ECE 4713 – Computer Architecture
Textbook: Computer Organization and Design: The Hardware/Software Interface, 2nd/3rd edition
**The following course outline is based on the 3rd edition.

1. **Computer Abstractions and Technology**
   - 1.1 Introduction
   - 1.2 Below your program
   - 1.3 Under the covers
   - 1.4 Historical Perspective and Remarks

2. **Introductions: Language of the Computer**
   - 2.1 Introduction
   - 2.2 Operations of the Computer
   - 2.3 Operands of the Computer Hardware
   - 2.4 Representing Instructions in the Computer
   - 2.5 Logical Operations
   - 2.6 Instructions for Making Decisions
   - 2.7 Supporting Procedures in Computer Hardware
   - 2.8 MIPS Addressing for 32-Bit Immediates and Addresses
   - 2.9 Translating and Starting a Program
   - 2.10 Arrays versus Pointers

3. **Arithmetic for Computers**
   - 3.1 Introduction
   - 3.2 Signed and Unsigned Numbers
   - 3.3 Addition and Subtraction
   - 3.4 Multiplication
   - 3.5 Division
   - 3.6 Floating Point
   - 3.7 Historical Perspective and Further Reading

4. **Assessing and Understanding Performance**
   - 4.1 Introduction
   - 4.2 CPU performance and its Factors
   - 4.3 Evaluating Performance
   - 4.4 Concluding Remarks

5. **The Processor: Datapath and Control**
   - 5.1 Introduction
   - 5.2 Logic Design Convention
   - 5.3 Building a Datapath
   - 5.4 A Simple Implementation Scheme
   - 5.5 A Multicycle Implementation
   - 5.6 Exceptions

6. **Enhancing Performance with Pipelining**
   - 6.1 An Overview of Pipelining
   - 6.2 A Pipeline Datapath
   - 6.3 Pipeline Control
   - 6.4 Data Hazards and Forwarding