**COURSE PLAN**

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| --- | --- |
| Target | 50% (marks) |
| Level-1 | 40% (population) |
| Level-2 | 50% (population) |
| Level-3 | 60% (population) |

1. **Method of Evaluation**

|  |  |
| --- | --- |
| **UG** | **PG** |
| Quizzes/Tests, Assignments (30%) | Quizzes/Tests, Assignments, seminar (50%) |
| Mid Examination (20%) | End semester (50%) |
| End examination (50%) |  |

1. **Passing Criteria**

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| --- | --- | --- |
| **Scale** | **PG** | **UG** |
| **Out of 10 point scale** | SGPA – “6.00” in each semester  CGPA – “6.00”  Min. Individual Course Grade  –  “C”  Course Grade  Point –  “4.0” | SGPA – “5.0” in each semester  CGPA – “5.0”  Min. Individual Course Grade  –  “C”  Course Grade  Point –  “4.0” |

\*for PG, passing marks are 40/100 in a paper

\*for UG, passing marks are 35/100 in a paper

1. **Pedagogy**

* Blackboard Collaborate Live Lectures
* Blackboard Collaborate/Kaltura Recorded Lectures
* Voice over PPTs
* Discussion Forum (Blackboard)
* YouTube videos
* Concept diary (needs to be maintained by students-short and concise notes, which include course concepts that he/she has understood.)

1. **References:**

|  |  |  |  |
| --- | --- | --- | --- |
| Text Books | Web resources | Journals | Reference books |
| 1.Flexible Test Automation – by Vitaliano Inglese, Pasquale Arpaia  2. Book by Xebia Press | 1.<https://www.toolsqa.com/selenium-tutorial/>  2.<https://www.javatpoint.com/selenium-tutorial> |  | 1.Experiences of Test Automation: Case Studies of Software Test Automation - by Mark Fewster, Dorothy Graham |

**GUIDELINES TO STUDY THE SUBJECT**

**Instructions to Students:**

1. Go through the 'Syllabus' in the Black Board section of the web-site(https://learn.upes.ac.in) in order to find out the Reading List.
2. Get your schedule and try to pace your studies as close to the timeline as possible.
3. Get your on-line lecture notes (Content, videos) at Lecture Notes section.  These are our lecture notes. Make sure you use them during this course.
4. Check your blackboard regularly
5. Go through study material
6. Check mails and announcements on blackboard
7. Keep updated with the posts, assignments and examinations which shall be conducted on the blackboard
8. Be regular, so that you do not suffer in any way
9. C**ell Phones and other Electronic Communication Devices:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.
10. **E-Mail and online learning tool:** Each student in the class should have an e-mail id and a pass word to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments preferably should be uploaded on online learning tool. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.
11. **Attendance:** Students are required to have minimum attendance of 75% in each subject. Students with less than said percentage shall NOT be allowed to appear in the end semester examination.

This much should be enough to get you organized and on your way to having a great semester! If you need us for anything, send your feedback through e-mail [to](mailto:abc@ddn.upes.ac.in) your concerned faculty. Please use an appropriate subject line to indicate your message details.

There will no doubt be many more activities in the coming weeks. So, to keep up to date with all the latest developments, please keep visiting this website regularly.

**RELATED OUTCOMES**

1. **The expected outcomes of the Program are:**

|  |  |
| --- | --- |
| PO1 | Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| PO2 | Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| PO3 | Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| PO4 | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| PO5 | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| PO6 | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| PO7 | Environment and sustainability: understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| PO8 | Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| PO9 | Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| PO10 | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| PO11 | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| PO12 | Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

1. **The expected outcomes of the Specific Program are: (upto3)**

|  |  |
| --- | --- |
| PSO1 | Perform system and application programming using computer system concepts, concepts of Data Structures, algorithm development, problem solving and optimizing techniques. |
| PSO2 | Apply software development and project management methodologies using concepts of front-end and back-end development and emerging technologies and platforms. |
| PSO3 | Apply the understanding of DevOps as cultural philosophies, practices, and tools that increase the ability to deliver applications and services at high velocity. |

1. **The expected outcomes of the Course are: (minimum 3 and maximum 6)**

|  |  |
| --- | --- |
| CO 1 | Apply test automation and its seven principles. |
| CO 2 | Explain approaches of testing like Manual, Automated, Unit, Integration, Smoke-Sanity and Regression. |
| CO 3 | Designing Test Cases and examine traceability matrix. |
| CO 4 | Combine Estimation Techniques and bug life cycle. |

1. **Co-Relationship Matrix**

Indicate the relationships by1- Slight (low) 2- Moderate (Medium) 3-Substantial (high)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Program**  **Outcomes**  **Course Outcomes** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO 1** |  |  |  |  | 3 |  |  |  |  |  |  | 1 |  | 2 | 3 |
| **CO 2** |  |  |  |  | 2 |  |  |  |  |  |  | 2 |  | 2 | 3 |
| **CO 3** |  |  |  |  | 3 |  |  |  |  |  |  | 1 |  | 2 |  |
| **CO 4** |  |  |  |  | 2 |  |  |  |  |  |  |  |  |  | 3 |
| **Average** |  |  |  |  | **3** |  |  |  |  |  |  | **2** |  | **2** | **3** |

1. **Course outcomes assessment plan:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **components**  **Course Outcomes** | **Assignment** | **Test/Quiz** | **Mid Semester** | **End Semester** | **Any other** |
| **CO 1** | **■** | **■** | **■** | **■** | **□** |
| **CO 2** | **■** | **■** | **■** | **■** | **□** |
| **CO 3** | **□** | **■** | **□** | **■** | **□** |
| **CO 4** | **□** | **■** | **□** | **■** | **□** |
|  |  |  |  |  |  |

**BROAD PLAN OF COURSE COVERAGE**

**Course Activities:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Description** | **Planned** | | | **Remarks** |
| **From** | **To** | **No. of Sessions** |
| **1.** | **INTRODUCTION TO TEST AUTOMATION**  Principles, SDLC vs STLC, Testing Life Cycle, Usability Testing, Functional Testing,  End to End Testing, Compatibility Testing, GUI Testing, API testing | 6-Jan | 28- Jan | 6 |  |
| **2.** | **UNDERSTANDING TESTING**  Usability Testing, Functional Testing, End to End Testing, Compatibility Testing, GUI Testing, API testing | 29- Jan | 15-Mar | 6 |  |
| **3.** | **APPROACHES TO TESTING**  Manual Testing, Automation Testing, Unit Testing, Integration Testing, Smoke-Sanity Testing, Regression Testing | 16-Mar | 02-Apr | 6 |  |
| **4.** | **DESIGNING TEST CASES**  Test Scenario, Test Case Design, Test Basis, Traceability Matrix | 03-Apr | 15-Apr | 3 |  |
| **5.** | **ESTIMATION TECHNIQUES**  Estimating automation, Test Plan Document, Bug Life Cycle | 16-Apr | 30-Apr | 3 |  |

Sessions: Total No. of Instructional periods available for the course

**SESSION PLAN**

**UNIT-I**

|  |  |  |
| --- | --- | --- |
| **Lecture No.** | **Topics to be Covered** | **CO Mapped** |
| 1 | Course Plan Discussion and Test Automation Overview | CO1 |
| 2 | Introduction to Test Automation –   1. Seven Principles 2. SDLC vs STLC 3. Testing Life Cycle | CO1 |
| 3 | Introduction to Test Automation –   1. Usability Testing 2. Functional Testing | CO1 |
| 4 | Introduction to Test Automation –   1. End to End Testing 2. Compatibility Testing | CO1 |
| 5 | Introduction to Test Automation –   1. GUI Testing | CO1 |
| 6 | Introduction to Test Automation –   1. API Testing | CO1 |

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**SESSION PLAN**

**UNIT-II**

|  |  |  |
| --- | --- | --- |
| **Lecture No.** | **Topics to be Covered** | **CO Mapped** |
| 7 | Introduction to selenium –   1. Selenium components 2. Selenium Architecture | CO2 |
| 8 | What is TestNg, Installing TestNg in Eclipse, TestNg annotations,  Understanding usage of annotations | CO2 |
| 9 | Running a Test in TestNg, TestSuite in TestNg, Setting priority of execution for test cases,  Skipping Tests | CO2 |
| 10 | parameterizing Tests – DataProvider,  Putting Dataproviders for multiple tests in a single file, Assertions/Reporting Errors,  HardAssertions, SoftAssertions | CO2 |
| 11 | TestNg Reports, Using TestNg in Selenium,What is Ant,  Downloading and configuring Ant,  Build.xml configuration | CO2 |
| 12 | XSLT report generation generation using TestNg and Ant,  Building a BAT file to run tests using ANT | CO2 |

**SESSION PLAN**

**UNIT-III**

|  |  |  |
| --- | --- | --- |
| **Lecture No.** | **Topics to be Covered** | **CO Mapped** |
| 13 | Introduction to Selenium 3.0 version –  Selenium3.x advantages and implementation, Downloading WebDriver Jars,  Configuring in eclipse, Drivers for Firefox, IE, chrome, Iphone, Android etc,  First Selenium Code, Working with chrome and IE | CO2 |
| 14 | Close and Quit –Difference,  Firepath and firebug Add-ons installation in Mozilla,  Inspecting elements in Mozilla, Chrome and IE,  Various locator strategies,  Identifying WebElements using id, name, class,  Finding Xpaths to identify | CO2 |
| 15 | Absolute and Relative Xpaths,  Creating customized Xpaths without firebug,  Css Selectors, Generating own CssSelectors,  Performance of CssSelectors as compared to Xpaths | CO2 |
| 16 | Objects with same id/xpath/cssSelector,  What is class attribute?, Handling Dynamic objects/ids on the page,  Working with different browsers without changing code,  Managing Input fields, Buttons and creating custom xpaths | CO2 |
| 17 | Managing/Identifying Links with xpaths/css selectors,  Extracting More than one object from a page,  Extracting all links of a page/Bulk extraction of objects,  Finding whether object is present on page or not | CO2 |
| 18 | Approaches to testing –  Manual Testing  Automation Testing  Unit Testing  Integration Testing  Smoke-Sanity Testing  Regression Testing | CO2 |

**SESSION PLAN**

**UNIT-IV**

|  |  |  |
| --- | --- | --- |
| **Lecture No.** | **Topics to be Covered** | **CO Mapped** |
| 19 | Designing test cases –  Test Scenario, Test Case Design | CO3 |
| 20 | Designing test cases –  Test Basis | CO3 |
| 21 | Designing test cases –  Traceability Matrix | CO3 |

**SESSION PLAN**

**UNIT-V**

|  |  |  |
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| **Lecture No.** | **Topics to be Covered** | **CO Mapped** |
| 22 | ESTIMATION TECHNIQUES –  Estimating automation | CO4 |
| 23 | ESTIMATION TECHNIQUES –  Test Plan Document | CO4 |
| 24 | ESTIMATION TECHNIQUES –  Bug Life Cycle | CO4 |