El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Engineering**
COURSE RUBRIC AND NUMBER	**ENGR 2406**
COURSE TITLE	**Introduction to Digital Systems**
COURSE CREDIT HOURS	**4 3 3** **Credits Lec Lab**

I. Catalog Description

Provides an introduction to theory and design of digital logic, circuits and systems including number systems, operations and codes; logic gates; Boolean Algebra and logic simplification; Karnaugh maps; combinational logic; functions of combinational Logic; flip-flops and related devices; counters; shift registers; sequential logic; memory and storage. **(3:3).**

II. Course Objectives

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

A. Apply the number representations used in today's digital systems and their arithmetic properties and conversion techniques.

B. Apply the fundamental concepts of the theorems of Boolean Algebra to minimize AND-OR combinational circuit realizations.

C. Design combinational circuits (adders, code converters, etc.) using basic logic gates.

D. Analyze the design of standard arithmetic circuits that involve signed addition, subtraction, and multiplication using combinational circuits.

E. Analyze and design combinational digital circuits using building blocks such as multiplexers, ROMS, PLAs, PALs, and decoders.

F. Analyze and design synchronous sequential circuits (counters, registers, etc.) by using basic flip-flops and logic gates.

G. Explain the fundamentals of clocking logic and how to avoid the adverse affects of logic hazards.

H. Design and test digital circuits using MSIs, EPROMs, and simple CAD tools.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:
1. Utilize binary and hexadecimal numbers.
2. Solve problems involving digital codes, operations, and number systems.

3. Define, describe, and analyze fundamentals of Boolean algebra and digital logic gates.
4. Describe, analyze, design, and fabricate combinational logic circuits.
5. Describe, analyze, design, and fabricate sequential logic circuits.
6. Describe and explain the fundamentals of memory operations.
7. Apply computer mathematical and/or simulation tools to solve digital systems problems.

Lab Outcomes:
Upon successful completion of this course, students will:

1. Prepare laboratory reports that clearly communicate experimental information in a logical and scientific manner.
2. Conduct basic laboratory experiments involving design and construction of digital circuits and systems.
3. Relate physical observations and measurements involving digital circuits and systems to theoretical principles.
4. Evaluate the accuracy of physical measurements and the potential sources of error in the measurements.
5. Design fundamental experiments involving principles of digital circuits and systems.
6. Identify and apply appropriate sources of information for conducting laboratory experiments involving digital circuits and systems.
7. Apply computer mathematical and/or simulation tools to solve digital systems problems.

IV. Evaluation

A. The grade for this course will be based on performance on quizzes, regular exams, labs, homework, and a comprehensive final exam. Every student is required to take the final exam at the end of the semester.

B. The grade will be assigned based on the scale below:

Score	Grade
90-100	A
80-89	B
70-79	C
60-69	B
Below 60	F

V. Disability Statement (Americans with Disabilities Act [ADA])

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024)

VI. 6 Drop Rule

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.