Labs at a glance

Lab No.	Brief Description	Objective	Duration	Points Possible
0-OPT§	Tutorials – ModelSim and Vivado and Basys3 Board	Introduction to digital design using FPGAs. Introduction to simulation and synthesis.	1 week	-
1	Subtractor and ALU	Simple combinational circuit design	1 week	100 (40+40+20)
2	Excess-3 code converter and BCD counter	Simple sequential circuit design	1 week	100 (40+30+30)
3	Package sorter and Traffic Light Controller	More digital design. Introduction to testbenches.	1 week	120 (20+50+50)
4	Parking Meter	Advanced digital design. Interfacing with 7-segment display and push buttons.	2 weeks	150
5	A basic SNAKE game	Interfacing with PS/2 Keyboard and VGA display	2 weeks	180 (50+50+80)
6	Stack Calculator	Using Block RAMs on FPGAs	1 week	100
7	MIPS Processor	Basic microprocessor design	2 weeks	150 (50+100)

Important: Please check the schedule sheet on Canvas for the lab due dates

§Lab 0 is optional, but is highly recommended to learn the software needed for this course. Students who complete Lab 0 before the given deadline will earn a rain check to either (1) remove a one-day penalty on a late lab (2) receive 10 lost points on a homework, or (3) drop one participation grade