Sant Gadge Baba Amravati University, Amravati

Part A

Faculty: Science and Technology

Programme: Bachelor of Computer Application (BCA)

Part B

Syllabus Prescribed for 3 Year BCA UG Programme

Programme: Bachelor of Computer Application (BCA)

Semester V

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Hours / Periods)
5BCA4	Software Engineering	60 Periods

Course Objectives(Cos)

1. Familiarization with the concept of software engineering and its relevance.
2. Understanding of various methods or models for developing a software product.
3. Ability to analyze existing system to gather requirements for proposed system.
4. Skill to design and code software.
5. Able to test and implement the software.

Unit	Content
Unit I	**Introduction to Software Engineering:** Software Evolution, Software, Changing Nature of Software, Legacy Software, Software Myths **Software Process:** Software Engineering, Process Framework, Process Models-Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized process Models, Agile Process. **(11 Periods)**
Unit II	**Software Engineering Practice:** Communication Practices, Planning Practices, Modeling Practices, Construction Practice, and Deployment. **System Engineering:** Computer Based Systems, Hierarchy, Product Engineering, System Modeling. **Requirement Engineering:** Task, Process **Design Engineering:** Design Concept, Design Model, Architectural Design, Component Level Design, Interface Design**. (12 Periods)**
Unit III	**Web Engineering:** Process, Methods, Tools and Technology, Design Issues, Web App Interface Design, Content Design **Software Project Management:** Management Spectrum-The People, The Product, The Process, The Project **Project Estimation:** Resources, Estimation Models Project Scheduling, Risk Management, and Quality Management **(11 Periods)**
Unit IV	**Software Testing Strategies:** Strategic Approach, Test Strategies for conventional Software and Object Oriented Software, Validation Testing, Art of Debugging, System Testing. **(11 Periods)**
Unit V	**Testing Tactics:** Static testing by Humans, Static Analysis Tools, Structural Testing, Code Functional Testing, Code Coverage Testing, Code Complexity Testing, Challenges in White Box Testing ; Black Box Testing-Need & purpose of Black Box Testing, Requirement based testing, Positive and Negative testing, Software Testing Tools. **(11 Periods)**
*SEM	
COs: 1. To be able to draw upon foundational knowledge, learn, adapt and successfully bring to bear analytical and computational approaches on changing societal and technological challenges COs: 2. To assess the curricular skills acquired by students at college level through Assignments, Unit test, Internal Test, Group Discussion/Seminar/Mini Project, Study Tour	
**Activities	1. Identify the requirements of customer problem through customer interaction. 2. Prepare the Software Requirement Specification document. 3. Develop a solution for the customer problem. **(4 Periods)**

Course Material/Learning Resources

Text books:
1. Software Engineering by Roger S Pressman

Reference Books:
1. Software Project Management by Edwin Bennatan
2. Software Engineering by Sommerville Pearson
3. Software Project Management in Practice by Pankaj Jalote
4. Software Engineering By Deven Shah, Dreamtech Wiely India
5. Software Testing Principles and Practices - Srinivasan Desikan and Gopalaswamy Ramesh, Publisher: Pearson Education.

Weblink to Equivalent MOOC on SWAYAM if relevant:
1. https://onlinecourses.nptel.ac.in/noc19_cs69/preview
2. https://onlinecourses.swayam2.ac.in/cec20_cs07/preview
3. https://www.mygreatlearning.com/advanced-software-engineering-course-iit-madras

Weblink to Equivalent Virtual Lab if relevant:
1. http://vlabs.iitkgp.ernet.in/se/
2. https://www.vlab.co.in/broad-area-computer-science-and-engineering
3. https://www.vlab.co.in/

Any pertinent media (recorded lectures, YouTube, etc.) if relevant:
1. https://www.youtube.com/watch?v=uJpQlyT_CK4&list=PLxCzCOWd7aiEed7SKZBnC6ypFDWYLRvB2
2. https://www.youtube.com/watch?v=qjoK53K2qUQ
3. https://www.youtube.com/watch?v=smqQxsdDRII&list=PLrjkTql3jnm9b5nr-ggx7Pt1G4UAHeFlJ&index=3