**COURSE SYLLABUS**

**COM339: Advance Software Testing**

**Course Description**

Traditional software testing and debugging accounts for more than half the cost of software development, but often fails to find many critical bugs. As a result, developing effective software testing processes and techniques is a critical skillset in the industry. The student will build on the fundamental principles of software testing learned in the previous course, and explore advanced, automated testing techniques.

**General Course Information**

|  |  |
| --- | --- |
| Number of Units/Weeks | 4/10 |
| #Hours Lecture/#Hours Laboratory/#Hours Homework | 40/00/80 |
| Prerequisite(s) | None |
| Co-requisites (s) | None |
| Course Developer(s) | Leticia Rabor, M.S. |
| Date Approved / Last Review | May 2017 / May 2017 |

**Learning Outcomes**

* Given system requirements, analyze the test needs in order to plan test activities and work products.
* Describe the circumstances under which automated testing should be considered.
* Discuss the development of automated tests using an industry standard framework in a high level programming language.
* Describe the use of the traceability matrix to check completeness and consistency of the defined test plan.
* Explain the factors that must be considered when specifying the level of detail in a test plan.
* Discuss the development of a test plan execution schedule considering factors such as completeness, and consistency with test objectives and strategies.
* Explain the importance of accurate and timely information collection during the test process to support reporting and evaluation exit criteria.

**Instructional Methods Employed in this Course**

* Use of Software Testing tools
* Lecture and reading assignments
* Practical Hands-on exercises
* Homework Review Questions
* PowerPoint Slides

**Information Resources for this Course**

**Textbook**

Elfriede Dustin, Jeff Rashka, John Paul. (1999). *Automated Software Testing.* Boston, MA: Addison-Wesley Professional. ISBN: 978-0201432879

**Other Resources**

Beizer, B. (2009). *Software testing techniques* (2nd ed.). London: International Thomson Computer Press.

Myers, G., & Sandler, C. (2012). *The art of software testing* (3rd ed.). Hoboken, N.J.: John Wiley & Sons.

**Table/Topics & Assignments**

**Types of Assignments:**

**Lecture -**

Considered Lecture Hours  
**Classroom Discussion -**

Considered Lecture Hours  
**In Class (IC) Exercise -**

Considered Lecture Hours

**Reading -**

Considered Homework (HW), work done outside of class  
**Project Assignments -**

Considered HW, work done outside of class  
**Chapter Review Exercises -**

Considered HW, work done outside of class

**Midterm and Final -**

Considered Lecture Hours

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Week 1** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 1A | Introduction to Automated Testing | 4 | -- | -- | -- |  |
| HW 1A | Read Chapter 1 (26 pages). Evaluated by HW 1B | -- | -- | 2.6 | -- |  |
| HW 1B | Chapter 1 Review Exercises | -- | -- | 2 | -- | Week 2 |
| HW 1C | Project 1 | -- | -- | 4 | 50 | Week 2 |
| Total Week 1 |  | 4 | -- | 8.6 | 50 |  |
| **Week 2** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 2A | Decision to Automate Test | 4 | -- | -- | -- |  |
| HW 2A | Read Chapter 2 (24 pages). Evaluated by HW 2B | -- | -- | 2.4 | -- |  |
| HW 2B | Chapter 2 Review Exercises | -- | -- | 2 | -- | Week 3 |
| HW 2C | Project 2 | -- | -- | 6 | 50 | Week 3 |
| Total Week 2 |  | 4 | -- | 10.4 | 50 |  |
| **Week 3** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 3A | Automated Test Tool Evaluation and Selection | 4 | -- | -- | -- |  |
| HW 3A | Read Chapter 3 (36 pages) Evaluated by HW 3B | -- | -- | 3.6 | -- |  |
| HW 3B | Chapters 3 Review Exercises | -- | -- | 2 | -- | Week 4 |
| HW 3C | Project 3 | -- | -- | 4 | 50 | Week 4 |
| Total Week 3 |  | 4 | -- | 9.6 | 50 |  |
| **Week 4** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 4A | Automated Testing Introduction Process | 4 | -- | -- | -- |  |
| HW 4A | Read Chapters 5 (44 pages) Evaluated by ELP 4B | -- | -- | 4.4 | -- |  |
| HW 4B | Chapter 5 Review Exercises | -- | -- | 2 | -- | Week 5 |
| HW 4C | Project 4 | -- | -- | 3 | 50 | Week 5 |
| Total Week 4 |  | 4 | -- | 9.4 | 50 |  |
| **Week 5** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 5A | Test Team Management | 2 | -- | -- | -- |  |
| EXAM 5B | Midterm Examination (Chapters 1-4) | 2 | -- | -- | 150 | In Class |
| HW 5A | Read Chapter 5 (28 pages) Evaluated by HW 5B | -- | -- | 2.8 | -- |  |
| HW 5B | Chapter 5 Review Exercises | -- | -- | 2 | -- | Week 6 |
| HW 5C | Project 5 | -- | -- | 5 | 100 | Week 6 |
| Total Week 5 |  | 4 | -- | 9.8 | 250 |  |
| **Week 6** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 6A | Test Planning: Smart Application of Testing | 4 | -- | -- | -- |  |
| HW 6A | Read Chapter 6 (30 pages) Evaluated by HW 6B | -- | -- | 3 | -- |  |
| HW 6B | Chapter 6 Review Exercises | -- | -- | 2 | -- | Week 7 |
| HW 6C | Project 6 | -- | -- | 3 | 100 | Week 7 |
| Total Week 6 |  | 4 | -- | 8 | 100 |  |
| **Week 7** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 7A | Test Analysis and Design | 4 | -- | -- | -- |  |
| HW 7A | Read Chapter 7 (35 pages) Evaluated by HW 7B | -- | -- | 3.5 | -- |  |
| HW 7B | Chapter 7 Review Exercises | -- | -- | 2 | -- | Week 8 |
| HW 7C | Project 7 | -- | -- | 3 | 100 | Week 8 |
| Total Week 7 |  | 4 | - | 8.5 | 100 |  |
| **Week 8** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 8A | Test Development | 4 | -- | -- | -- |  |
| HW 8A | Read Chapter 8 (38 pages) Evaluated by HW 8B | -- | -- | 3.8 | -- |  |
| HW 8B | Chapter 8 Review Exercises | -- | -- | 2 | -- | Week 9 |
| HW 8C | Project 8 | -- | -- | 3 | 100 | Week 9 |
| Total Week 8 |  | 4 | - | 8.8 | 100 |  |
| **Week 9** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 9A | Test Execution | 4 | -- | -- | -- |  |
| HW 9A | Read Chapter 9 (26 pages)  Evaluated by HW 9B | -- | -- | 2.6 | -- |  |
| HW 9B | Chapter 9 Review Exercises | -- | -- | 2 | -- | Week 10 |
| HW 9C | Project 9 | -- | -- | 5 | 100 | Week 10 |
| Total Week 9 |  | 4 | -- | 9.6 | 100 |  |
| **Week 10** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 10A | Test Program Review and Assessment | 2 |  |  |  |  |
| EXAM 10A | Final Examination (Chapters 5-10) | 2 | -- | -- | 150 | In Class |
| Total Week 10 |  | 4 | -- | -- | 150 |  |

**Course Hours Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Topic** | **LEC Hours** | **LAB Hours** | **HW Hours** |
| 1 | Course Introduction to Software Testing, Introduction to Software Testing Life Cycle | 4 | -- | 8.6 |
| 2 | Introduction to Test Planning | 4 | -- | 10.4 |
| 3 | Test Design | 4 | -- | 9.6 |
| 4 | Test Techniques, Dynamic & Static Black Box Testing | 4 | -- | 9.4 |
| 5 | Levels & Types of Testing, Static White Box Testing | 4 | -- | 9.8 |
| 6 | Test Execution, Dynamic White Box Testing | 4 | -- | 8.0 |
| 7 | Writing a Test Plan, Defect Management | 4 | -- | 8.5 |
| 8 | Reporting & Team Collaboration | 4 | -- | 8.8 |
| 9 | Metrics & Measurement | 4 | -- | 9.6 |
| 10 | Testing Tools & FAQs, Finals | 4 | -- | -- |
| Total |  | 40 | -- | 82.7 |

**Table/Point Breakdown**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Assignment** | **Possible Points** | **Percent**  **of Grade** |
| 1 | Project 1 | 50 | 5% |
| 2 | Project 2 | 50 | 5% |
| 3 | Project 3 | 50 | 5% |
| 4 | Project 4 | 50 | 5% |
| 5 | Project 5 | 100 | 10% |
| 5 | Midterm | 150 | 15% |
| 6 | Project 6 | 100 | 10% |
| 7 | Project 7 | 100 | 10% |
| 8 | Project 8 | 100 | 10% |
| 9 | Project 9 | 100 | 10% |
| 10 | Finals | 150 | 15% |
| Total |  | 1000 | 100% |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Your grades for this course** | |  |  |  |  |  |
| Your final grade for this course will be based on an assessment by the Instructor of your performance on a number of course activities, which may include objective tests, classroom exercises, laboratory demonstrations, project papers, or other types of activities. The chart below indicates in what activities you will engage, how many possible points can be earned for each activity, and the percentage of your final grade that will be accounted for by each activity. | | | | | | |
| Students in this course should be graded following Coleman University assessment practices and policies. A point system is used in the University to indicate student performance on various required activities or projects. For this course, it is recommended that points be distributed as follows: | | | | | | |
| **Coleman University Grade Assignment Policy:** | | |  |  |  |  |
|  | **Percent** | | **Letter Grade** | **Grade Points** |  |  |
|  | 94-100 | | A | 4 |  |  |
|  | 90-93 | | A- | 3.67 |  |  |
|  | 87-89 | | B+ | 3.33 |  |  |
|  | 84-86 | | B | 3 |  |  |
|  | 80-83 | | B- | 2.67 |  |  |
|  | 77-79 | | C+ | 2.33 |  |  |
|  | 74-76 | | C | 2 |  |  |
|  | 70-73 | | C- | 1.67 |  |  |
|  | 67-69 | | D+ | 1.33 |  |  |
|  | 64-66 | | D | 1 |  |  |
|  | 60-63 | | D- | 0.67 |  |  |
|  | N/A | | INC | 0 |  |  |
|  | N/A | | W | 0 |  |  |
|  | 60 or above | | CR | 0 |  |  |
|  | 59 or below | | NC | 0 |  |  |
|  | N/A | | I | 0 |  |  |
|  | N/A | | W | 0 |  |  |
|  | N/A | | AU | 0 |  |  |
|  | N/A | | TR | 0 |  |  |
|  | N/A | | WV | 0 |  |  |
|  |  |  |  |  |  |  |
|  | **Legend** | | |  |  |  |
|  | CR = Credit | NC = No Credit | |  |  |  |
|  | I = Incomplete | W = Course Withdrawal | |  |  |  |
|  | AU = Audit | TR = Transfer Credit | |  |  |  |
|  | WV = Waiver |  | |  |  |  |
|  |  |  |  |  |  |  |
| **Academic Accommodation / Adjustment Policy:** | | | | | | |
| In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA), Coleman University offers accommodations to students with documented physical, psychological, and/or cognitive disabilities. Coleman University will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to offer equal educational opportunities to qualified disabled individuals. | | | | | | |
|  |  |  |  |  |  |  |
| To qualify for an academic accommodation under ADA, the student must provide adequate documentation of a disability. Students seeking academic accommodations should contact the campus ADA Coordinator at 858-966-3953 or via email at ada@coleman.edu. The ADA Coordinator will review the documentation provided and verify ADA coverage. Students covered under ADA must meet with the ADA Coordinator at the beginning of every term to determine the appropriate academic accommodations. Failing to meet with the ADA Coordinator at the beginning of every term may impact the availability of accommodations. | | | | | | |
|  |  |  |  |  |  |  |
| After the academic accommodations have been determined, the students’ instructors will be notified by the ADA Coordinator. If any problems or concerns regarding the provision of accommodations occur, the student must inform the ADA Coordinator. If the student feels accommodation is not being made appropriately, the student may follow the published Student Grievance Procedures. | | | | | | |