Course Information	
Course title	Introduction to Electronic Design Automation
Semester	107-2
Designated for	COLLEGE OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE DEPARTMENT OF ELECTRICAL ENGINEERING
Instructor	JIE-HONG JIANG
Curriculum Number	EE3012
Curriculum Identity Number	901 33700
Credits	3.0
Course Syllabus	
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Course Description	1. Introduction History, VLSI design flow, etc. 2. Basics of Computation Theory and Mathematical Optimization 3. Models of computation Finite state machine, finite automata, Kahn process network, Petri net, neural network, etc. 4. High-level synthesis Design space exploration, resource sharing, etc. 5. Logic synthesis Technology independent optimization, technology mapping, technology dependent optimization, timing and power analysis, etc. 6. Verification Combinational and sequential equivalence checking, property

	checking, etc. 7. Physical design Floorplanning, placement, routing, etc. 8. Testing Combinational and sequential ATPG, design for test, etc. 9. Simulation Numerical techniques, device modeling, switch-level and logic-level simulation, etc.
Course Objective	Electronic Design Automation (EDA) concerns the correctness, reliability, productivity, and optimization of system construction. It is an interdisciplinary field, where electrical engineering and computer sciences intersect. In EDA, theoretical computer science (including algorithms, complexity, automata, logic, programming languages, etc.) finds rich and practical applications. On the other hand, some of the techniques developed in the EDA community have been much enhanced the state-of-the-art solvers on intractable problems. In this course we will study some representative problems and solutions making VLSI design an automatic process. In particular, we will cover system modeling, optimization, analysis, and verification.
References	Textbook： Electronic Deisng Automation: Synthesis, Verification, and Test, Laung-Terng Wang, Kwang-Ting (Tim) Cheng, and Yao-Wen Chang, editors, Morgan Kaufmann Publishers, 2009.

Progress

Week	Date	Topic
Week 1	2/18	Introduction
Week 2	2/25	Computation and Optimization
Week 3	3/04	Models of Computation
Week 4	3/11	High-Level Synthesis

Week 5	3/18	Logic Synthesis (1)
Week 6	3/25	Logic Synthesis (2)
Week 7	4/01	Logic Synthesis (3) (4/13 補課)
Week 8	4/08	Verification (1)
Week 9	4/15	Verification (2)
Week 10	4/22	Verification (3)
Week 11	4/29	Guest Lecture by Dr. Alan Mishchenko (author of Berkeley Logic Synthesis and Verification System ABC)
Week 12	5/06	Midterm (5/6); Physical Design (1) (5/11 補課)
Week 13	5/13	Physical Design (2)
Week 14	5/20	Physical Design (3)
Week 15	5/27	Testing (1)
Week 16	6/03	Testing (2)
Week 17	6/10	Advanced Topics
Week 18	6/17	Final Quiz; Advanced Topics
Week 19	6/24	Project Presentation