PHYS-3444 Syllabus, 2018 Summer I

Description
A study of the behavior of digital logic circuit elements, with an emphasis on applications in research instrumentation, industrial controls, and computer design.

Time and Location

<table>
<thead>
<tr>
<th>Section</th>
<th>Weekdays</th>
<th>Time</th>
<th>Location</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>010/02z</td>
<td>MTWR</td>
<td>13:00 to 16:50</td>
<td>VIN 147</td>
<td>Allen</td>
</tr>
</tbody>
</table>

Instructor Information

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Office</th>
<th>Office Hours</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Charles Allen</td>
<td>VIN 126</td>
<td>MTWR 10-11</td>
<td><a href="mailto:charles.allen@angelo.edu">charles.allen@angelo.edu</a></td>
</tr>
</tbody>
</table>

Student Learning Outcomes
To gain an understanding of basic digital devices and digital circuits which comprise a simple computer system. To explore through laboratory exercises the elements of a digital circuit.

Course Materials
- **Digital Design**, Mano/Ciletti, 4th or 5th edition

There are myriad sources of information about digital electronics online. Three that are at approximately the right level are:

- [allaboutcircuits.com/textbook/digital](http://allaboutcircuits.com/textbook/digital)
  This is the 6th volume in a complete electronics textbook. Although it contains most of the information we will cover, that information is interspersed with other information that we will not cover, making it a bit difficult to follow at times.

  This is an excellent excerpt from a web site aimed at electronics technicians. It is a bit short on explanations at times, but what it does have is very readable.

- [electronics-tutorials.ws](http://electronics-tutorials.ws)
  This is similar to the previous site, but you have to pick out the appropriate modules yourself.

We would like to replace the (expensive) Mano textbook with a less alternative option, but none of the above seem quite right. I would appreciate your comments about how useful you find the above sites compared to the Mano textbook.

Attendance Policy
A signin sheet will be placed on the front desk before the start of each class. You are responsible for signing in before the start of each class. For administrative purposes, any day you do not sign in is counted as an absence. Attendance in and of itself is not part of your course grade, but is occasionally
needed for reports for athletes and scholarship recipients. Signing in for someone else, or signing and leaving, is considered a violation of the Honor Code.

Classroom Conduct
Mobile phones and music players must be put away at all times. Although the use of laptops or tablets in lecture is allowed, it is discouraged as they can be a distraction to other students. Any use of a laptop or tablet must be solely connected with the lecture material: Using it for other purposes will result in the student being asked to leave. No electronic devices may be used for quizzes or exams.

Assessment
Every day without an exam, you will complete at least one worksheet with problems covering the material discussed that day in class. The worksheets may be paper-only problems, but most will involve building a circuit. Some worksheets may be assigned as homework. Your lowest worksheet scores will be dropped before incorporating your worksheet score into your grade. The exact number will depend on how many worksheets the class completes during the semester.

Three midterm exams will be given during class. A comprehensive final exam will be given during the normal final exam period for this lecture period.

Your course grade is determined by:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Score</th>
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<tbody>
<tr>
<td>Worksheets</td>
<td>40%</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>40%</td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>20%</td>
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A Note on Worksheets and Exam Problems
Please do not ruin the learning experience for yourself or others by acquiring notes, worksheet solutions, or exam solutions, or by giving your notes, worksheet solutions, or exam solutions to a future student. It is difficult to make worksheet and exam problems that are both soluble and teach something about a topic. It is simply not possible to come up with completely new problems each time the course is offered.

Accommodations
Persons with disabilities which may warrant academic accommodations must contact the Office of Student Affairs in order to request and to implement academic accommodations.

A student who intends to observe a religious holy day should make that intention known in writing to the instructor at least one week prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within one week after the absence.
Honor Code
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in the Student Handbook.

Daily Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture ID</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Jun 4</td>
<td>2A</td>
<td>Boolean Algebra and Logic Gates</td>
</tr>
<tr>
<td>Jun 5</td>
<td>2B</td>
<td>Gate-Level Minimization</td>
</tr>
<tr>
<td>Jun 6</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>Jun 7</td>
<td>3B</td>
<td></td>
</tr>
<tr>
<td>Jun 11</td>
<td>Q-2-3</td>
<td><strong>quizzes for chapters 2 and 3</strong></td>
</tr>
<tr>
<td>Jun 12</td>
<td>1A</td>
<td>Digital Systems and Binary Numbers</td>
</tr>
<tr>
<td>Jun 13</td>
<td>1B</td>
<td>Combinational Logic</td>
</tr>
<tr>
<td>Jun 14</td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td>Jun 18</td>
<td>4B</td>
<td><strong>quizzes for chapters 1 and 4</strong></td>
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<tr>
<td>Jun 19</td>
<td>4C</td>
<td>Synchronous Sequential Logic</td>
</tr>
<tr>
<td>Jun 20</td>
<td>Q-1-4</td>
<td>Registers and Counters</td>
</tr>
<tr>
<td>Jun 21</td>
<td>5A</td>
<td><strong>quizzes for chapters 5 and 6</strong></td>
</tr>
<tr>
<td>Jun 25</td>
<td>5B</td>
<td>Hamming codes, cleanup</td>
</tr>
<tr>
<td>Jun 26</td>
<td>6A</td>
<td>Comprehensive final exam</td>
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<tr>
<td>Jun 27</td>
<td>6B</td>
<td></td>
</tr>
<tr>
<td>Jun 28</td>
<td>Q-5-6</td>
<td></td>
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<tr>
<td>Jul 2</td>
<td>CLEANUP</td>
<td></td>
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<tr>
<td>Jul 3</td>
<td>FINAL</td>
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