**COURSE SYLLABUS**

**COM239: Software Testing**

**Course Description**

This course provides an introduction to systematic and organized approaches to software testing. The goal of the course is to provide students with the skills to select and apply a testing strategy and testing techniques that are appropriate to a particular software application or system. In addition, the student will become familiar with using a standardized testing tool to assess the effectiveness of their testing activity, and to provide evidence to justify their evaluation. Students will learn the theory behind criteria-based test design and to apply that theory in practice. Topics include test case design, the various levels of testing, test management, evaluating software quality, validation of test outputs, report generation, test coverage criteria, STLC, and test metrics.

**General Course Information**

|  |  |
| --- | --- |
| Number of Units/Weeks | 4/10 |
| #Hours Lecture/#Hours Laboratory/#Hours Homework | 40/00/80 |
| Prerequisite(s) | COM202 or COM285 (SD)  COM123 or COM203 (GDD) |
| Co-requisites (s) | None |
| Course Developer(s) | Anthony Le, B.S.  Leticia Rabor, M.S. |
| Date Approved / Last Review | May 2017 / May 2017 |

**Learning Outcomes**

(CLO1) Demonstrate the fundamentals of software testing.

(CLO2) Identify requirements to determine appropriate testing strategies.

(CLO3) Construct comprehensive test strategies and plans, as well as generating several test cases.

(CLO4) Apply a wide variety of testing techniques in relation to software development and project management.

(CLO5) Complete report generation including the measurement of test processes.

(CLO6) Use a web-based tracking tool to track known bugs in a self-developed software program.

(CLO7) Communicate clearly and appropriately to determine requirements, procedures, expected outcomes and product.

(CLO8) Explain the benefits of team building in software testing.

**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**

Laboon, B. (2017). *A Friendly Introduction to Software testing (1st ed)*. North Charleston, SC: CreateSpace Independent Pub.

Schultz, C., Bryant, R.D. (2017). *Game Testing All In One (3rd ed).* Herndon, VA:Mercury Learning & Information Pub.

**Other Book Resources**

Patton, R. (2006). *Software testing* (2nd ed.). Indianapolis, IN: Sams Pub.

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.

**Web Site Resources**

10 Steps to Become a Video Game Tester,

<http://www.gamedesigning.org/video-game-tester/>

International Game Developers Association,

<http://www.igda.org/>

Entertainment Software Association,

<http://www.theesa.com/>

Academy of Interactive Arts & Sciences,

<http://www.interactive.org/>

**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 Software Testing Life Cycle | 4 | -- | -- | -- |  |
| HW 1A | Read Intro to Software Testing Chapters 2, 3, 7 (13 pages); Game Testing Chapters. 2, 3 (46 pages). Evaluated by HW 1B | -- | -- | 5.9 | -- | Week 2 |
| HW 1B | Chapter Review Exercises  (10 questions) | -- | -- | 0.8 | -- | Week 2 |
| HW 1C | Project 1 | -- | -- | 4 | 100 | Week 2 |
| Total Week 1 |  | 4 | -- | 10.7 | 100 |  |
| **Week 2** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 2A | Introduction to Test Planning | 4 | -- | -- | -- |  |
| HW 2A | Read Intro to Software Testing Chapters 6, 8 (19 pages), Game Testing Appendix B page 375 (6 pages). Evaluated by HW 2B | -- | -- | 2.5 | -- | Week 3 |
| HW 2B | Chapter Review Exercises  (10 questions) | -- | -- | 0.8 | -- | Week 3 |
| HW 2C | Project 2 | -- | -- | 4 | 100 | Week 3 |
| Total Week 2 |  | 4 | -- | 7.3 | 100 |  |
| **Week 3** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 3A | Test Design | 4 | -- | -- | -- |  |
| HW 3A | Read Intro to Software Testing Chapters 15, 16 (21 pages), Game Testing Chapter 9 (30 pages). Evaluated by HW 3B | -- | -- | 5.1 | -- | Week 4 |
| HW 3B | Chapter Review Exercises (10 questions) | -- | -- | .8 | -- | Week 4 |
| HW 3C | Project 3 | -- | -- | 8 | 100 | Week 4 |
| Total Week 3 |  | 4 | -- | 13.9 | 100 |  |
| **Week 4** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 4A | Test Techniques | 2 | -- | -- | -- |  |
| LEC 4B | Dynamic & Static Black Box Testing | 2 | -- | -- | -- |  |
| HW 4A | Read Intro to Software Testing Chapters 4, 5 (13 pages), Game Testing Chapters 5-8 (92 pages). Evaluated by ELP 4B | -- | -- | 10.5 | -- | Week 5 |
| HW 4B | Chapter Review Exercises  (10 questions) | -- | -- | 0.8 | -- | Week 5 |
| Total Week 4 |  | 4 | -- | 11.3 | - |  |
| **Week 5** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 5A | Levels & Types of Testing | 1 | -- | -- | -- |  |
| LEC 5B | Static White Box Testing | 1.5 |  |  |  |  |
| EXAM 5B | Midterm Examination (Chapters 1-5, 7, 12) | 1.5 | -- | -- | 150 | In Class |
| HW 5A | Read Intro to Software Testing Chapters 13, 14, 17, 19, 20 (58 pages), Game Testing Chapters 10, 12, 14, 15 (73 pages). Evaluated by HW 5B | -- | -- | 13.1 | -- | Week 6 |
| HW 5B | Chapter Review Exercises  (10 questions) | -- | -- | 0.8 | -- | Week 6 |
| Total Week 5 |  | 4 | -- | 13.8 | 150 |  |
| **Week 6** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 6A | Test Execution | 2 | -- | -- | -- |  |
| LEC 6B | Dynamic White Box Testing | 2 | -- | -- | -- |  |
| HW 6A | Read Intro to Software Testing Chapters 10, 11 (6 pages), Game Testing Chapter 4 (27 pages). Evaluated by HW 6B | -- | -- | 3.3 | -- | Week 7 |
| HW 6B | Chapter Review Exercises (10 questions) | -- | -- | 0.8 | -- | Week 7 |
| HW 6C | Project 4 | -- | -- | 4 | 100 | Week 7 |
| Total Week 6 |  | 4 | -- | 8.1 | 100 |  |
| **Week 7** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 7A | Writing a Test Plan | 2 | -- | -- | -- |  |
| LEC 7B | Defect Management | 2 | -- | -- | -- |  |
| HW 7A | Read Intro to Software Testing Chapter 9 (8 pages), Game Testing Chapter 13 (16 pages). Evaluated by HW 7B | -- | -- | 2.4 | -- | Week 8 |
| HW 7B | Chapter Review Exercises  (10 questions) | -- | -- | .8 | -- | Week 8 |
| HW 7C | Project 5: Test Plan | -- | -- | 4 | 200 | Week 10 |
| Total Week 7 |  | 4 | 1 | 7.2 | 200 |  |
| **Week 8** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 8A | Reporting & Team Collaboration | 4 | -- | -- | -- |  |
| HW 8A | Read Intro to Software Testing Chapters 21 (9 pages) Evaluated by HW 8B | -- | -- | 0.9 | -- | Week 9 |
| HW 8B | Chapter Review Exercises (10 questions) | -- | -- | .8 | -- | Week 9 |
| HW 8C | Project 6 | -- | -- | 4 | 100 | Week 9 |
| Total Week 8 |  | 4 | 1.0 | 5.7 | 100 |  |
| **Week 9** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 9A | Metrics & Measurement | 4 | -- | -- | -- |  |
| HW 9A | Read Intro to Software Testing Chapter 12  (8 pages), Game Testing Chapter 11 (16 pages).  Evaluated by HW 9B | -- | -- | 2.4 | -- | Week 10 |
| HW 9B | Chapter Review Exercises  (10 questions) | -- | -- | 0.8 | -- | Week 10 |
| HW 9C | Project 7 | -- | -- | 4 | 100 | Week 10 |
| Total Week 9 |  | 4 | -- | 7.2 | 100 |  |
| **Week 10** |  |  |  |  |  |  |
| **Type** | **Topic/Description** | **LEC Hours** | **LAB Hours** | **HW Hours** | **Point Value** | **Due** |
| LEC 10A | Testing Tools & FAQs | 2 |  |  |  |  |
| EXAM 10A | Final Examination | 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 | -- | 10.7 |
| 2 | Introduction to Test Planning | 4 | -- | 7.3 |
| 3 | Test Design | 4 | -- | 13.9 |
| 4 | Test Techniques, Dynamic & Static Black Box Testing | 4 | -- | 11.3 |
| 5 | Levels & Types of Testing, Static White Box Testing | 4 | -- | 13.8 |
| 6 | Test Execution, Dynamic White Box Testing | 4 | -- | 8.1 |
| 7 | Writing a Test Plan, Defect Management | 4 | -- | 7.2 |
| 8 | Reporting & Team Collaboration | 4 | -- | 5.7 |
| 9 | Metrics & Measurement | 4 | -- | 7.2 |
| 10 | Testing Tools & FAQs, Finals | 4 | -- | -- |
| Total |  | 40 | -- | 85.2 |

**Table/Point Breakdown**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Assignment** | **Possible Points** | **Percent**  **of Grade** |
| 1 | Project 1 | 100 | 10% |
| 2 | Project 2 | 100 | 10% |
| 3 | Project 3 | 100 | 10% |
| 5 | Midterm | 150 | 15% |
| 6 | Project 4 | 100 | 10% |
| 7 | Project 5: Test Plan | 200 | 20% |
| 8 | Project 6 | 100 | 15% |
| 9 | Project 7 | 100 | 15% |
| 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. | | | | | | |