

Course Syllabus

1. Course number and name: 020TEDNI4 Digital Systems Design
2. Credits and contact hours: 6 ECTS credits, 2x1:15 course hours + 1x2:30 : lab session
3. Instructor's or course coordinator's name: Alain Ajami
4. Text book, title, author, and year : Digital Electronics. A Practical Approach with VHDL, William Kleitz, Pearson 2014
 - a. other supplemental materials:
Professor textbook and course material
5. Specific course information
 - a. catalog description :

This course introduce the engineering approaches to design and analysis of digital logic circuit. The course covers number systems and codes, Boolean algebra and its applications in analysis and design of logic circuits, Karnaugh maps, memory elements, analysis and synthesis of synchronous and asynchronous sequential systems.

- b. prerequisites :
 - c. Required/Elective/Selected Elective: Required
6. Specific goals for the course
 - a. specific outcomes of instruction

- Analyze and design combinational and sequential circuits
- Design a system, component, or process to meet a set of specifications.
- Use basic structural Hardware Description Language to implement digital circuits.
- Design and conduct experiments with Altera Quartus II, a VHDL software package, and utilize this software package to solve problems on a wide-range of digital logic circuits.

- b. KPIs addressed by the course.

KPI	a2	e3	K2	
Covered	x	x	x	
Assessed	x	x	x	
Give Feedback				

7. Topics and approximate lecture hours :

- Number Systems and Codes (2 lectures)
- Boolean Algebra and Logic Gates (3 lectures)
- Arithmetic Operations and Circuits (3 lectures)
- Combinational Logic (5 lectures)
- Synchronous and asynchronous Sequential Logic (6 lectures)
- Registers and Counters (5 lectures)
- Huffman's Method for Synthesizing Sequential Circuits (4 lectures)
- Lab session (14 lectures)

8.