OFFICIAL COURSE OUTLINE INFORMATION

| Shaded headings are subject to change at the discretion of the department and the material will vary. |

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

<table>
<thead>
<tr>
<th>FACULTY/DEPARTMENT:</th>
<th>PHYSICS 472</th>
<th>PHYSICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE NAME/NUMBER</td>
<td>DIGITAL ELECTRONICS LABORATORY</td>
<td></td>
</tr>
<tr>
<td>FORMER COURSE NUMBER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UCFV CREDITS</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

CALENDAR DESCRIPTION:

Physics 472 is the laboratory portion of the digital electronics course, Physics 462. The experiments done in this course are designed to provide students with practical experience using, testing, and designing digital logic circuits. The experiments are closely related to the material covered in the classroom. This course emphasizes design and assembly of circuits with discrete gates, interfacing these circuits directly to microprocessors, and using industrial production tools for practical applications.

PREREQUISITES: PHYS 222

COREQUISITES: PHYS 462

SYNONYMOUS COURSE(S)

(a) Replaces: 

(b) Cannot take: 

SERVICE COURSE TO: 

TOTAL HOURS PER TERM: 45

TRAINING DAY-BASED INSTRUCTION

LENGTH OF COURSE: 

HOURS PER DAY: 

MAXIMUM ENROLLMENT: 24

EXPECTED FREQUENCY OF COURSE OFFERINGS:

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

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

TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:  

AUTHORIZATION SIGNATURES:

Course Designer(s): George McGuire; revised P. Mulhern

Chairperson: Art Last; revised E. Camm (Curriculum Committee)

Department Head: Tim Cooper; revised P. Mulhern

Dean: Wayne Welsh; revised J. Snodgrass

PAC Approval in Principle Date: PAC Final Approval Date: December 14, 2001
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:
Initial oral discussion
Relevant industrial experience

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:]
The final grade will be awarded on the total number of points earned. There are 21 labs, each marked out of 10, a project worth 60 points, and a final exam worth 30 points, for a total maximum of 300 points. Extra projects can be done for additional credit. I will not mark labs that are handed in later than two weeks past the scheduled lab date.
The marks awarded will be based on the number of points awarded.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>279+</td>
</tr>
<tr>
<td>B+</td>
<td>234 - 248</td>
</tr>
<tr>
<td>C+</td>
<td>189 - 203</td>
</tr>
<tr>
<td>P</td>
<td>144 - 158</td>
</tr>
<tr>
<td>A</td>
<td>264 - 278</td>
</tr>
<tr>
<td>B</td>
<td>219 - 233</td>
</tr>
<tr>
<td>C</td>
<td>174 - 189</td>
</tr>
<tr>
<td>N.C.</td>
<td>&lt; 144</td>
</tr>
<tr>
<td>A-</td>
<td>249 - 263</td>
</tr>
<tr>
<td>B-</td>
<td>204 - 218</td>
</tr>
<tr>
<td>C-</td>
<td>159 - 173</td>
</tr>
</tbody>
</table>

COURSE CONTENT:
[Course content varies by instructor. An example of course content might be:]
Sept 8 Introduction; techniques, lab manuals, data analysis
Lab 0: Measurement Techniques

Sept 15 Lab 1: Basic Gates
Lab 2: Combinations of Gates

Sept 22 Lab 3: Diode and Transistor Logic
Lab 4: Simple Op-Amp Amplifier

Sept 29 Lab 5: Loading a Gate
Lab 6: Frequency Response of a Gate

Oct 6 Lab 7: Schmitt Trigger
Lab 8: Mini-Project

Oct 13 Lab 9: Monostable Multivibrators
Lab 10: Astable Multivibrators

Oct 20 Lab 11: RS and D Flip-Flops
Lab 12: JK Flip-Flops

Oct 27 Lab 13: Encoders and Decoders; 7 Segment Display
Lab 14: Multiplexer

Nov 3 Project (Work Day #1)

Nov 10 Lab 15: Counters
Lab 16: Adders

Nov 17 Project (Work Day #2)

Nov 24 Lab 17: A/D test circuit
Lab 18: Computer Interface of A/D

Dec 1 Lab 19: Game Port Access
Lab 20: Printer Port Access

Dec 8 Project (Work Day #3)