1. Course Number and Title:

CMP 454 - Software Testing and Quality Engineering

- 2. Credits Hours: 3-0-3
- **3. Prerequisite and/or Co-Requisite:** Prerequisites: CMP 305 (Data Structures and Algorithms)
- 4. Name and Contact of Instructor: Dr. Khaled El-Fakih

5. Course Description (Catalog Description):

Provides an overview of software engineering. Covers software quality assurance; black-box and white-box testing; integration and regressions testing; and selected topics from the following: object oriented software testing, acceptance testing, conformance testing, diagnostic testing, test execution, distributed systems testing, test languages and test tools, GUI testing, interoperability testing, test metrics and standards for software quality and testing.

6. Textbook and other Supplemental Material:

Textbook:

• Mathur, A., Foundations of Software Testing, 2nd edition, 2011, Addison-Wesley.

Other supplemental materials

- Jorgensen, P., Software Testing: A Craftsman's Approach, Second Edition, 2002, CRC Press.
- Kohavi Z., Switching and Finite Automata Theory, 1978, McGraw-Hill Book Company, NY.
- Slides at *ilearn* folder

7. Learning outcomes:

Upon completion of the course, students will be able to:

- 1. Describe software testing processes and activities
- 2. Construct functional tests using black-box boundary value and equivalence class testing methods
- 3. Develop functional tests using black-box decision tables and cause effect graphs
- 4. Build white-box dataflow and structural tests
- 5. Derive test cases for specifications modeled as finite state machines
- 6. Describe integration and regression testing methods
- 7. Compose effective technical reports and present software engineering content

8. Teaching and Learning Methodologies:

Methods include three one-hour lectures per week.

9. Course Topics and Schedule in Weeks:

Торіс	Weeks
An overview of software quality and testing	1
activities/methods	
Black-box boundary value and equivalence testing	2
Black-box decision table (and cause effect) testing	1
White-box dataflow and structural testing	2.5
Integration and regression testing	2
Black-box finite state machine based conformance testing	3
Black-box and white-box mutation testing	1
Presentations/Demos:	1.5
Evaluation	2
Total	16