

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



MASTER SYLLABUS

**COURSE NUMBER – COURSE NAME
MKTX 215 – Digital Fundamentals and Logic Design**

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Canino School of Engineering Technology

Department: Mechatronics Engineering Technology

Semester/Year: Fall/2018

A. **TITLE:** Digital Fundamentals and Logic Design

B. **COURSE NUMBER:** MKTX 215

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

Credit Hours: 3

Lecture Hours: 3 per week

Lab Hours: per week

Other: per week

Course Length: 15 Weeks

D. **WRITING INTENSIVE COURSE:** Yes No

E. **GER CATEGORY:** None: Yes: GER
If course satisfies more than one: GER

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

G. **COURSE DESCRIPTION:**

The topics covered in this course are: number systems, logic operations and codes, logic gates, Boolean algebra and logic simplification, combinational logic analysis, functions of combinational logic, latches, flip-flops, counters and shift registers. Digital to Analog and Analog to Digital converters and Semiconductor memories are also covered.

H. **PRE-REQUISITES:** None Yes If yes, list below:

CITA 152 Computer Logic and ENGS 102, and PHYS 132/136

CO-REQUISITES: None Yes If yes, list below:

I. STUDENT LEARNING OUTCOMES: (see key below)

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

<u>Course Student Learning Outcome</u> <u>[SLO]</u>	<u>Program Student Learning Outcome</u> <u>[PSLO]</u>	<u>GER</u> <i>[If Applicable]</i>	<u>ISLO & SUBSETS</u>	
Perform number systems conversion	a, k		2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
Provide the simplest expression for the output using Karnaugh mapping with the "Can't Happen" conditions	a, k		2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
Design and analyze a synchronous Up/Down digital counter	a, c, k		2-Crit Think 5-Ind, Prof, Disc, Know Skills ISLO	CA IA PS Subsets
Describe the internal operations of a successive-approximation type of analog to digital converter	a, k		2-Crit Think 5-Ind, Prof, Disc, Know Skills 1-Comm Skills	CA PS IA W

KEY	<u>Institutional Student Learning Outcomes [ISLO 1 – 5]</u>
ISLO #	ISLO & Subsets
1	Communication Skills Oral [O], Written [W]
2	Critical Thinking <i>Critical Analysis [CA], Inquiry & Analysis [IA], Problem Solving [PS]</i>
3	Foundational Skills <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	Social Responsibility <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	Industry, Professional, Discipline Specific Knowledge and Skills

J. **APPLIED LEARNING COMPONENT:** Yes No

If YES, select one or more of the following categories:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Classroom/Lab | <input type="checkbox"/> Civic Engagement |
| <input type="checkbox"/> Internship | <input type="checkbox"/> Creative Works/Senior Project |
| <input type="checkbox"/> Clinical Placement | <input type="checkbox"/> Research |
| <input type="checkbox"/> Practicum | <input type="checkbox"/> Entrepreneurship |
| <input type="checkbox"/> Service Learning | (program, class, project) |
| <input type="checkbox"/> Community Service | |

K. **TEXTS:**

Digital Electronics: Principles & Applications, 8th Ed., McGraw-Hill, 2013, ISBN:
9780073373775

L. **REFERENCES:**

N/A

M. **EQUIPMENT:** None Needed:

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

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

- Tests, Quizzes
- Design Projects
- Homework

P. **DETAILED COURSE OUTLINE:**

1. Number Systems, Operations, and Codes
2. Logic Gates
3. Boolean Algebra and Logic Simplification
4. Combination Logic Analysis
5. Functions of Combinational Logic
6. Latches and Flip-Flops
7. Counters
8. Solid State Memories
9. Digital to Analog Converters
10. Analog to Digital Converters

Q. **LABORATORY OUTLINE:** None Yes