# Imperial Valley College

**COURSE SYLLABUS FOR:**

**DIGITAL LOGIC CIRCUITS (ELTR 240)**

3.0 Credit Units. CRN 20883, Spring 2016

Ricardo Jiménez, Instructor.

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## Course Description:

A continuation of ELTR220 (formerly ELTRN2B.) The advanced study of applied digital electronic systems such as those found in computing, audiovisual, and other electromechanical equipment.

## Lecture & Laboratory Course Goals And Objectives:

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

*1. Understand the theory of the decimal, binary, and hexadecimal codes, which is the essential factor in making digital circuits operate properly.*
*2. Analyze and reduce digital circuits using Boolean Algebra and K Maps.*
*3. Explain the operation of combinatorial circuits in different configurations.*
*4. Apply K Maps in digital electronic circuits using logic gates.*
*5. Compare and contrast the newer digital logic families, such as HT and AC MOS.*
*6. Compare PLDs systems based on GAL architectures*
*7. Apply microcontrollers for instrumentation techniques to various measurement situations.*
*8. Design software programs for PIC microcontrollers using assembler language.*
*9. Design and test programs for PLCs using ladder logic.*
*10. Analyze new devices and systems proposed by authors in journals and trade magazines and appraise the value of these advances for redesign of systems.*

## Class Hours:

Tuesdays (Lab) 6:30 to 8:00 P. M. Room 1400. Thursdays (Lecture 6:00 to 9:10 P.M.), Room 3110.

## Detail Course Schedule by weeks:

1. Number systems and Codes
2. Boolean Algebra and Reduction Techniques
3. Logic Families
4. Decoders, Encoders, and Comparators
5. Multiplexers and Demultiplexers
6. Sequential and Counter Circuits
7. Microprocessor fundamentals and applications
8. Microcontrollers and Assembler Language
9. Architecture of PIC microcontrollers
10. Instruction set for PIC microcontrollers
11. Design of routines for digital application
12. Design of routines for advanced applications
13. Routines for time-period measurements
14. Programmable Logic and Ladder Logic
15. Multisim software for digital applications
16. Final Examination .

## Discussion Of Assignments And Instructional Methods:

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Discussion of assignments and instructional methods will be a combination of all methods of instruction, which can be classified as telling, lecturing, or discussing; showing or demonstrating.

## Statement Of Grading Procedures:

| | |
|---|---|
| 1. Homework, Assignments: | 10% |
| 2. Lab. Experiments and Reports: | 30% |
| 3. Mid-Term Exam: | 30% |
| 4. Final Exam: | 30% |

## Attendance Policy:

A student may be excluded (drop) from further attendance in a class during the semester when absences after the close of registration have exceeded the number of class hours, which the class meets per regular semester week (5 hours 30 minutes = two classes).
A student who is tardy two times may be considered as having been absent one class.
More than Two absences (5 hours 30 minutes) after the close of registration : Drop

## Textbooks:

Digital Electronics Principles and Applications, Third Edition. Tokheim. Mc Graw Hill. ISBN: 0-07-830981-6.
The Forrest Mims Engineer's Notebook (Amazon.com).
Pic Basic Projects. Dogan Ibrahim. Newness, Elesevier.

## Required Materials:

Scientific Calculator CASIO fx-115MS or equivalent.
All other materials with the exception of the textbook and calculator will be supplied.

## Accommodations For Disabilities:

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP & S) office as soon as possible.

## Policy On Plagiarism And Cheating:

If cheating or plagiarism is discovered, a student may be dropped from the course with a grade of "F".

I will be audio recording this class for quality and archiving purposes.