ELE 1601 Intro

Last updated 6/6/24

These slides introduce ELE1601 and Dr. Johnson

ELE1601 Intro

- Electrical Engineering and Programming
  - Most EEs will do some programming on the job
    - As their project
    - To support their other work
    - To test ideas
    - To test hardware
  - C is the dominant programming language for electronic systems
    - C++ is gaining
    - Very high-level languages like Python have a role also
  - Just about anyone can do coding

The value you bring is understanding the problem and providing optimized solutions

ELE1601 Intro

- EE Programming at MSOE
  - Programming dominant classes
    - Freshman level – ELE1601
      - Fundamentals of C
    - Sophomore level – ELE2610
      - Embedded systems
      - SUMO BOT
    - Junior level – ELE3510 (taken S2 of sophomore year)
      - Digital systems
      - Create your own computer processor
      - Video game or similar project
    - Senior level – ELE4901, ELE4902
      - Senior design
      - Most senior design projects have significant programming content
  - Other classes use many of these concepts with other tools
    - MATLAB, Python

ELE1601 Intro

- Why a special programming class for EEs
  - EEs work on a wide range of topics that span:
    - systems
    - hardware
    - software
  - While “coders” do not need to understand what is happening at the hardware level – EEs do!
  - Instead of just writing c = a + b; and moving on, we will understand what a,b,c are at the hardware level, what happens with the + and = signs, and how that line of code turns into a string of 1s and 0s that the actual computer hardware understands

ELE1601 Intro

- ELE1601 – Introduction to programming for EEs

Course Description

This course introduces concepts that are required to solve engineering problems using structured programming techniques. Students will develop a working knowledge of a high-level programming language, structured programming techniques, and the tools used in developing solutions to solve engineering problems. Emphasis will be placed on understanding the interaction of programs with the supporting hardware (program flow in memory, data usage in memory, pointers, and structures). Homework assignments will include moderate sized, multi-lecture programs. Many assignments will introduce concepts found in Electrical Engineering problems. A course project incorporating the major topics from the class may be included. (prereq: none)

ELE1601 Intro

- ELE1601 – Introduction to programming for EEs

Course Learning Outcomes

Upon successful completion of this course, the student will be able to:

- Design, write, and document algorithmic solutions for engineering problems
- Employ variables, expressions, and operations in C
- Use structured programming techniques in C
- Design and write functions in C
- Explain concepts and terminology related to processor architecture
- Describe the relationship between Software and Hardware
- Use Integrated Development Environment tools for software development and debugging
- Utilize library functions and algorithms
- Utilize basic data structures
- Recognize and employ good software practices

ELE1601 Intro

- You
  - Mostly Freshman
    - First college experience
      - Away from home
      - Away from friends
      - Responsible for all aspects of your life
    - Probably breezed through high school
      - Didn't struggle much
      - Never had to ask many questions
  - Some Sophomores
    - Off track - schedule wise
    - Retakes

NOW
is the time to change your approach to education. There are lots of resources available to help you succeed: RCAS, website documents, your Professors
USE THEM

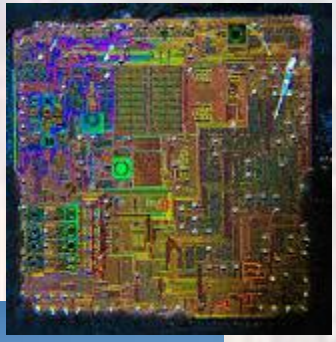
Me: Dr. Johnson

PURDUE UNIVERSITY

NIU

MSOE UNIVERSITY

RCA



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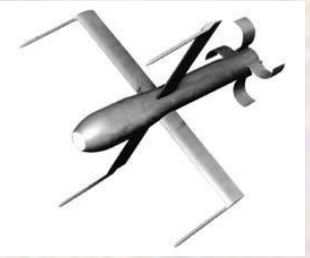


IBM

MOTOROLA

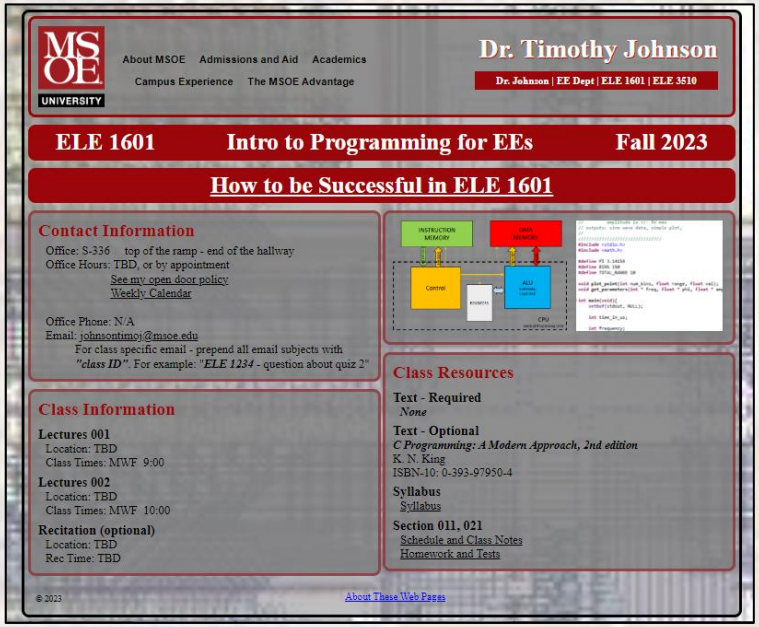
ELE1601 Intro

- Dr. Johnson's Website
  - https://faculty-web.msoe.edu/johnsontimoj/index.html
  - Search johnson and MSOE in your browser

ELE1601 Intro

- ELE 1601 Website
  - https://faculty-web.msoe.edu/johnsontimoj/ELE1601/index-ele1601.html

  - Link in upper right-hand corner of Dr. Johnson's website



ELE1601 Intro

- Syllabus
  - https://faculty-web.msoe.edu/johnsontimoj/ELE1601/files1601/syllabus.pdf
- Class Notes
  - https://faculty-web.msoe.edu/johnsontimoj/ELE1601/index-ele1601-schedule.html
- HW
  - https://faculty-web.msoe.edu/johnsontimoj/ELE1601/index-ele1601-hw.html