

# EGR 112 Applied Programming for Engineers

## Credit by Examination Study Guide

### TOPICS COVERED

- C Data Types
- Assignment and Operators
- I/O with printf and scanf
- Logical Variables and Expressions
- Library Functions (stdio.h and math.h)
- Conditional Statements (if/else and switch/case)
- Repetition Statements (Loops: while, for, and do-while)
- Custom Functions
- Pointers
- File I/O (Reading from and Writing to Files)
- Arrays and Matrices
- Strings

### SOFTWARE

Students will be required to write a program during the exam. CodeBlocks is the software used during the test. It is FREE and available for download at the following link. It is recommended that students taking the test are familiar with the software for creating programs and using the basic debugger tool.

<http://www.codeblocks.org/downloads/binaries>

**Windows Users:** Select **codeblocks-20.03mingw-setup.exe**. There are many other options for Windows users, but they do not include the compiler or debugger.

### RESOURCES

#### *Videos*

C Tutorial Playlist: <https://www.youtube.com/playlist?list=PL0170B6E7DD6D8810>

This is a link to a playlist of C Programming Tutorials, which are done in CodeBlocks. Most of the topics are needed, but you can skip 62-67 and 85-87, which cover the memory functions and recursion.

CodeBlocks Debugger Tutorial: [https://www.youtube.com/watch?v=Jab1qj\\_QR8s](https://www.youtube.com/watch?v=Jab1qj_QR8s)

## Websites

- <https://www.learn-c.org/>
  - Site contains a list of exercises and explanations. It is a good place to start if you are new to C
  - Recommended Topics
    - Learn the Basics (Recommend all topics)
    - Advanced
      - Pointers
      - Function arguments by reference
      - Arrays and Pointers
      - Pointer Arithmetic
  
- <https://www.geeksforgeeks.org/c-programming-language/>
  - One of the more complete references but contains a lot of things that you will not need for EGR112.
  - Recommended Topics
    - Basics
    - Variable Declaration, Definition, and Scope
    - Data Types
    - Input/Output
    - Operators
    - Control Statements
    - Pointers (topics 1-11)
    - File Handling (topics 1-3, 5-6)
  
- <https://www.cprogramming.com/tutorial/c-tutorial.html?inl=pf>
  - Site contains a list of tutorials, the most important of which is File I/O with is not covered by the other references
  - Recommended Topics
    - Introduction and Basic C Features
    - Pointers, Arrays, and Strings
    - File IO and Command Line Arguments
      - C File I/O
      - Type Casting
      - Command line arguments (optional)
  
- <https://www.studytonight.com/c/programs/>
  - Site contains many good code examples