

Course discipline/number/title: COMP 1150: Computer Science Concepts**A. CATALOG DESCRIPTION**

1. **Credits:** 3
2. **Hours/Week:** 3
3. **Prerequisites (Course discipline/number):** MATH 0099
4. **Other requirements:** College-level reading
5. **MnTC Goals (if any):** NA

B. COURSE DESCRIPTION: This can serve as a first course for Computer Science majors or a stand-alone course for those interested in learning more about the field. It introduces fundamental computer science concepts, including machine architecture, data representation, operating systems, networking and telecommunications, algorithms, programming languages, software engineering, data organization, and artificial intelligence. Students will learn to implement simple programs using Python or other languages. College-level reading.

C. DATE LAST REVISED (Month, year): December, 2022

D. OUTLINE OF MAJOR CONTENT AREAS:

1. Data storage
2. Machine architecture and data manipulation
3. Operating systems
4. Networking and telecommunications
5. Algorithms
6. Programming languages
7. Software engineering
8. Data structures
9. File structures and database structures
10. Artificial intelligence
11. Computer security
12. Computer programming in Python or other languages

E. LEARNING OUTCOMES (GENERAL): The student will be able to:

1. Apply the rudiments of data storage within a digital computer.
2. Explain the concepts of machine architecture and interaction between processor and memory
3. State the fundamental concepts of operating systems and networks.
4. Apply the concept of an algorithm and its importance within the discipline of computer science.
5. Develop algorithmic solutions and express them using pseudocode and flowcharts.
6. Apply the concept of a high-level programming language to implement algorithms with the language.
7. List the benefits of modular design.
8. State the concept of abstraction and elementary abstract data types.
9. State the concepts of file and database structures.
10. Explain the difficulty of detecting the presence of intelligence to the appearance of intelligence.
11. Explain the concept of computability.
12. Explain the concept of computer security and encryption.
13. Describe the evolution of digital systems and their past, present, and potential future impact on human society.
14. Construct simple programs in Python or other languages

F. LEARNING OUTCOMES (MNTC): NA**G. METHODS FOR EVALUATION OF STUDENT LEARNING:** Methods may include but are not limited to:

1. Tests
2. Lab exercises
3. Assignments
4. Comprehensive final test (written)

- H. **RCTC CORE OUTCOME(S).** This course contributes to meeting the following RCTC Core Outcome(s):
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.
- I. **SPECIAL INFORMATION (if any):** None