FLORIDA POLYTECHNIC UNIVERSITY

Course Syllabus

Course Information

- **Course Number and Title**: EEL 3702 Digital Logic Design
- **Credit Hours:** 3 Credits – (3 Lectures/week)
- **Academic Term:** Spring 2026

Instructor Information

- **Instructor:** Mohammad Farmani
- **Office Location:** BARC 1102
- **Office Hours**: Mondays 10:00 am – 1:00 pm, Tuesdays & Thursdays 10:00 am – 11:00 am.
- **Email address**: mfarmani@floridapoly.edu

Course Delivery and Course Description

- **Delivery Mode**: In Person (Section – 01: Tuesdays and Thursdays 8 am-9:15 am (IST-1067))
- **Course Website**: Canvas
- **Official Catalog Course Description**: The analysis and design of sequential logic circuits, combinational logic circuits, and feedback circuits are covered in this course. Additional topics include Boolean algebra, Boolean functions, number systems, minimizations, binary arithmetic, k-maps, combinational circuit synthesis, combinational medium scale integrated (MSI) logic circuits, sequential logic, sequential MSI logic circuits and synchronous state machine design.
    - **Course Prerequisites**: COP 2271C - Introduction to Computation and Programming
    - **Course Co – requisities or Prerequisite**: EGN 1007C - Concepts and Methods for Engineering and Computer Science
- **Required Texts and Materials:**
    - Required textbook: M. Morris R. Mano and Michael D. Ciletti .*Digital Design: With an Introduction to the Verilog HDL, VHDL, and System Verilog.* Sixth Edition, Pearson, 2018. ISBN-13: 978-0134549897.

Course Learning Outcomes (CLOs)

CLO-1: Use standard tools and concepts of digital logic (Boolean algebra, truth tables, K-maps, number systems, binary arithmetic).

CLO-2: Analyze combinational logic circuits using SSI and MSI components (logic gates, decoders, multiplexers).

CLO-3: Design combinational logic circuits using SSI and MSI components.

CLO-4: Analyze sequential logic circuits (flip-flops, state diagrams, state machines, timing diagrams).

CLO-5: Design sequential logic circuits (counters, FSMs) and implement them using HDL.

Outcomes Mapping

1. **Identify/Formulate**: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. **Apply Engineering Design**: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. **Communicate Effectively**: An ability to communicate effectively with a range of audiences.
4. **Ethical/professional responsibilities**: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. **Collaborate in a Team**: An ability to function effectively on a team whose members together provide leadership, create a collaborative environment, establish goals, plan tasks, and meet objectives.
6. **Conduct Experimentation**: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. **Apply New Knowledge**: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Outcome (ABET)	CLO-1	CLO-2	CLO-3	CLO-4	CLO-5
Identify/Formulate	**X**	**X**		**X**	
Apply Engineering Design		**X**	**X**		**X**
Communicate Effectively			**X**		**X**
Ethical/professional responsibilities					**X**
Collaborate in a Team					**X**
Conduct Experimentation		**X**	**X**	**X**	**X**
Apply New Knowledge				**X**	**X**

Course Policies

Attendance

Students are expected to attend all scheduled class and lab sessions. Absences may affect participation grades.

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 are subject to instructor discretion; extensions may be granted for documented reasons.

Grading Scale

Grade	Percentage
A	100 – 90
A-	89 – 87
B+	86 – 84
B	83 – 80
B-	79 – 77
C+	76 – 74
C	73 – 70
C-	69 – 67

D+	66 – 64
D	63 – 62
D-	61-60
F	59 – 0

Assignment/Evaluation Methods

Students will be evaluated through quizzes, homework, design assignments, exams, attendance, and participation.

Grade items: Quizzes, assignments, and Final Exam throughout the semester after the completion of a specific topic area – see the schedule for more details.	Points
Attendance	5
Homework and Design Assignment	25
Quiz	10
Exam I	15
Exam II	20
Exam III	25
Total Departmental Requirements: Minimum 30% or higher must be in the individual in-class assessments and evaluations.	100

Course Schedule

The schedule will remain tentative and may be adjusted as needed.

Week	Dates	Topics	Quizzes	Assignments / Exams
1	Jan 12 – Jan 16	Course introduction, syllabus, Canvas overview, digital systems, number systems, review of binary representation	–	–
2	Jan 19 – Jan 23	Digital systems and binary numbers (cont.); signed numbers and arithmetic operations	–	HW 1 assigned
3	Jan 26 – Jan 30	Boolean algebra and logic gates: basic identities, canonical forms	Quiz 1	–
4	Feb 2 – Feb 6	Boolean algebra and logic gates (cont.); implementation with basic gates	–	HW 2 assigned
5	Feb 9 – Feb 13	Gate-level minimization: K-maps, simplification techniques	Quiz 2	–
6	Feb 16 – Feb 20	Gate-level minimization (cont.); multi-output functions, don’t-care conditions	–	HW 3 assigned
7	Feb 23 – Feb 27	Gate-level minimization (review); midterm review session	–	–
8	Mar 2 – Mar 6	Introduction to combinational logic (encoders, decoders, multiplexers)	Quiz 3	**Exam I**
9	Mar 9 – Mar 13	Combinational logic (cont.); adders, comparators, arithmetic circuits	–	HW 4 assigned

Week	Dates	Topics	Quizzes	Assignments / Exams
10	Mar 16 – Mar 20	Spring Break – No Class	–	–
11	Mar 23 – Mar 27	Combinational logic design: hierarchical and modular design practices	Quiz 4	–
12	Mar 30 – Apr 3	Combinational logic wrap-up; introduction to sequential logic	–	Design Assignment 1 assigned
13	Apr 6 – Apr 10	Sequential logic: latches, flip-flops, registers, counters	Quiz 5	**Exam II**
14	Apr 13 – Apr 17	Sequential logic: state diagrams and finite state machines (FSMs)	–	HW 5 assigned
15	Apr 20 – Apr 24	Sequential logic (cont.); FSM implementation and examples	Quiz 6	Design Assignment 2 assigned
16	Apr 27 – Apr 28	HDL-based design; course review, applications, and comprehensive exam preparation	Quiz 7	–
–	Final Exam Week	Comprehensive Final **Exam III**	–	**Exam III** (comprehensive, cumulative)

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 Office of Disability Services (ODS), facilitates reasonable accommodations 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

accommodations. 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 accommodations must be made in advance. Accommodations are 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: DisabilityServices@floridapoly.edu; (863) 874-8770; 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. Any faculty or staff member you speak to is required 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 discuss resources and options available.

Academic Integrity

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 sanctions up to and including expulsion from the university.

Students are expected to complete their own work unless collaboration is explicitly allowed by the instructor (e.g., on certain homework or review activities). Copying from other students, prior semesters, or unauthorized sources is considered plagiarism.

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 accidentally, 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 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.

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.