OFFICIAL COURSE OUTLINE INFORMATION

Students are advised to keep course outlines in personal files for future use.

Shaded headings are subject to change at the discretion of the department and the material will vary
+ see course syllabus available from instructor

FACULTY/DEPARTMENT: PHYSICS

PHYSICS 472       3

COURSE NAME/NUMBER  FORMER COURSE NUMBER  UCFV CREDITS

LABORATORY: DIGITAL ELECTRONICS

COURSE DESCRIPTIVE TITLE

CALANDAR DESCRIPTION:

Physics 472 is the laboratory portion of the digital electronics course, Physics 462. The experiments done in this course are designed to provide the students with the practical experience using, testing, and designing digital logic circuits. The experiments are closely related to the material covered in the classroom. The unifying philosophy of this course is to show how digital logic circuits can be interfaced with many of the common microprocessors.

PREREQUISITES: PHYS 332

COREQUISITES: PRE- or COREQUISITES: PHYS 462

SYNONYMOUS COURSE(S)

(a) Replaces: ____________________________ (Course #)

(b) Cannot take: ____________________________ (Course #)

SERVICE COURSE TO:

DELUXE FOR:

TOTAL HOURS PER TERM: 60

TRAINING DAY-BASED INSTRUCTION

LENGTH OF COURSE:

HOURS PER DAY:

STRUCTURE OF HOURS:

Lectures: 60 Hrs

Seminar:

Laboratory:

Field Experience:

Student Directed Learning:

Other (Specify):

MAXIMUM ENROLLMENT:

EXPECTED FREQUENCY OF COURSE OFFERINGS:

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)

☐ Yes  ☐ No

WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)

☐ Yes  ☐ No

TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:

☐ Yes  ☐ No

AUTHORIZATION SIGNATURES:

Course Designer(s): George McGuire

Chairperson: Art Last (Curriculum Committee)

Department Head: Tim Cooper

Dean: Wayne Welsh, Ph.D.

PAC Approval in Principle Date: PAC Final Approval Date: December 13, 2000
LEARNING OBJECTIVES / GOALS / OUTCOMES / LEARNING OUTCOMES:
The experiments in this course are designed to provide students with:
1. the practical experience in using the basic digital gates;
2. digital design experience and how these circuits perform binary mathematics;
3. practical experience in using IC chips
4. the ability to interface digital circuits with common microprocessors

METHODS:
The experiments used in this course will be closely tied to the material covered in the lectures and to the assigned computer simulations. The laboratory is meant to be an integral part of the classroom portion of the course -- it should not be thought of as a separate part of the course. The experiments are needed to provide the practical experience with the logic circuits studied in the classroom. The unique combination of classroom theory, computer simulation, and practical experience should provide the students with the necessary knowledge and the experience to design and test digital electronic circuits. Experiments on computer interfacing will be assigned. Students after successfully completing this course will have a good understanding of digital electronics, microprocessors, computer architecture, and computer interfacing.

PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):
Credit can be awarded for this course through PLAR (Please check:) □ Yes □ No

METHODS OF OBTAINING PLAR:

TEXTBOOKS, REFERENCES, MATERIALS:
[Textbook selection varies by instructor. An example of texts for this course might be:]
REFERENCES:

SUPPLIES / MATERIALS:

STUDENT EVALUATION:
[An example of student evaluation for this course might be:]
Experiments 25%
Project 25%
Computer Simulations 15%
Final Exam (Physics 362) 35%

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]
EXPERIMENTS
Period 1. Experiment 2 and Experiment 3: Inverter, logic gates, and basic gates
Period 2. Experiment 4: Decoders and Multiplexers
Period 3. Experiment 5, Experiment 6: Adders and Complex Adders
Period 4. Experiment 7: Flip Flops
Period 5. Experiment 8 and Experiment 9: Four Bit register and Counters
Period 6. Experiment 11: A/D and D/A Converters

Period 7. Experiment 12 and Experiment 13: A/D and D/A computer interfaces

Period 8. Experiment 14 and Experiment 15: Random Access Memory

Period 9. Experiment 16 and Experiment 17: Program counters and Output Register

Period 10. Experiment 18 and Experiment 19: Ring Counter

Period 12. Experiment 22, and Experiment 23: ALU, Accumulator

Period 13. Experiment 24 and Experiment 25: Memory

Period 14. Experiment 25: System Interconnections

Period 15. Experiment 26; Assembler programming the 8080 microprocessor