

**FRANKLIN UNIVERSITY PROFICIENCY EXAM (FUPE)
STUDY GUIDE**

Course Title: COMP 201: Principles of Computer Organization

Recommended Textbook(s): <https://www.franklin.edu/current-students/academic-resources/textbooks>

Number & Type of Questions: 55 – Short answer, true/false, multiple choice, and an essay

Permitted Materials: No Materials Permitted

Time Limit: 120 minutes (2 hours)

Minimum Passing Score: 75%

Format varies

Outline of the Topics Covered:

Course Description

This course is the first of four courses that holistically explore the structure of computational systems. This course deals with the nature of computer hardware. The course will cover the structure of current computer systems at the level of functional organization, representation of data and programs, the design of the memory hierarchy, and, the design of the I/O system. The course will introduce basic assembly language.

Prerequisites

COMP 111: Introduction to Computer Science and Object-Oriented Programming

Course Outcomes

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

1. Analyze the structure of computer systems.
2. Analyze the relationship between computer system structures and performance.
3. Develop assembly language programming skills.
4. Demonstrate the implementation of higher-level language constructs in assembly language.

Course Content

Week 1 Outcomes (Chapters 1-3)

1. Discuss the role of the computer in information systems, and the components that make up a modern computer system.
2. Describe the general architecture of a computer, and the history of the computer from an architectural perspective.
3. Discuss the concept of a system from an IT perspective.
4. Discuss the fundamental role of systems.
5. Examine the relationship between decimal number system and numbers systems of other bases.

Week 2 Outcomes (Chapters 4-5)

1. Examine how to get different types of data into computer- usable form, and describe the different ways in which data may be represented, stored, and processed.
2. Demonstrate the representation of numbers and texts using various formats.
3. Demonstrate how to perform conversion and arithmetic operations on integer and floating-point formats.

Week 3 Outcomes (Chapter 6-7)

- Describe the Little Man Computer model and explore operations that the computer is capable of performing.
- Describe how instructions are executed in the Little Man Computer.
- Discuss the function of the central processing unit (CPU) and memory of a real computer.
- Discuss the characteristics and features of the instruction sets provided in real computers.

Week 4 Outcomes (Chapters 8-9)

1. Discuss the implementation of the CPU architectural model in modern technology.
2. Discuss memory enhancement, and the concept of multiprocessing.
3. Discuss the Input/Output requirements of some commonly used devices.
4. Discuss programmed Input/Output, the method used in the Little Man Computer, and consider its limitations.
5. Discuss the important issue of interrupts, and explore direct memory access (DMA) and Input/Output (I/O) controllers.

Week 5 Outcomes (Chapters 10-12)

1. Explore the computer display subsystem.
2. Discuss the architecture of a typical Graphics Processing Unit (GPU).
3. Explore laser and inkjet printer technologies, and different user input devices.
4. Discuss the network interface, and the organization of complete, modern, high-performance computer systems.
5. Discuss the various means used to support current I/O and storage requirements.
6. Explore coupling entire computer systems together as an alternative approach.
7. Discuss the basic concepts and infrastructure of network technology.
8. Discuss the importance of networking as a major impact on modern business processes and user access to knowledge, and explore the criteria and requirements that form the basis for networking.
9. Discuss the fundamental concepts of data communication and networking, and explore standards organizations

1/26/2025