

2023 Summer Online Computer Engineering Courses from Montana State University

CSCI 109 – C Programming for Engineers (3 credits)

Course Description: An introduction to programming using the language C that is meant for beginners that are not computer science majors. The course covers the standard C constructs with special emphasis placed on solving engineering problems in the assignments. All programming is performed through a remote connection to an MSU server. Pre-Req = Not a computer science major.

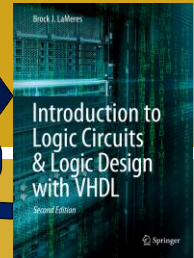
Beginning C

From Beginner to Pro
Sixth Edition
German Gonzalez-Morris
Ivor Horton

Apress

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 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.**



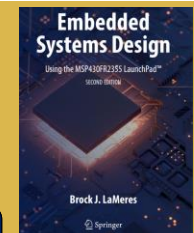
Same book for both classes.

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, preferably in C. **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 (5/15/23 → 8/4/23). You can work ahead if you'd like.
- 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 that is powered from the USB port of a laptop or workstation.
- Lab demos are accomplished by taking a video of your operational circuit. Lab help is via video calls with instructor.



Instructor

- Dr. Brock J. LaMeres, Professor, Electrical & Computer Engineering (lameres@montana.edu)
- Winner of the American Society for Engineering Education's (ASEE) *Distinguished Educator Award* in Electrical & Computer Engineering.
- Author of six (5) textbooks on embedded and digital systems.
- Recipient of seven (8) research grants from the National Science Foundation to improve engineering education and twelve (12) research grants from NASA to advance space computers.
- Director of the Montana Engineering Education Research Center.



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