

NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT: Electrical and Telecommunications Engineering
Technology

SUBJECT CODE EET2262/ET 482
AND TITLE: Digital Electronics II

COURSE DESCRIPTION: Theory and hands-on experience with microprocessors using assembly language are covered. Emphasis on usage of serial and parallel ports interfacing a digital controller to other devices.

PREREQUISITE: EET2162/ET 382,
PRE- or COREQUISITE: EET2271/ET 451

TEXTBOOK: Microcomputer Theory & Applications
By Rafiqzaman, Publisher Prentice Hall

COURSE OBJECTIVES/ Upon completion of this course the student will possess the ability to:

- COURSE OUTCOMES:**
1. Know the basic components of a microprocessor and minicomputer. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2h, 2k, 2I, 2m)
 2. Write, run, single step and flow chart a source code program (ABET Criteria 2a, 2b, 2c, 2d, 2h, 2I, 2m)
 3. Follow the logic and flow of information in a program. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2h, 2I, 2m)
 4. Use the many facilities (hardware and software) capabilities of the microprocessor. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2h, 2I, 2m)
 5. Use the microprocessor to solve an array of typical practical problems (timing, control and output). (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2I, 2m)
 6. Calculate the delay, and output considerations associated with different synchronous applications (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2f, 2I, 2m)
 7. Set conditions, assumptions and limitations of systems specs and implementation. (ABET Criteria 2a, 2b, 2c, 2d, 2e, 2I, 2m)

TOPICS: Topics include timing, controlling, outputting and displaying considerations. Block and schematic diagrams, of the hardware and software. Memory consideration (ROM, RAM), stack organization, internal wiring of the

microprocessor and busses. Registers, and the general architecture of the microprocessor including the status flags and interrupts are analyzed. Applications include; clock design, moving and flashing messages, counters (up and down) with variable times, synthesizers, routing information, etc.

CLASS HOURS: 2

LAB HOURS: 3

CREDITS: 3

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Description details for laboratory course work:

The student is first introduced to the microprocessor, and the simple model of a minicomputer. The basic components are introduced :such as input /output memory (ROM and RAM), ALU, Operating System, busses, compilers and translators. Software is introduced such as machine and assembly language, and extensively used to design practical applications such as counters (up/down), digital clocks, moving and flashing messages, routes, etc.

GRADING POLICY:

Exam #1 20%
Exam #2 20%
Lab Reports 15%
Term Project 10%
Final Examination 35%

<u>Letter Grade</u>	<u>Numerical Grade Ranges</u>	<u>Quality</u>
A	93-100	4.0
A-	90-92.9	3.7
B+	87-89.9	3.3
B	83-86.9	3.0
B-	80.82.9	2.7
C+	77-79.9	2.3
C	70-76.9	2.0
D	60-69.9	1.0
F	59.9 and below	0.0

WEEK	THEORY	HOMEWORK	LAB
1	1. The main building blocks of a digital computer: CPU, MEM, I/O, 2. CPU functions: ALU, CU. 3. ALU functions: Boolean Logic, addition, complementing. 4. Difference between a μ P, and a computer. 5. Making a digital clock.	Read Chapter 1 Chapter 2, pgs 17-23 Chapter 4, pgs. 136-144 Review binary & hexadecimal number systems (see Appendix E)	Observe how the SDK-85 implements the bldg. Blocks of a digital computer.

