identify what the user was doing, what they were expecting and what happened instead PC3. copy the error message and search for relevant solutions on developer forums **Identify the bug** PC4. determine the immediate line of code where the bug occurs PC5. specify the bug type (e.g., unexpected null, bad input, off-by-one, buffer overflow, index out-of-range, etc.) **Isolate the bug** PC6. use the process of elimination to isolate the bug to a particular line of code PC7. disable blocks of code (comment them out) until the crash stops happening PC8. use a unit-testing framework to isolate methods PC9. continue to disable code and reduce the application to minimal functionality until it begins working again PC10. eliminate the hardware or platform as a cause **Log analysis** PC11. log all activities and analyze the logs PC12. continue the isolation and logging processes until immediate line of code where bug occurs is identified	40	20
4	Monitor and manage applications and the deployed systems **Gathering requirements** PC1. define the business factors behind application performance monitoring requirements PC2. conduct an analysis to plan how to optimize applications in terms	30	10

	of cost and resource utilization **Monitoring system performance** PC3. define metrics to monitor application performance and health of deployed systems PC4. monitor application log reports for errors and clues about problems with the application and the deployed systems on cloud PC5. assess and deploy appropriate application monitoring tools such as to monitor application performance PC6. perform analysis to generate consumable reports about application performance **Reporting on application performance** PC7. share application performance reports with relevant stakeholders PC8. provide actionable insights for re-engineering the application		
5	Develop consistent and user-friendly web app for the target platform aligned to the functional, non-functional and user experience requirements **Understanding the scope** PC1. collaborate with cross functional teams to understand the scope PC2. understand and analyzed the functional, non-functional and user experience requirements with which the interface must be developed PC3. create list of tasks that the user can execute within the interface based on the requirements identified PC4. organize the list of tasks and interfaces needed for the overall application PC5. create a pre-list of possible reusable components before starting the development **Design and development** PC6. develop web prototypes based on the flows identified PC7. define the structure of the pages, the headers, the sections, the articles, main, footer, etc. PC8. develop codes for the various pages, the headers, the sections, the articles, main, footer, etc. PC9. develop application code as per the security requirements PC10. design and develop unit tests for the application code PC11. build, run and test the application before deployment	50	30
	Total	**200**	**100**

Course Outcomes:

Sr. No.	CO Statement	Marks % Weightage
CO-1	Implementation on DevSecOps or continuous Integration for coding and developing will improve.	25
CO-2	Development tests or simulations for end-to-end QA of systems evaluation.	15
CO-3	Fix application bugs, errors and improve application performance	20

CO-4	Monitoring and management of applications and the deployed systems	10
CO-5	Development of user-friendly applications, reusability of components and alignments as per user requirements.	30

Reference:

https://nsdcindia.org/sites/default/files/SSCQ8403_Application_Developer_Web_%26_Mobile_V1_30_07_2020.pdf