ECE 477 – Advanced Digital VLSI System Design with VHDL+Lab.

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Introduction

- Course Homepage:

http://ece477.cankaya.edu.tr

- Instructor's Office: L1-06
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Course Syllabus and Description

- Introduces the design of complex digital systems using hardware description languages.
- Focuses on synthesizable RTL VHDL code for digital circuit design using dataflow, structural, and behavioral coding styles.
- Introduces VHDL simulation and verification, and FPGA synthesis, placement, routing, timing analysis and performance optimization.

Course Syllabus and Description…

Recommended Text Books:

- Fundamentals of Digital Logic with VHDL Design (3rd ed.), S. Brown, Z. Vranesic (2008), ISBN: 978-0077221430
- FPGA Prototyping by VHDL Examples, Xilinx Spartan-3 version, Pong P. Chu (2008), ISBN: 978-0470185315
- VHDL for Logic Synthesis, Andrew Rushton (2011), ISBN: 978-0470688472

Useful links:

- http://www.ece.unm.edu/~jimp/vhdl_fpgas/
- http://www.cse.unt.edu/~smohanty/Teaching/2004Fall_DSD/LectureSlides.html

Course Syllabus and Description…

Tentative Course Content:

- Design of Digital Hardware
- Introduction to VHDL
- Concepts of Implementation with SPLD, CPLD, FPGA
- Number Representation and arithmetic circuits
- VHDL for combinational circuits
- VHDL for sequential circuits
- Finite State Machines
- Register Transfer Methodology (RTL)
- Testing of Logic circuits

Course Syllabus and Description…

- Grading Policy:

Home works	: %10
Lab	: %30
Attendance	: %5
Midterm	: %25
Final	: %30

Outcomes of This Course

What will you gain from this course ??

- Learning a new language VHDL (item in CV)
- Learning CAD tools (item in CV)
- Designing and simulating hardware units, such as adders, subtractors, multipliers, etc.
- Understanding inner details of processors
- Designing processors of your own