Digital Logic Systems

Spring Semester

LECTURER

Professor Guy Even

Office: Wolfson Engineering, room 202
Telephone: 03-640-7769
E-mail: guy@eng.tau.ac.il

COURSE DESCRIPTION

COURSE TOPICS

Weeks 1-6: Introduction to discrete math (sets, Boolean functions, induction and recursion, sequences and series, directed graphs, binary representation, propositional logic, Boolean algebra, asymptotics.)
Weeks 6-7: Representation of Boolean functions by Boolean formulae.
Week 8: Combinational circuits (foundations, cost, delay, lower bounds).
Weeks 9-11: Basic combinational circuits: tress for associative functions, encoder, decder, multiplexers, shifters, adders, subtractors, representation of signed integers.
Weeks 11-12: Synchronous circuits: Foundations, timing analysis, shortest clock period.
Week 13: Finite State machines and synchronous circuits/
Week 14: Synthesis and analysis of finite state machines.
Weeks 14-16: A simple processor (instruction set architecture, ALU, datapath, file register, control, assembly)-as time permits
Week 16: Design and simulation of digital circuits using a computer.

ASSIGNMENTS

Homework assignments and solutions will be displayed continuously on the course site in MOODLE. The homework assignments will not be reviewed or graded; however, not solving the homework will greatly reduce your chance for success in the course.

MIDTERM COURSE POLICY

A midterm exam will be scheduled in the beginning of the semester. During an examination, student shall not use books, papers, or other materials not authorized by the instructor. The midterm count for 1% of the final grade.

FINAL COURSE POLICY

The final exam will cover the entire course material and will count for 99% of the total course grade. The duration will be 3 hours. During an examination, student shall not use books, papers, or other materials not authorized by the instructor.
Students will have a first exam, Moed A. If the student does not pass, they can retake the exam, Moed B. The last exam taken will be the student's final grade for the exam.

REQUIRED READING

Guy Even and Moti Medina: *Digital Logic Design*

ADDITIONAL READING

R. McEliece, R.Ash, and C. Ash: *Introduction to Discrete Mathematics*, Random House
J.E. Savage, *Model sof Computations*, Eddison Wesley
S.A. Ward and R.H. Halstead, *Computation Structures*, MIT press
G., A. Kandel and J.L. Mott, *Foundations of Digital Logic Design*. World Scientific