# * Learning Outcomes / Course Competencies / Learning Objectives

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Austin Community College

# Course learning outcomes

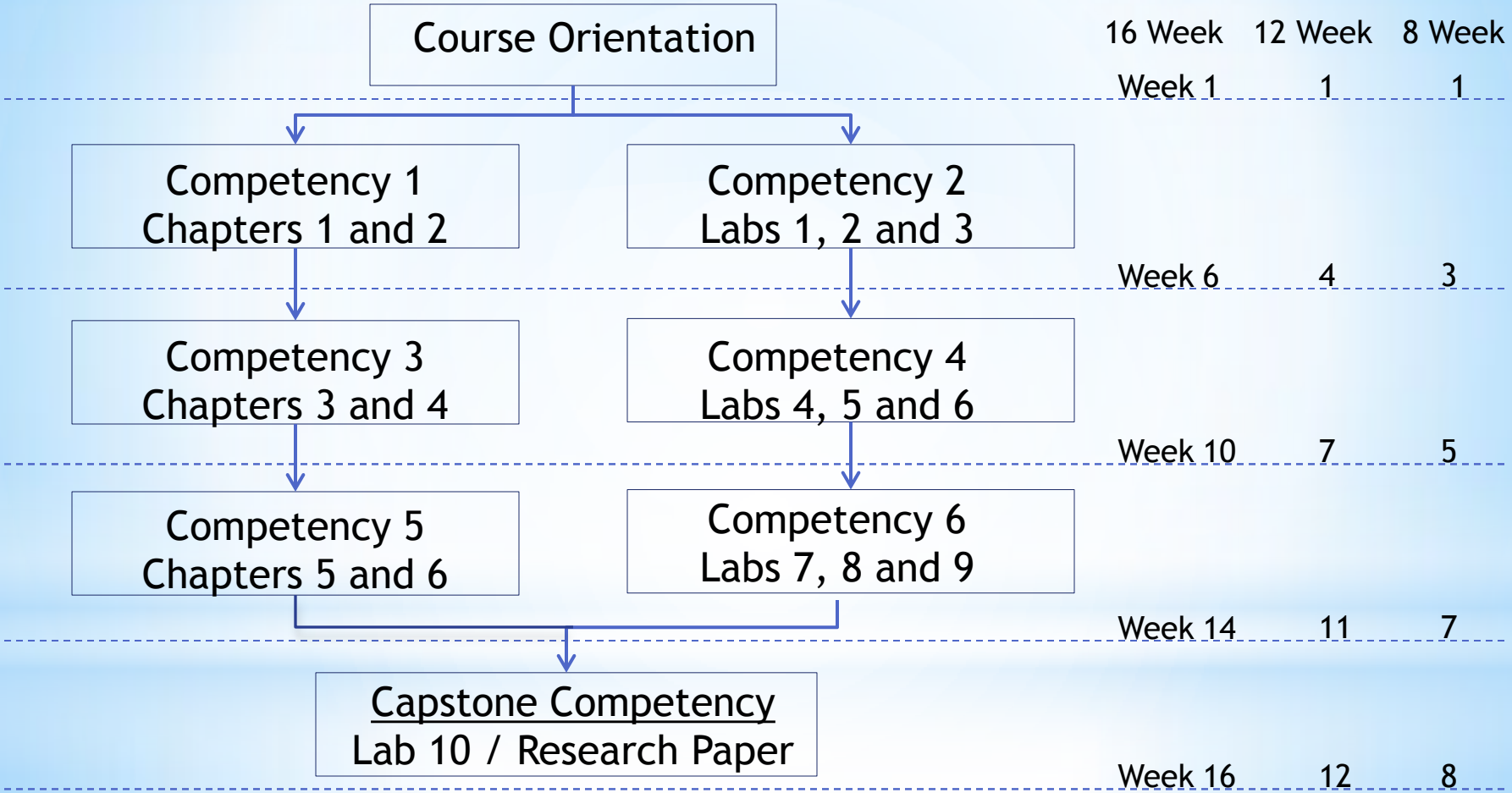
- Demonstrate a practical understanding of test strategies and how they relate to the reliability of software products
- Develop the ability to be curious, thorough, observant and detail-oriented when interpreting and documenting the results of experimental test setups
- Develop an awareness of important test metrics including correct outcomes and performance

# Course competencies

- Competency 1 – Relate the fundamentals of software testing throughout the software life cycle
- Competency 2 – Evaluate test documentation and experiment with testing of websites and internet loading
- Competency 3 – Assess static and test design techniques
- Competency 4 – Create test cases, interpret test results, construct bug reports and verify bug fixes

# Course competencies

- Competency 5 – Describe test management and tool support for testing
- Competency 6 – Demonstrate the integration of test schedules, test cases, test scripts and test scenarios
- Capstone competency – Create and defend a product ship recommendation and summarize independent research related to software testing


Course Orientation
16 Week
12 Week
8 Week
Week 1
1
1
Competency 1
Chapters 1 and 2
Competency 2
Labs 1, 2 and 3
Week 6
4
3
Competency 3
Chapters 3 and 4
Competency 4
Labs 4, 5 and 6
Week 10
7
5
Competency 5
Chapters 5 and 6
Competency 6
Labs 7, 8 and 9
Week 14
11
7
Capstone Competency
Lab 10 / Research Paper
Week 16
12
8

# Course orientation learning objectives

* Demonstrate an understanding of the graded activities and assignment deadlines associated with this course
* Demonstrate the ability to successfully complete a graded assessment instrument on or before the specified deadline
* Point out the purpose (goal) of software testing, the history of the first “computer bug” and how to measure defects
* Identify the test objectives for production level software and the traits of a professional software tester
* Explain how the “Abilene Paradox” relates to software testing

# Competency 1 learning objectives

* Chapter 1 – Fundamentals of testing
  * Explain why testing is necessary and support that explanation with examples and evidence
  * Discuss how testing supports quality and contrast defects and symptoms
  * Relate how testing finds and prevents defects
  * Explain the fundamental principles of testing
  * Describe the fundamental test processes
  * Explain the psychology of testing and how people influence testing success
  * Explain and contrast the mindset of testers and programmers and why they often conflict
  * Demonstrate an understanding of the ISTQB Code of Ethics and software testing terminology

# Competency 1 learning objectives

* Chapter 2 – Testing throughout the software life cycle
  * Explain the relationship between development and testing within a development life cycle
  * Relate the typical levels of testing with respect to their major objectives
  * Identify which persons perform the testing activities at various test levels
  * Relate the four major types of test (functional, non-functional, structural and change-related) and show concrete examples for each
  * Compare maintenance testing with testing new applications
  * Identify triggers and reasons for maintenance testing
  * Demonstrate an understanding of software testing terminology

* Lab 1 – Testing documentation
  * Create and execute a test plan, including test cases, to verify the correctness of documentation
  * Prepare a test summary report, and bug reports if necessary
* Lab 2 – Testing websites
  * Create and execute a test plan, including test cases, to evaluate compliance with specifications
  * Prepare a test summary report, and bug reports if necessary
* Lab 3 – Testing internet loading
  * Experiment with internet loading to create and execute a test plan that evaluates internet speed under various loads
  * Analyze and summarize the results of the experiment

# * Competency 2 learning objectives

# Competency 3 learning objectives

- Chapter 3 – Static techniques
  - Explain the importance and advantages of static testing
  - Contrast the difference between static testing and dynamic testing
  - Compare the differences between formal and informal reviews
  - Explain the factors for successful completion of reviews
  - Differentiate objectives of static analysis from static and dynamic testing
  - Describe the main features of static analysis
  - Demonstrate an understanding of software testing terminology

# Competency 3 learning objectives

* Chapter 4 – Test design techniques
  * Differentiate between a test condition, a test case and a test procedure
  * Explain why both specification-based and experience-based testing approaches are useful
  * Write test cases from software models using equivalence partitioning, boundary value analysis, decision tables and state transition diagrams
  * Describe the concept and importance of code coverage
  * Categorize the reasons for writing test cases based on intuition, experience and knowledge about common defects
  * List factors that influence selection of test techniques
  * Demonstrate an understanding of software testing terminology

# Competency 4 learning objectives

- Lab 4 – Writing test cases
  - Develop test cases based upon a given specification
- Lab 5 – Running test cases
  - Interpret actual results against predicted results
  - Prepare bug reports using an incident logging tool
- Lab 6 – Verification of bug fixes
  - Rewrite test cases to match changes in product specifications
  - Update the status of incident reports

# Competency 5 learning objectives

- Chapter 5 – Test management
  - Explain the basic ideas of test organization
  - Describe the fundamentals of test planning and implementation
  - Explain the essentials of test progress monitoring and control
  - Identify the basics of configuration management that relate to testing
  - Explain how risk and testing relate
  - Describe incident logging
  - Demonstrate an understanding of software testing terminology

# Competency 5 learning objectives

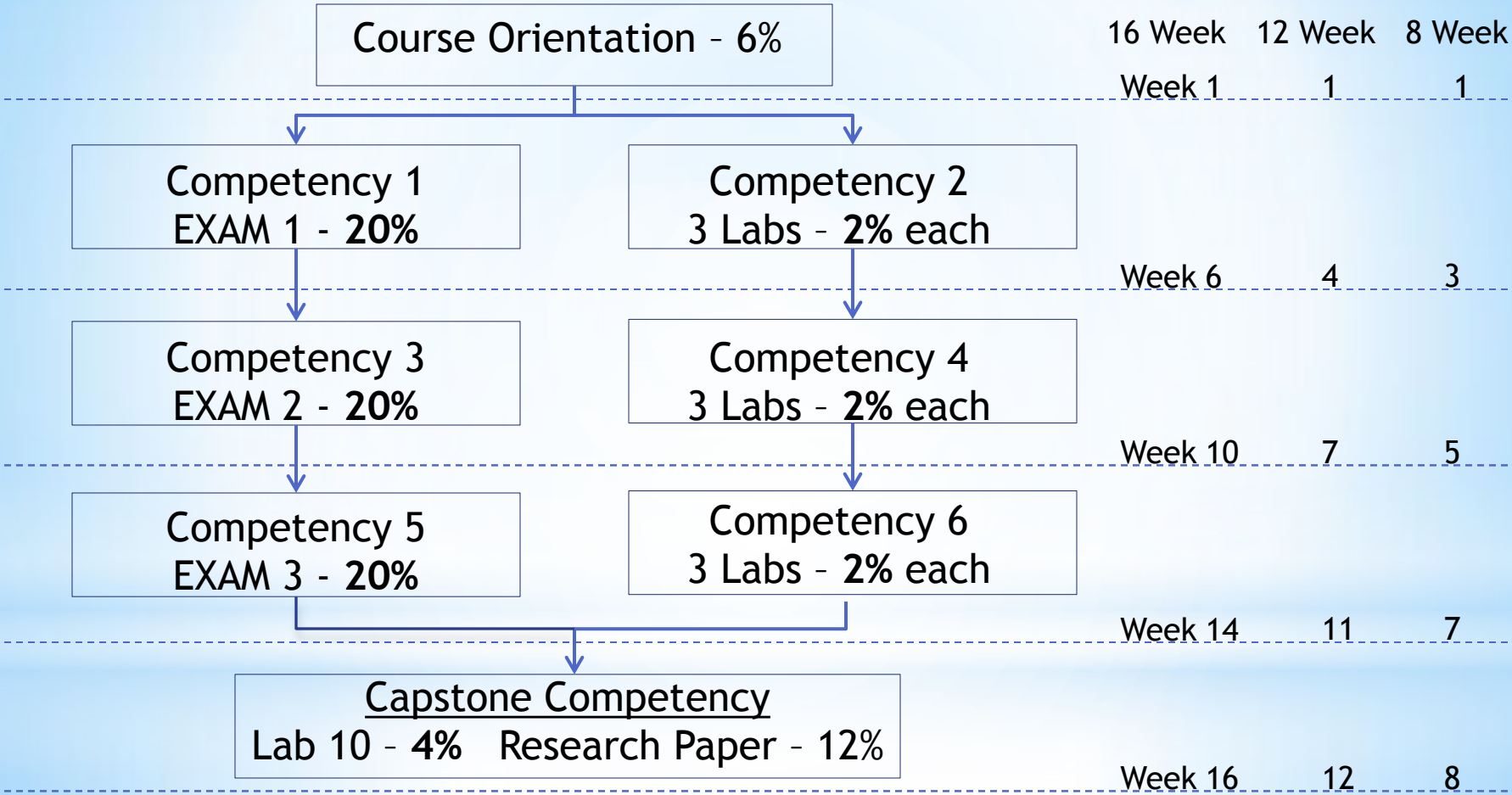
- Chapter 6 – Tool support for testing
  - Classify different types of test tools according to the test process activity that they support
  - Recognize the tools that may help developers in their testing
  - Assess the potential benefits and potential risks of tool support for testing in general
  - State the main principles of introducing a tool into an organization
  - State the goal of a proof-of-concept or piloting phase for tool evaluation
  - Demonstrate an understanding of software testing terminology

* Lab 7 – Creating test schedules
  * Construct detailed test schedules using Microsoft Project
* Lab 8 – Creating test cases and scripts
  * Create test cases and scripts using industry standard tools
* Lab 9 – Creating test scenarios
  * Create test scenarios that incorporate the test cases and scripts previously created

# * Competency 6 learning objectives

# Capstone learning objectives

- Lab 10 – Create and defend a ship recommendation
  - Evaluate and arrange data collected from testing history
  - Prepare and justify a ship recommendation based on your analysis
- Prepare an independent research paper on an *approved topic* in software testing
  - Select a topic of interest in software testing
  - Prepare a research paper on this topic
  - Summarize the key elements as they relate to Software Testing


Course Orientation – 6%
16 Week
12 Week
8 Week
Week 1
1
1
Competency 1
EXAM 1 - 20%
Competency 2
3 Labs – 2% each
Week 6
4
3
Competency 3
EXAM 2 - 20%
Competency 4
3 Labs – 2% each
Week 10
7
5
Competency 5
EXAM 3 - 20%
Competency 6
3 Labs – 2% each
Week 14
11
7
Capstone Competency
Lab 10 – 4% Research Paper – 12%
Week 16
12
8

Have a good semester, and enjoy this course!