

وزارة التعليم العالي والبحث العلمي
جهاز الاشراف والتقويم العلمي
دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الأكاديمي للعام الدراسي ٢٠٢٥-٢٠٢٦ للكليات والمعاهد

الجامعة : جامعة شط العرب الاهلية

الكلية \المعهد : الكلية التقنية الهندسية

القسم العلمي : قسم هندسة تقنيات الحاسوب

تاريخ ملء الملف : ٢٠٢٥/٩/١١

التوقيع

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اسم المعاون العلمي : م. عصام خليل ابراهيم

اسم رئيس القسم : م. مكي جبار عبد الرزاق

التاريخ :

التاريخ : ٢٠٢٥ / ٩ / ١١

م. عصام خليل ابراهيم
معاون العميد للشؤون العلمية

دقق الملف من قبل

شعبة ضمان الجودة والأداء الجامعي

اسم مدير شعبة ضمان الجودة والأداء الجامعي

مصادقة السيد العميد

٢٠٢٥ / ٩ / ١١

أ.م.د. هازن عبداللّه علوان

عميد الكلية التقنية الهندسية

Ministry of Higher Education and Scientific Research

Supervision and Scientific Evaluation Body

Quality Assurance and Academic Accreditation Office

Course Description Sample

Subject: Advance Digital Electronics

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1. Educational Institution	Shatt Al Arab University
2. Department / Center	Computer Techniques Engineering.
3. Course Title /Code	Advance Digital Electronics / ADE
4. Lecturer Name	MSc. Fatima Tariq Hussein
5. Type of Teaching	Theary – Lab – Tutorial
6. Academic Year /Term	2025/2026
7. Total No. of Teaching Hours	120
8. Date of Preparing this Course Description	10/10/2025

9. Course Objectives

• Know the types of programmable logic devices
• To understand the different programming techniques
• Clarify and understand the structure of the programmed gate array
• To clarify the entity language (VHDL) and identify its basic components
• Identify the types of data in the VHDL language
• Identify the characteristics of data and signals
• Understand parallel instructions and how to use them
• Understand sequential instructions and how to use them
• Clarify the finite state machine and its programming and programming components and packages and programming functions and procedures

- Explanation of examples of designing various digital circuits

10. Course Output, Methodology and Evaluation

(A) Cognitive Objectives

1. Know the types of programmable logic devices (FPGA).
2. Describe the different programming techniques.
3. Explain the structure of the programmable gate array and how to program it.
4. Explain the entity language (VHDL) and identify its basic components and the types of data used in it.
5. Explain the characteristics of data, signals, parallel instructions and how to use them and serial instructions and how to use them.
6. Explain the finite state machine and its programming and programming components and packages and programming functions and procedures.

(B) Skill Objectives Related to the Program:

1. Identify the components of programmable logic devices.
2. The student should be able to use modern design techniques for logic circuits.
3. The student should be able to use the VHDL language to program digital circuits.
4. Examples of designing various digital circuits.

Methods of Teaching and Learning

- 1- Using some basic principles for designing logical circuits.
 - 2- Using schematic diagrams.
 - 3- Using programming materials for programming languages.
- Laboratory application of the curriculum vocabulary using computer programs to represent and simulate digital systems such as Proteus and VHDL writing programs such as Warp 6.

Methods of Evaluation

Number	calendar element	degree

(C) Sentimental and Value Objectives

- 1- Understanding the requirements of the engineering profession and ethical responsibility.
- 2- Understanding the impact of engineering solutions on economic and environmental activities and the societal context.
- 3- Understanding the need for and ability to engage in lifelong learning.

Methods of Teaching and Learning

- 1- Using some basic principles for designing logical circuits.
 - 2- Using schematic diagrams.
 - 3- Using programming materials for programming languages.
- Laboratory application of the curriculum vocabulary using computer programs to represent and simulate digital systems such as Proteus and VHDL writing programs such as Warp 6.

Methods of Evaluation

- 1- The achievement test and the concepts below:
 - A- Paragraphs with selected answers.
 - B- Synthetic questions (the answer is done by understanding the information available in the question form and in the illustrative figures).
 - C- Multiple choice paragraphs.
- 2- Homework and classwork.

D) General and Qualitative Skills (other skills related to the ability of employment and personal development)

- 1- The ability to identify, formulate and solve engineering problems.
- 2- The ability to design and conduct experiments, analyze and interpret data.
- 3- The ability to use modern engineering techniques, skills and tools necessary to practice the engineering profession.
- 4- Developing the student's programming skills in the (VHDL) language.

11. Course Structure

Week	No of Hours	Required Learning Output	Title of Subject	Teaching Method	Evaluation
1	4	Introduction to Field Programmable Gate Array Understanding	Introduction toFPGA	Lecture/Labo ratory	• Interactive assessment • Periodic written tests • Direct assessment
2–3	8	Understanding different programming techniques	Programming technologies	Lecture/Labo ratory	• Interactive assessment • Periodic written tests • Direct assessment
4–6	12	Understanding the types of programmable logic devices	Types of FPLDs	Lecture/Labo ratory	• Interactive assessment • Periodic written tests • Direct assessment
7	4	the structure of the Field Programmable Gate Array	FPGA architecture	Lecture/Labo ratory	• Interactive assessment • Periodic written tests • Direct assessment
8	4	Programming the FPGA	Programming (Configuring) an FPGA	Lecture/Labo ratory	• Interactive assessment • Periodic written tests • Direct assessment

9	4	Introduction to the physical entity description language and identifying its basic components	Introduction to VHDL Fundamental VHDL Units: • Library • Entity Architecture		• Interactive assessment • Periodic written tests • Direct assessment
10-11	8	Identifying data types in the physical entity description language	Data types: pre-defined data types, user-defined data types		• Interactive assessment • Periodic written tests • Direct assessment
12	4	Identifying data attributes and signals	Operators, data attributes, signal attributes		• Interactive assessment • Periodic written tests • Direct assessment
13-14	8	Identifying parallel instructions and how to use them	Concurrent code		• Interactive assessment • Periodic written tests • Direct assessment
15-16	8	Identifying sequential instructions and how to use them	Sequential code		• Interactive assessment • Periodic written tests • Direct assessment
17-18	8	Identifying the finite state machine and programming it	State machine		• Interactive assessment • Periodic written tests • Direct assessment
19-21	12	Programming components and packages	Packages and components		• Interactive assessment

					• Periodic written tests • Direct assessment
22-24	12	Programming functions	Functions and procedures		• Interactive assessment • Periodic written tests • Direct assessment
25-30	24	Examples of designing various digital circuits	Design examples		• Interactive assessment • Periodic written tests • Direct assessment

12. Infrastructure

a. Textbooks	Circuit design with VHDL by pedroni Digital Design with CPLD Application and VHDL by Dueck
b. References	Circuit design with VHDL by pedroni Digital Design with CPLD Application and VHDL by Dueck
c. Recommended books and periodicals (journals, reports, etc.)	Circuit design with VHDL by pedroni Digital Design with CPLD Application and VHDL by Dueck
d. Electronic references, internet websites, etc	Google

13. The Plan of Improving the Course

1- Familiarity with all that is new and innovative in teaching and learning strategies. 2- Adding topics related to logical families.
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3- Redistributing weekly hours to the curriculum vocabulary in a manner that is consistent with the size of each topic within the curriculum.