FLORIDA POLYTECHNIC UNIVERSITY

Course Syllabus – CEN4072.01 – Spring 26

Disclaimer - The instructor reserves the right to modify the syllabus as necessary throughout the semester, except for the grading scale, grade distribution, and learning outcomes, which will not change.

Course Information

- **Course Number and Title**: CEN 4072 (Section 1) - Software Verification and Quality Assurance
- **Credit Hours:** 3 Lecture
- **Academic Term:** Spring 2026

Instructor Information

- **Instructor:** Abdelwahab Hamam
- **Office Location:** BARC 2233
- **Office Hours**: M/W/F 11-12 @BARC 2233 in person
- **Email address**: ahamam@floridapoly.edu

Course Delivery and Course Description

- **Delivery Mode**: Face-to-face, M/W/F 1:00-1:50 pm, @IST 1045
- **Course Website**: Canvas
- **Official Catalog Course Description**:
  This course introduces software verification and validation techniques with a particular focus on software testing. The course also provides students a comprehensive understanding of the software quality assurance and techniques used to assess software quality.
  - **Course Pre-Requisites**: : CEN 4033 Secure Software Engineering
  - **Communication/Computation Skills Requirement (6A-10.030)**: N
- **Required Texts and Materials:**
  - "Introduction to Software Testing", 2nd Edition, Ammann, P. and Offutt, J., Cambridge University Press, 2016, **ISBN: 9781107172012**
  - IntelliJ (Java IDE)
- **References:**
  - "Test Driven: TDD and Acceptance TDD for Java Developers", Koskela, L., Manning Publications, 2007. **ISBN: 9781932394856**
  - Mauro Pezze, Michael Young: "Software Testing and Analysis: Process, Principles and Techniques", Wiley, 2007. **ISBN: 0471455938.**

Course Learning Outcomes (CLOs)

The course objective is to introduce software validation and verification, which are vital for the software development life cycle, including tools and techniques used for software quality assurance.

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

CLO-1: **Build** a basic foundation in software testing methods.
CLO-2: **Understand** quality assurance as a fundamental component of the software life cycle.
CLO-3: **Explain** differing approaches to performing V&V planning.

CLO-4: **Identify** the tasks necessary to accomplish different types of testing for a software system.
CLO-5: **Specify** an appropriate testing strategy for a given software development activity.

Alignment with Program Outcomes (ABET)

The Computer Science program at Florida Polytechnic University has aligned its Program Outcomes with the ABET Students Outcomes 1-6 from the ABET General Criterion 3 and the ABET Program Criteria. The table shown below summarizes how the CLOs stated above align with the Program Outcomes (ABET 1-6).

These outcomes are:

1. **Analyzing a Problem**: Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions
2. **Implementing a Solution**: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
3. **Communicating Effectively**: Communicate effectively in a variety of professional contexts
4. **Performing Legal & Ethical Analysis**: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. **Collaborating as a Team**: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline
6. **Applying theory**: Apply computer science theory and software development fundamentals to produce computing-based solutions.

Program Outcome (ABET)	CLO-1	CLO-2	CLO-3	CLO-4	CLO-5
Analyzing a Problem				**X**	**X**
Implementing a Solution		**X**	**X**	**X**	**X**
Communicating Effectively			**X**	**X**	**X**
Performing Legal & Ethical Analysis		**X**	**X**	**X**	
Collaborating as a Team				**X**	**X**
Applying theory	**X**				**X**

Course Policies

Attendance

Students in face-to-face courses are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP).

Students are expected to attend class IN PERSON. Unexcused absence will affect the participation grade for the course.

Exceptions to any attendance requirements may be made on a case-by-case basis.

Participation

Students are expected to participate in the classroom experience. The use of earbuds/headphones during class is specifically not allowed and students who engage in this behavior may be asked to leave the class for the day (noting exceptions for authorized accommodations). In addition, students who routinely do not bring materials to class that are required for participation, will not be given credit for class attendance, and if this becomes a pattern of behavior, may be asked to leave the class for the day. Persistent problems with participation may result in a code of conduct referral.

Late Work/Make-up work

Late submissions could be accepted with PENALTY up to three days. The penalty will be 15% per day. No submission is allowed after 72 hours of the deadline. Exceptions to any late work policy may be made on a case-by-case basis.

Absence from an exam or quiz will result in a grade of **zero** for that test, except if **official proof** is provided to the instructor (such as a doctor's note) to write a make-up test. This will be decided on a case-by-case basis.

Grading Scale

A ≥ 93.00	B+ 87.00 - 89.99	C+ 77.00 - 79.99	D+ 67.00 - 69.99	F ≤ 59.99
A- 90.00 - 92.99	B 83.00 - 86.99	C 73.00 - 76.99	D 63.00 - 66.99	
	B- 80.00 - 82.99	C- 70.00 - 72.99	D- 60.00 - 62.99	

(See also University Grading Policy).

Assignment/Evaluation Methods

Assignments	35%
Participation	5%
Quizzes	20%
Midterm Exam	20%
Final Exam	20%
---	---
Total	100%

Assignments: Tentatively five assignments will be provided and graded. (Assignments are subject to change depending on progress of the course)

- Assignment 1: Code analysis (CLO3)
- Assignment 2: Developing Junit tests (CLO1)
- Assignment 3: Input space partitioning CLO4)
- Assignment 4: Graph-based coverage testing (CLO4)
- Assignment 5: Analyzing Junit code (CLO4)

Quizzes and exams will reinforce concepts learned in class (CLO2, CLO5)

Miscellaneous

- Email communication should be done through the official floridapoly.edu email. Put the course name or number on the subject line.
- You are responsible for your submission on Canvas and your submission is accepted on time. This includes that you have submitted the correct file(s) and that the file(s) are not corrupt.
- If you are working in a group, you should have a backup plan if a member drops out. Please communicate group member disputes to me as soon as possible if you feel this is necessary.
- There is nothing that can be done to raise your grade at the end of the semester after all submission deadlines have passed.
- Although I try to announce everything on Canvas, you are responsible for in-class announcements.

Tentative Course Schedule

- Important Dates: https://floridapoly.edu/academics/academic-calendar/index.php

Week	Date	Topics (tentative)	Key Activities (tentative)
1	01/12	Intro / Syllabus	
	01/14	Why do we test (goals of s/w testing)	
	01/16	Review of fundamental s/w eng. Concepts (from previous courses)	
2	01/19	**No Class – Martin Luther King Jr. Holiday**	

	01/21	Model Driven Test Design (testing foundation)	
	01/23	Test Automation (software testability)	
3	01/26	Test Automation (test automation framework)	
	01/28	Putting Testing First (testing in agile)	
	01/30	Criterion-based Test Design (preview of the next topics)	Quiz 1
4	02/02	Input Space Partitioning (input domain modeling)	
	02/04	Input Space Partitioning (input domain modeling)	
	02/06	Input Space Partitioning (input domain modeling)	
5	02/09	Input Space Partitioning (extended example)	
	02/11	Graph Coverage (graph coverage criteria)	
	02/13	Graph Coverage (graph coverage criteria)	Quiz 2
6	02/16	Graph Coverage (graph coverage for source code)	
	02/18	Graph Coverage (graph coverage for source code)	
	02/20	Graph Coverage (graph coverage for design elements)	
7	02/23	Graph Coverage (graph coverage for design elements)	
	02/25	Graph Coverage (graph coverage for specifications)	
	02/27	Graph Coverage (graph coverage for use cases)	Quiz 3
8	03/02	Graph Coverage (extras)	
	03/04	Review for midterm	
	03/06	**Midterm**	Exam
9	03/09	Logic Coverage (semantic logic coverage criteria)	
	03/11	Logic Coverage (semantic logic coverage criteria	
	03/13	Logic Coverage (semantic logic coverage criteria)	
10	03/16	**SPRING BREAK – No Classes**	
	03/18		
	03/20		
11	03/23	Logic Coverage (structural logic coverage for programs)	
	03/25	Logic Coverage (specification-based logic coverage)	
	03/27	Logic Coverage (logic coverage of finite state machines)	Quiz 4
12	03/30	Syntax-based Testing (syntax-based coverage criteria)	
	04/01	Syntax-based Testing (Program-based grammars)	
	04/03	Syntax-based Testing (Program-based grammars)	
13	04/06	Syntax-based Testing (integration and object-oriented testing)	
	04/08	Syntax-based Testing (specification-based grammars)	
	04/10	Syntax-based Testing (input space grammars)	Quiz 5
14	04/13	Testing in Practice (managing the test process)	
	04/15	Testing in Practice (managing the test process)	
	04/17	Testing in Practice (writing test plans)	
15	04/20	Testing in Practice (test implementation)	
	04/22	Testing in Practice (regression testing)	
	04/24	Review	
16	04/27	Class Wrap-up	

* Assignments will be given every 2 to 3 weeks on average.

Holidays/Breaks:

1. Jan 19, 2026 - Martin Luther King Jr. Holiday
2. Feb 10, 2026- Career Day (it is a Tuesday, so we don't have a class either way)
3. March 16-20, 2026 – Spring Break

Midterm:

To Be confirmed (Tentatively 03/06)

Final Exam:

Set by the registrar during May 4 -8, 2026.

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Tutoring and Learning Center (TLC)**: : The Tutoring and Learning Center (The TLC) provides tutoring to all Florida Poly students who may need additional academic support. The TLC is staffed by students who have excelled in the courses they tutor. They offer support by reviewing concepts and materials from class, clarifying points of confusion and providing assistance with learning strategies. While the focus of TLC is to provide support to students in freshman-level courses, upper-level courses are also tutored at the Center. The TLC is located in the IST Commons (second floor).
- **Knack Tutoring:** Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Florida Polytechnic University has partnered with Knack to provide students with access to verified peer tutors who have previously aced this course. To view available tutors, visit floridapoly.joinknack.com and sign in with your student account.
- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit https://floridapoly.edu/writingcenter.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The University, through the Office of Disability Services (ODS), facilitates reasonable accommodation for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodation.

If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal and communicate with your instructor about your approved accommodations as soon as possible. Arrangements for testing accommodation must be made in advance. Accommodation is not retroactive.

If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible.

The Office of Disability Services (ODS):
DisabilityServices@floridapoly.edu
(863) 874-8770
The Access Point
ODS website: www.floridapoly.edy/disability

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. You may speak to your professor, but your professors have an obligation to report the incident to the Title IX Coordinator.

Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discussion resources and options available.

Academic Integrity

The faculty and administration take academic integrity very seriously. Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in an academic integrity hearing and sanctions against the accused student if found in violation. Sanctions range from receiving a zero on the exam or assignment, to expulsion from the university. Repeat offenders are subject to more severe sanctions and penalties.

Recording Lectures

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidently, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action).

Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is ***prohibited****.*

Civility and Collegiality

Faculty and students come to the university for the same reason, which is to participate in a highly professional educational environment. To that end, both students and faculty are expected to treat each other with mutual regard and civility. Communication, written, oral and behavioral, between faculty and students must remain respectful. Within and outside of the classroom, students must refrain from derogatory comments toward the faculty member and their fellow students, and faculty as well must refrain from derogatory comments toward their students. Faculty and students should address each other with respect, in accordance with the wishes of the faculty and the students: for example, no one should be addressed by their last name alone.

Faculty from the outset of a course can and should specify what constitutes activities and behavior that take away from, that diminish, the educational environment. An individual student's distracting behavior impedes the education of fellow students, which itself is a form of disrespect. Civility and collegiality also include respecting each other's time: for example, neither students nor faculty should arrive late to class (unless unforeseen, pressing circumstances prevail); faculty should be present at the posted office hours; and students and faculty should be punctual when meeting times are scheduled. In more general terms, collegiality means respecting the right of both faculty and students to participate fully and fairly in the educational enterprise.