



DISCIPLINE ACADEMIC SHEET
ACADEMIC YEAR 2025 – 2026

1. PROGRAMME DATA

1.1. Higher Education Institution	UNIVERSITY OF CRAIOVA
1.2. Faculty	Automation, Computers and Electronics
1.3. Department	Computers and Information Technology
1.4. Field of Study	Computers and Information Technology
1.5. Study level	L(License / Undergraduate)
1.6. Organizational form	IF
1.7. Study Program (name/code) /Qualification	Computers / L2060101010

2. Discipline data

2.1 Discipline Name	Digital Electronics						
2.2 Course Activities Holder	Associate professor. dr. ing Prejbeanu Răzvan Gabriel						
2.3. Practical Activities Holder	Associate professor. ing Prejbeanu Răzvan Gabriel,						
2.4. Study Year	III	2.5. Semester	V	2.6. Evaluation type	E	2.7. Discipline regime	DOB

3. Estimated total time (hours per semester of teaching activities)

3.1. Number of hours per week	4	in which: 3.2 course	2	3.3. sem./lab./pr.	2
3.4. Total hours of curriculum	56	in which: 3.5 course	28	3.6. sem./lab./pr.	28
Time distribution - hours/week					hours
Study after manual, course support, bibliography and notes					21
Additional documentation in library, on specialized electronic platforms and field					10
Training seminars / labs, homework, portfolios and essays					4
Tutorial					2
Examinations					3
Other activities consultations, student meetings					4
3.7. Total hours per individual activities					44
3.8. Total hours per semester					100
3.9. Number of credits					4

4. Preconditions (where appropriate)

4.1. of curriculum	● Electronic Devices, Digital Circuit Analysis and Synthesis, Electronic Technology, Fundamental Electronic Circuits
4.2. of competence	●

5. Conditions (where appropriate)

5.1. of the course	- teaching the course is using the projector (face-to-face) but for some explanations and answers to questions using screen sharing / whiteboard. It provides course support in electronic format and access to up-to-date documentation. The teaching process has the following structure:
--------------------	---

	- 50% theoretical presentation, based on the course support (slides) - 50% interactive activity (discussions with students)
5.2. of seminar/ laboratory/project	● preliminary individual study of the protocol of the practical work

6. COURSE OBJECTIVES – expected learning outcomes that are supported by completing and passing the course

Knowledge	Student/Graduate: 1. The student/graduate describes, identifies, summarizes elementary concepts and methods related to systems in general and to digital systems and computer networks in particular and their application to concrete problems.
Skills (Abilities)	Student/Graduate: 1. The student/graduate uses specific methods of measuring electrical quantities and identifies digital and analog electronic devices. 2. The student/graduate analyzes systems using the theories studied and designs, implements, diagnoses and troubleshoots digital systems. 3. The student/graduate uses specific theories and tools (applications, models, protocols, etc.) for the analysis, simulation, design and implementation of computer networks.
Responsibility and autonomy	Student/Graduate: 1. The student/graduate carries out processes in computer project management and information technology, taking on different roles in the team and clearly and concisely describing the results, verbally and in writing.

7. Content

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1 - Chapter 1. Switching mode of semiconductor devices. 1.1. Semiconductor diode switching regime	face to face	It provides course support in electronic format and access to up-to-date documentation. The teaching process has the following structure: -50% theoretical presentation, based on the course support (slides) -50% interactive activity (discussions with students)	2
2. 1.2. Bipolar transistor switching mode 1.3. Switching mode of the unipolar transistor			2
3. - 1.4. Comparison between the bipolar transistor and the unipolar transistor 1.5. Electrical representation of logical symbols			2
4. - Chapter 2. Elementary logic circuits. 2.1. Logic circuits with discrete components. 2.2. RTL and DTL integrated logic circuits.			2
5. - 2.3. Standard TTL family. Parameters. Inverter, NAND and TTL NOR.			2
6. - 2.4. It carries HTTL and TTL Schottky. 2.5. Circuits with the collector empty. 2.6. "Three State" circuits. 2.7. ECL and I2L circuits			2

7. - 2.8. Static PMOS and NMOS circuits. 2.9. Transfer gate. Dynamic NMOS circuits. 2.10. CMOS circuits. Inverter, NAND and NOR. 2.11. CMOS transfer gate. Applications			2
8. – Chapter. 3. Combinational logic circuits. 3.1. Analysis and synthesis c.l.c. 3.2. Parity detector.			2
9. - 3.3. Multiplexers and demultiplexers. 3.4. Numerical comparators. 3.5. Adders.			2
10. -3.6. Code converters. 3.7. Encoders and decoders 3.8. ROM, PROM, EPROM, E2PROM memories. Organization. Extensions. 3.9. Programmable logic areas			2
11. - Chapter. 4. Sequential logic circuits. 4.1. CBB-SR asynchronous, synchronous and Master-Slave.			2
12. - 4.2. CBB-D asynchronous and synchronous. - 4.3. Addressable latch. - 4.5. CBB-D Master-Slave. Register.			2
13. - 4.4. RAM memories.			2
14. - 4.6. CBB-T. 4.7. CBB-JK asynchronous, synchronous and Master-Slave.			2
The course is taught using the video projector (face-to-face) but for some explanations and answers to questions we use screen sharing / blackboard.			
Bibliography:			
1. Prejbeanu R., Circuite Integrate Digitale, Editura SITECH Craiova 2015; 2. Filipescu, V., Circuite integrate digitale – Indrumar de laborator, Editura UNIVERSITARIA Craiova, 2009; 3. Maican, S., Sisteme numerice cu circuite integrate - culegere de probleme, Editura TEHNICA, Buc., 1980; 4. Millman, J., Grabel, A., Microelectronique, McGraw-Hill, 1991; 5. Stefan, Gh., Circuite integrate digitale, Editura DENIX, Bucuresti, 1993; 6. Sztojanov, I., s.a., De la poarta TTL la microprocesor, Seria Electronica aplicata, Editura TEHNICA, Buc., 1987; 7. Toacse, Gh., Nicula, D., Electronica digitala, Editura TEORA, 1996; 8. Toacse, Gh., Nicula, D., Electronica digitala. Dispozitive – circuite – proiectare, Editura Tehnica, Bucuresti, 2005; 9. Wakerly, J. F., Circuite digitale. Principiile si practicile folosite in proiectare, Editura Teora, Bucuresti, 2000			

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Presentation of the laboratory platform	face to face	Simulation software / stands, platforms, implementation, testing	2
2. Analysis and synthesis c.l.c.			2
3. Odd-parity detector. Code converters			4
4. Numerical comparators and adders			2
5. Multiplexers and demultiplexers			4
6. Encoders. Address decoders, BCD - decimal and BCD - 7 segments.			4
7. The bistable flip-flop SR, D, T, JK			4
8. Registers: parallel, serial travel, universal			4
9. FINAL EVALUATION	face to face		2
Bibliography:			
1. Prejbeanu R., Circuite Integrate Digitale, Editura SITECH Craiova 2015; 2. Filipescu, V., Circuite electronice digitale, Editura UNIVERSITARIA Craiova, 2002; 3. Filipescu, V., Circuite integrate digitale – Indrumar de laborator, Editura UNIVERSITARIA Craiova, 2009			

8. Correlating the content of the discipline with the expectations of representatives from the epistemic community, professional associations and representative employers in the field related to the program

By understanding the theoretical-methodological concepts and approaching the practical aspects included in the discipline

Digital Electronics, students acquire a consistent knowledge base, in accordance with the competencies required for possible occupations.

- Practical and research activity in the field of digital electronics requires mathematical methods and the use of computer for the analysis of experimental data and for solving various complex problems (algorithmization and calculation flow)
- The need to use digital integrated circuits in scientific activity.
- The contents were corroborated following the joint analysis with specialists from SC RELOC SA and SC INDAELTRAC SRL

9. Evaluation

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	Questions on the subjects from the Course + Laboratory (Lp); Correctness of answers - understanding and correct application of the issues addressed in the course	The condition of participation in the exam: Making all practical work and lab work getting to a passing grade (≥ 5). N1: Written test - multiple choice grid test (assessed by a grade from 1 to 10). The final exam grade is $N = 0.7N1 + 0.3N2$	70% of the final grade (contains the one point by officio)
9.5. Seminar/laboratory/project	L: Correctness of answers - proper acquisition and understanding of problems treated in the laboratory.	Periodical and final evaluation N2: Laboratory activity. Portfolio with laboratory papers written in English	30% of the final grade (contains the one point by officio) but only after obtaining grade 5

	Correct solving the assignments during the semester. Getting the right results for homework from laboratory	(appreciated by a grade from 1 to 10).	in the theoretical examination
9.6. Minimum standard of performance Minimum standard of performance (the minimum knowledge necessary to promote discipline and how to check the knowledge acquiring)			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025	Conf. Univ. dr Răzvan Gabriel PREJBEANU	

Date of Approval in the Department	Signature of the Department Director,
28.09.2025	Ș.l.dr.ing. Nicolae ENESCU

Date of Approval in the Faculty	Signature of the Dean,
	Prof.dr.ing. Dorin ȘENDRESCU