#### 20IT7402A - SOFTWARE TESTING & AUTOMATION

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| **Course Category:** | Programme Elective - 3 | | | | | | **Credits:** | | | | | | | | | 3 | |
| **Course Type:** | Theory | | | | | | **Lecture-Tutorial-Practice:** | | | | | | | | | 2-0-2 | |
| **Prerequisites:** | 20IT5302 : Software Engineering | | | | | | **Continuous Evaluation:** | | | | | | | | | 30 | |
|  | | | | | | | **Semester end Evaluation:** | | | | | | | | | 70 | |
| **Total Marks:** | | | | | | | | | 100 | |
| **Course Outcomes** | Upon successful completion of the course, the student will be able to: | | | | | | | | | | | | | | | | |
| CO1 | Apply Black Box, White Box, and Selenium testing techniques in commercial environment for improving the quality of software product. | | | | | | | | | | | | | | | |
| CO2 | Choose the techniques and skills for testing software projects using modern software testing tools | | | | | | | | | | | | | | | |
| CO3 | Analyze V&V activities, software testing life cycle and methodologies, test automation life cycle and its frame work. | | | | | | | | | | | | | | | |
| CO4 | Create test cases for manual and automation testing. | | | | | | | | | | | | | | | |
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| **Contribution of Course Outcomes towards achievement of Program Outcomes**  **(1-Low, 2-Medium, 3- High)** | CO | PO1 | PO 2 | PO 3 | PO4 | PO5 | | PO 6 | PO 7 | PO 8 | PO 9 | PO 10 | PO 11 | PO 12 | PSO 1 | | PSO2 |
| CO1 | 2 |  |  |  |  | |  |  |  |  |  |  | 2 |  | |  |
| CO2 | 3 |  |  |  | 3 | |  |  |  |  |  |  |  | 1 | | 1 |
| CO3 | 1 | 2 |  |  |  | |  |  |  |  |  |  | 2 |  | |  |
| CO4 | 2 |  | 3 |  |  | |  |  |  |  |  |  |  | 2 | | 2 |
| **Course Content** | **UNIT I:**  **Introduction to Software Testing** : Introduction, Evolution of Software Testing, Software Testing – Myths and Facts, Goals of software Testing, Software Testing Definitions, Model for Software Testing, Effective software testing vs Exhaustive Software Testing.  **Software Testing Terminology and Methodology:** Software Testing Terminology, Software Testing Life Cycle(STLC), Software Testing Methodology  **Verification & Validation :** Verification and Validation(V & V) Activities, Verification, Verification of Requirements, Verification of High-level Design, Verification of Low-level Design, How to verify code, Validation. | | | | | | | | | | | | | | | | |
| **UNIT II:**  **Black Box Testing Techniques:** Boundary Value Analysis (BVA), Equivalence Class Testing, State Table based Testing, Decision Table based Testing, Cause -Effect Graphing based Testing.  **White Box Testing Techniques:** Need of White Box Testing, Logic Coverage Criteria, Basis Path Testing, Graph Matrices, Loop Testing, Data Flow Testing **Case study:** Income tax calculator | | | | | | | | | | | | | | | | |
| **UNIT III:**  **Test Automation:** Introduction, Test automation life cycle, Test automation approach, Test automation framework.  **Agile Test Automation:** Agile automation, Agile automation framework.  **Case study:** Design test cases for an enterprise application. | | | | | | | | | | | | | | | | |
| **UNIT IV:**  **Selenium:** Getting Started with Selenium IDE, Locators, Overview of Selenium WebDriver, Working with WebDriver  **Case study:** Applying Selenium testing for an enterprise application. | | | | | | | | | | | | | | | | |
| **Content beyond the syllabus** | **Business process testing** | | | | | | | | | | | | | | | | |
| **Text books and Reference books** | **Text Book(s):**  [1]. Naresh Chauhan, “Software Testing Principles and Practices, Oxford University Press, 2010.  [2]. Rajeev Gupta, “Agile automation and unified functional testing”, Pearson 2017.  [3]. David Burns, “Selenium 2 Testing Tools Beginner's Guide”, Published by Packt Publishing Ltd, 2012.  **Reference Books:**   1. Brian Marick , “The craft of software testing”, Pearson Education, 2007 2. Edward Kit , “Software Testing in the Real World”, Pearson.2002 3. Perry, “Effective methods of Software Testing”, 3rd Edition, John Wiley,2006 4. Meyers, “Art of Software Testing, **3rd** Edition John Wiley. 2015 5. Dr.K.V.K.K.Prasad , “Software Testing Tools” , Dreamtech, 2009. | | | | | | | | | | | | | | | | |
| **E-resources and other digital material** | 1. Prof. Rajib Mall, IIT Kharagpur, NPTEL SOFWARE Testing video. Available: <https://nptel.ac.in/courses/106105150/>, 2016 2. Software testing MIT. Available: [http://ocw.mit.edu/courses/electrical- engineering-and-computer- science/6-912-introduction-to-copyright-law-january- iap-2006/video-lectures/lecture-4-software-licensing/](http://ocw.mit.edu/courses/electrical-%20engineering-and-computer-%20%20%20science/6-912-introduction-to-copyright-law-january-%20iap-2006/video-lectures/lecture-4-software-licensing/)   [3]. Gregory Gay. Associate Professor, Chalmers and the University of  Gothenburg.[Software Quality and Testing - Spring 2022](https://www.youtube.com/playlist?list=PLv6u-SBiAxoaOo5Nl_dgxIjThc4EDo0ez),  <https://youtu.be/OLbo92_MgtU> [4]. Sanjai Rayadurgam Director,[https://www.coursera.org/lecture/introduction-software-testing](https://www.coursera.org/lecture/introduction-software-testing                 /welcome-to-the-software-testing-and-automation-myKdt)  [/welcome-to-the-software-testing-and-automation-myKdt](https://www.coursera.org/lecture/introduction-software-testing                 /welcome-to-the-software-testing-and-automation-myKdt), 2020 | | | | | | | | | | | | | | | | |

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| Module coordinator | Dr.K.SithaKumari |  |
| Program coordinator | Dr. G. Kalyani |  |
| HOD:IT | Prof. M. Suneetha |  |