نموذج (هـ)

Summarized Course Description

Course number: ECE 343	Course name: Introduction to Digital VLSI
لغة تدريس المقرر: English	Pre-requisites: ECE 241
Credit hours: 4 **(3-2-0)**	Course level: Level - 7

Course Description   وصف المقرر :

Theory and practice of very-large-scale integration (VLSI) circuit design. Metal-oxide-semiconductor (MOS) transistors; static and dynamic complementary metal-oxide-semiconductor (CMOS) combinational and sequential circuits; design of adders, multipliers, and shifters; performance, power consumption and testing. CAD tools for layout, timing analysis, synthesis, physical design, and verification.

Course objectives   أهداف المقرر :

1. Have an understanding of the characteristics of CMOS circuit construction.

2. Introduce the concepts and techniques of modern integrated circuit design and testing (CMOS VLSI).

3. Provide experience designing integrated circuits using Computer Aided Design (CAD) Tools.

Course Outcomes   مخرجات التعليم:

Upon completing the course, the student should be able to:

1. Create models of moderately sized CMOS circuits that realize specified digital functions.
2. Apply CMOS technology-specific layout rules in the placement and routing of transistors and interconnect, and to verify the functionality, timing, power, and parasitic effects.
3. Compare between different state-of-the-art CMOS technologies and processes.
4. To give the student an understanding of the different design steps required to carry out a complete digital VLSI (Very-Large-Scale Integration) design in silicon.

5. Design functional units including adders, multipliers, ROMs, SRAMs, and PLAs

Textbook and references   الكتاب المقرر والمراجع المساندة:

Textbook: N. Weste and D. Harris, CMOS VLSI Design: A Circuits and Systems Perspective (4th Edition), 2010. AddisonWesley.

References: Jan M. Rabaey, Anantha Chandrakasan, and Borivoje Nikolic, Digital Integrated Circuits: A Design Perspective, 2nd Edition, Prentice Hall, ISBN: 0-13-090996-3, 2003. • S.M. Kang and Y. Leblebici, CMOS Digital Integrated Circuits: Analysis and Design (3rd edition), McGraw Hill, ISBN 0-07-246053-9, 2003.