# 2020 Summer Online ECE Courses from Montana State University

EELE 261 – Intro to Logic Circuits (4 credits including lab)

Course Description
An introduction to classical digital logic design including number systems, interfacing, Boolean algebra, combinational logic design, and finite state machines. This course then moves into Hardware Description Languages (VHDL) for the design and simulation of digital systems. The course includes a laboratory where students build logic circuits using both discrete and programmable logic devices (FPGAs). Pre-Req = College Algebra. Windows or Linux computer required.
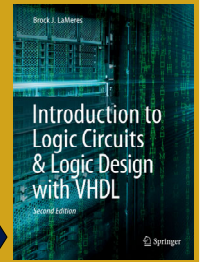
Same book for both classes.

EELE 367 – Logic Design (4 credits including lab)
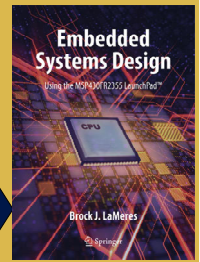
Course Description
A continuation of EELE 261 covering behavioral modeling of digital systems using VHDL. Topics include finite state machines, arithmetic circuits, and memory systems. Emphasis is put on modeling and simulation in VHDL. The course culminates with the design of a full 8-bit computer implementation. The course includes a laboratory where students implement their designs on an FPGA. Pre-Req = EELE 261. Windows or Linux computer required.
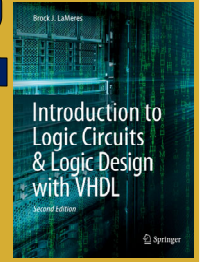
EELE 371 – Microprocessor HW/SW (4 credits including lab)

Course Description
An introduction to the structure of microprocessors, arithmetic and logic units, processor control, interrupts, memories, and input/output. This course is often called *Embedded Systems Design*. The course includes a laboratory where students design and test programs on the MSP430 microcontroller. Pre-Req = EELE 261 and knowledge of basic programming. Macs are OK.

Subscribe to Dr. LaMeres' YouTube channel to get access to all textbook videos.
www.youtube.com/c/DigitalLogicProgramming_LaMeres

Course Schedule
- Courses run during the 12-week summer session (5/18/20 → 8/7/20).
- If a slight modification to the schedule is needed, contact the instructor.
- The courses can even be configured into 2x 6-week sessions to support a 2 course sequence.

How does an online lab work?
- Students check out a portable lab kit.
- The kits are powered from the USB port of your computer.
- Lab demos are accomplished by taking a video of your operational circuit.
- Lab assistance is done via video conference calls on your phone.
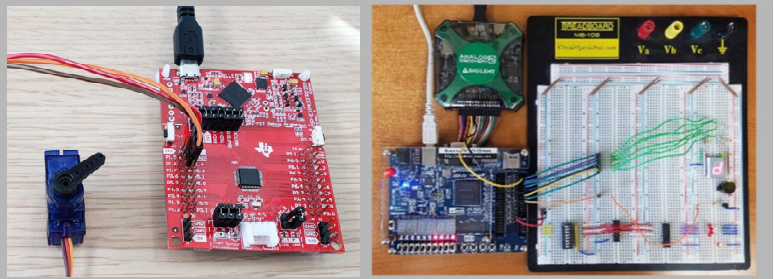
Instructor
- Dr. Brock J. LaMeres, Professor, Electrical & Computer Engineering (lameres@montana.edu)
- Winner of the 2018 American Society for Engineering Education's (ASEE) *Distinguished Educator Award* in Electrical & Computer Engineering.
- Author of six (6) textbooks on digital systems.
- Recipient of seven (7) research grants from the National Science Foundation to improve engineering education.
- Recipient of twelve (12) research grants from NASA to advance flight computing.