HOLY SPIRIT UNIVERSITY OF KASLIK

Syllabus (Admin)

Fall 2024 to Spring 2025

I. Course Information

Academic unit	School of Engineering
Department	Electrical, Telecommunications, and Computer Engineering
Code	GEL314
English Title	Digital Electronics
French or Arabic Title *(when applicable)*	
Type	☒ C ☐ CTP ☐ TP ☐ P ☐ TD ☐ S ☐ TH
Pre-requisites	GEL311
Co-requisites	GEL372
Number of credits	2
Contact hours per week	2
Delivery Language:	☐ French ☒ English ☐ Arabic ☐ Other (specify):
Offered	☒ Fall ☒ Spring ☐ Summer
Current Semester	Fall 2024
CRN	10564; 10580
Class Schedule	Monday and Friday 09:30 → 10:20; Tuesday and Thursday 11:00 → 11:50

II. Course prerequisite knowledge and skills

Short description of what students should know about the topic, and which related skills they should have developed prior to registering for the course.

III. Instructor

Name and Title	Professor Charbel Fares
Category	☒ Full-time ☐ Part-time
Office	H110
Email / Teams	charbelfares@usek.edu.lb *Replies are to be expected within the following 2 working days*
Office hours	Monday, Friday at 12:30 → 13:30; Thursday at 14:00 → 15:00

IV. Course Core Information

Course Description *(Slight introduction)*:

Revision of synchronous, asynchronous and shift registers counters. Summary: Moore and Mealy machine. Digital integrated circuits. Elements programmable logic PAL and PLA. Random access memory RAM. ROM read-only memories. Analog to digital conversion and applications.

Course Goals

Short description of the main goals of the course.

Delivery Mode

Shot description on the teaching strategy and approach.

Sessions include lecture notes and/or PowerPoint slides.

V. Course Learning Outcomes (LOs)

Enter all learning outcomes for the course (minimum 3, maximum 6). These may be mandated by the department. All learning outcomes should be measurable. Use "Action Words" as per the institutional guidelines: Writing Learning Outcomes.
After a successful completion of the course, students will be able to: 1. Discover real examples of digital systems. 2. Design and analyze logic systems. 3. Design a system and process to meet desired needs within realistic constraints. 4. Identify and solve engineering problems.

VI. Course General Requirements

Writing Requirements

Students must be able to write precisely and coherently on the course topics in a manner that is comprehensible for the reader. Examples of such writing can be found in published papers, manuals, textbooks, and expository articles aimed at non-expert audiences.

Add any specific requirements related to your course.

Oral Requirements

Students must be able to express their thoughts clearly, pronounce correctly, listen actively, and participate effectively in discussions. Presentation skills, such as organization, confident delivery, and engaging the audience, are also important. Students should be adaptable in their communication style, open to different viewpoints, and demonstrate critical thinking skills.

Add any specific requirements related to your course.

Technical Requirements

Students should have basic computer literacy, including proficiency in word processing, internet research, and email communication. Additionally, depending on the field, students may need specific technical skills like programming, data analysis, laboratory techniques, or software proficiency.

The minimum technical skills required vary depending on the program or field of study. Students may need specific technical skills like programming, data analysis, laboratory techniques, or software proficiency. Add any specific requirements related to your course.

VII. Course Timetable

Timetable

Week	Topic	LO(s)	Assessment Activities	Learning Activities
1	Introduction to digital integrated circuits. Analysis of a technical note	An ability to discover real digital systems	Assignment	Whiteboard problem solving
2	Reminder on the synthesis of synchronous sequential circuits	An ability to design and analyze logic systems	Assignment	Hands-on exercises
3	Analysis of asynchronous sequential circuits	An ability to design and analyze logic systems	In-class Quiz	Demonstration + Exercises
4	Synthesis of Mealy machine	An ability to design a system and process to meet desired needs within realistic constraints	Q&A	Demonstration + Exercises
5	Synthesis of Moore machine	An ability to design a system and process to meet desired needs within realistic constraints	Assignment	Demonstration + Exercises
6, 7	Introduction to programmable logic elements. PAL and Elements	An ability to design a system and process to meet desired needs within realistic constraints	Assignment	Demonstration + Exercises
8, 9	PAL and PLA Elements	An ability to design a system and process to meet desired needs within realistic constraints	Assignment	exercises.
10	Memories. Random access memory RAM, ROM only memories	An ability to discover real digital systems	Assignment	Demonstration + Exercises
11	Digital to analog conversion	An ability to discover real digital systems	Test	Demonstration + Exercises

12	Analog to digital conversion features, nonlinearities, architectures	An ability to discover real digital systems	Assignment	Demonstration + Exercises
13	Analog to digital conversion features, nonlinearities, architectures	An ability to discover real digital systems	Project	Demonstration + Exercises
14	A to D and D to A applications	An ability to discover real digital systems	Assignment	Demonstration + Exercises
15	**Final Exams**			

Schedule of Holidays, Make-up Sessions, Evaluations dates and Deadlines for Assignments.
USEK **Academic calendar** can be found at www.usek.edu.lb.

Week	Month	Date	Day	Specific Announcement
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15	**Final Exams**			

VIII. Course Material

Required Texts	- *Digital Electronics Principles, Devices and Applications, Anil K. Maini.*
Supplemental References	- *Digital principles and applications, Albert Malvino, Donald P. LEACH, Editeur: McGRAW Hill International Editions.* - *Logic circuit and state machine design, David COMER, International Edition*
Required Materials	

IX. Course Grading System

Provide information about each assignment and assessment activity and specify their weight in the overall grade.

All course grades will be regularly shared with students, preferably on the e-learning platform.
The course final examinations date will be published by the Registrar Office in due time. No test or examination shall be given during the last two weeks before the regular examination period.

Passing grade

A minimum grade of 70 is required for this course.
The Grading policy can be found in the **Academic Rules and Regulations** published on the website.

Grading criteria

Grading Criteria (Total = 100%)	
10%	Attendance and active participation
20%	Homeworks, Quizzes
30%	Tests
40%	End of semester evaluation *(The final exam shall have the highest percentage of the grade)*

X. Course Policies and Support to students

The USEK **Academic Rules and Regulations** is the official document of record concerning academic programs and regulations. It can be found at www.usek.edu.lb .

Class attendance policy

Students can, for valid and justified reasons, be absent for a number of teaching hours equal to three teaching weeks (20% of the course's number of hours, i.e., 9 hours = 6 sessions of an hour and 15 minutes each). However, they are responsible for learning material covered in class and will fail all graded class activities (quizzes, tests, presentations, discussions, etc.) organized during these absences.
Students who exceed the authorized limit of absences will not be allowed to sit for their final exam. They must officially withdraw from the course before the official deadline, otherwise, they will be given the grade FW (Fail to Withdraw).
Students with an excused absence will be permitted to make up coursework or complete an equivalent assignment agreed upon with the instructor.

Absence to Mid-term and final exam

A student who does not show up for the Mid-term and final exams, for any reason, is given, by the teacher, a failing grade of zero. If this absence is due to special justifiable circumstances, such as:

- Death of a family member or relative.
- Hospitalization, attested by a medical report from the hospital.
- Tested positive to COVID-19, attested by a PCR test with a QR code.
- Serious accident, attested by an official report from a sworn expert.

Then the student can present a petition with supporting documents at the Student Affairs Office within the 24 hours following the missed exam. The request will be accepted for a valid justification or in case of a recurrence. A student who has shown up for the exam cannot, in any case, present a petition for a make-up exam.
The Mid-term and final exams policy can be found at www.usek.edu.lb .

Late Submission

Assignments are expected to be submitted by the designated deadlines. Late submissions may result in grade penalties unless prior arrangements have been made with the instructor.

Academic Integrity

Plagiarism and any form of academic dishonesty are strictly prohibited. All work submitted must be your own, unless otherwise specified.
Students are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in an academic penalty of the student failing the assignment and may result in additional disciplinary measures. This includes, but not limited to, improper citation of sources, using another student's work, and any other form of academic misrepresentation. Suspicions of use of artificial intelligence aids will be considered as alleged violations of Cheating.
The Academic Integrity policy can be found at www.usek.edu.lb .

Netiquette

Students are expected to communicate with each other and with the instructor in a learning community. They are expected to be respectful, polite, and knowledgeable during oral and written communication and when posting to the class discussion forums.

Arrangements for Students with Special Needs

USEK empowers students to manage challenges and limitations imposed by special needs. Students with disabilities are encouraged to contact the Access Office by sending an email to accessoffice@usek.edu.lb, for any accommodation needed to fulfill course requirements (within the first week of the semester).

Writing Center

The USEK Writing Center offers writing assistance to students. Its main mission is to develop their writing skills and provide free writing support for students of all levels and at any stage of the writing process by offering in-person consultations during which writers can brainstorm ideas, adopt different writing approaches and strategies, and receive feedback from a well-trained tutor. For assistance student are encouraged to contact the center by sending an email to writingcenter@usek.edu.lb.

Technical Support

The Enterprise and Information Technology Services (EITS) at USEK provides essential assistance to students for resolving technical issues and ensuring smooth access to digital resources. It offers guidance and troubleshooting for hardware and software problems, assists with network connectivity, and helps students navigate learning management systems and online platforms.

Latest Update on	Signature
01-09-2024	**Professor Charbel Fares**