STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

CYBR/CITA 152 – COMPUTER LOGIC

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SCHOOL OF SCIENCE, HEALTH AND CRIMINAL JUSTICE
CENTER FOR CRIMINAL JUSTICE, INTELLIGENCE
AND CYBERSECURITY
FALL 2022

A. **TITLE**: Computer Logic

B. **COURSE NUMBER:** CYBR/CITA 152

C. **CREDIT HOURS: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

 # Credit Hours: 3
 # Lecture Hours: 4 **per week**
 # Lab Hours: **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: No

E. **GER CATEGORY:** None

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **COURSE DESCRIPTION:** This course provides a background in number systems, logic gates & logic circuit basics, relational and logical operators, and problem solving skills used in computing. It introduces students to programming concepts and program design through the study of a programming language with a reduced set of instructions.

H. **PRE-REQUISITES/CO-REQUISITES:**

a. Pre-requisite(s): Intermediate Algebra (MATH 106) or permission of instructor
c. Pre- or co-requisite(s): none
b. Co-requisite(s): none

I. **STUDENT LEARNING OUTCOMES:**

By the end of this course, the student will be able to:

Course Student Learning Outcome [SLO]	***PSLO***	***ISLO***
a. Define number systems and apply conversion rules between different number systems	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
b. Describe internal data representation in digital devices; examine operations with binary integers	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
c. Describe the basic logic gates; show their applications in logic circuits using truth tables and Boolean expressions	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
d. Examine general problem-solving methods. Apply problem solving techniques to designing simple programs	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5

e. Experiment with a reduced instruction set programming language to write simple programs. Recognize the relationship between program variables and their memory representation	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
f. Differentiate between arithmetic, relational and logical operators. Apply them in control expressions for loop and decision statements	3. Demonstrate a solid understanding of the methodologies and foundations of IT	5
g. Work individually and in teams on the assigned problems	2. Identify issues and collaborate on solutions concerning IT in an effective and professional manner 4. Apply problem solving and troubleshooting skills	2[CA, PS] 4[T] 5

J. APPLIED LEARNING COMPONENT: Yes__X___ No_____

- Classroom/Lab

K. <u>TEXTS:</u> None

L. **REFERENCES:** Various online resource such as SUNY Canton Library Books24x7 ITPro Book Database

M. **EQUIPMENT:** Computer lab classroom

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

- Exams
- Quizzes
- Assignments

P. **DETAILED COURSE OUTLINE:**

I. Number Systems
   A. How number systems work
   B. The binary number system
   C. The hexadecimal number system
   D. Number systems conversions
      a. From decimal
      b. To decimal
      c. Binary and hexadecimal
   E. Types of numbers
      a. Unsigned integers
      b. Signed integers
      c. Representing numbers in computer memory

II. Introduction to logic gates and logic circuits
   A. Logic gates
   B. Logical/Boolean expressions
   C. Truth tables

Logic circuits and applications of logic circuits

III. Problem solving tools
    A. Problem solving concepts
    B. The input/process/output (IPO) method

IV. Structured programming - Introduction
    A. Program design concepts and tools
    B. Variables and constants
    C. Language structures
        a. I/O statements
        b. Assignment statements
        c. Loops
        d. Decisions
    D. Functions and Procedures
    E. Simple programs
    F. Concepts of integrated development environment (IDE)

Q. <u>LABORATORY OUTLINE</u>: N/A