Introduction to Slot Technology

COURSE NUMBER: ET 138B
SEMESTER: Fall, 2010
CREDITS: 3 (3,0,0,0)
PREREQUISITES: NONE
TIMES: Saturday 9:00 AM - 11:50 AM OR Distance Ed on Angel
TEXT: Slot Machine Principles, Diagnostics, & Repair, Jennings, Premium Source
(http://www.custompublisher.com/e-packs/students/smpdr)

WEB: http://sites.csn.edu/jmiller
OFFICE HOURS and E-Mail: Per http://sites.csn.edu/jmiller

COURSE DESCRIPTION:
An introductory course in the design, theory and operation of electronic slot machines. Students will be exposed to the theory and operation of electronic slot machines.

SAFETY:
The electronics technician works with electrical and electronic devices. Test instruments are used to measure the electrical characteristics of these components and their respective circuits. There are many tasks that are involved with the technicians work. Even though these tasks are interesting and challenging, they may involve certain hazards if the technician is careless concerning work habits. It is essential that every student learn and practice the principles of safety.

"The primary safety rule for general shop and the electronics laboratory is: THINK BEFORE YOU ACT - DON'T CLOWN AROUND! Safety is everyone's responsibility. Everyone must cooperate to create the safest possible working conditions."

GENERAL LABORATORY SAFETY PROCEDURES:
- NO SMOKING in the building - Nevada State Law.
- Keep the work bench in a neat and orderly fashion.
- Extraneous items of jewelry should be removed before applying power to a circuit. This includes ALL rings and ALL watches.
- No food or beverages will be allowed on the work station.
- Keep aisles clear. Keep doors and drawers closed after obtaining necessary materials.
- Inspect the work area for safety hazards. Inspect test leads and hook-up wires for cuts, nicks, and exposed wire. Inform the instructor or lab assistant of any hazards that are found.

Your instructor will inform you of additional safety rules that must be adhered to.

ELECTROSTATIC DISCHARGE (ESD):
ESD is a problem all technicians and engineers must be aware of. All bench work will be
accomplished at ESD protected work stations.

**DISABILITIES:**
If you have a documented Disability that may require assistance, you will need to contact the Disability Resource Center (DRC) for coordination of your Academic Accommodations. The DRC is located in Student Services in the 1100 area on the Cheyenne Campus. The phone number is 651-4700.

For those students that would like to earn a little extra cash, stop by the DRC to fill out a job interest card. This office hires students as note takers, proctors, scribes, and research assistants as needed.

**RETENTION:**
Helping you survive and succeed in college is what Retention is all about. Did you know that CSN has a wide array of services and programs to help make your experience at CSN be a successful and rewarding one? The office of Retention can help you get or stay on the right track. We offer:

- E-ALERT! is CSN’s academic early warning system. Professors identify students who need help and/or students who are having trouble in their classes may set up an appointment and receive help.
- **Free Success Planning Appointments** are available. The staff of the Retention Office is committed to helping you succeed at CSN by sitting down with you, assessing your needs and getting you plugged in to CSN’s many resources.

**GRADING SCALE:**
A: 90 - 100%,
B: 80 - 89%,
C: 70 - 79%,
D: 60 - 69%,
F: <60%

**GRADING POLICY:**
Quizzes: 25%, Midterm Exam: 35%, Final Exam: 40%

**Attendance Policy:**
College enrollment assumes maturity and seriousness of purpose. Students are expected to attend each meeting of every course for which they have registered. A student may be administratively dropped from a course for excessive absences. Under no circumstances will an absence, for any reason, excuse the student from completing all works assigned in a given course. After an absence, it is the student’s responsibility to check with the instructor about completion of missed
assignments.

**Personal Communicators:**
Cell phones and pagers must be turned off or put in silent mode during class. Only emergency services personnel (ON CALL) may keep their communicators on.

**Course Content:**
1. Slot Machine Components
2. Machine Styles
3. Block Diagram
4. Modes of Operation
5. RAMs and ROMs
6. Embedded Microprocessors
7. Random Number Generators
8. Dollar Bill Validator (DBV)
9. Coin Comparitors
10. Hoppers
11. Reel Motors and Mechanisms
12. CRT Displays
13. Statistical Recall

**COURSE OUTCOMES:**
At the completion of the course, the student will be able to:
1. Demonstrate a working knowledge of embedded microprocessor systems.
2. Explain the difference between ROM, PROM, EPROM, and RAM
3. Explain the theory of operation of a typical electronic slot machine.
4. Describe the modes of operation of a slot machine.
5. Explain the coin-in assembly.
6. Explain the coin-out assembly.
7. Identify external and internal components.
8. Show proper ESD prevention.
10. Describe the operation of peripheral devices.

**METHODS OF EVALUATION COURSE OUTCOMES:**
1. Examinations
2. Quizzes
<table>
<thead>
<tr>
<th>Week of:</th>
<th>Items covered:</th>
<th>Details of covered items:</th>
<th>Before Next Class Do:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 30 Aug 2010</td>
<td>Page 1-15 of text and handouts linked to the Learning Module 1</td>
<td>Course Introduction, Lab Safety, ESD discharge, and a history of Slot Machines</td>
<td>Read this weeks materials and take Quiz 1 due per course calendar on Angel. Review next week’s covered items.</td>
</tr>
<tr>
<td>2 5 Sep</td>
<td>Page 16-36 of text, handouts linked and videos on Learning Module 2</td>
<td>Types of slot machine games and system components</td>
<td>Take Quiz 2 due per course calendar on Angel and review next week’s covered items.</td>
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<tr>
<td>3 12</td>
<td>Page 37-40 of text, handout linked and video on Learning Module 3</td>
<td>Slot Machine Modes or Operation and Block diagram of a Simple Slot Machine. Lab: Printer removal and paper loading.</td>
<td>Take any quizzes due per course calendar on Angel, next week’s covered items.</td>
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<tr>
<td>4 19</td>
<td>Page 41-52 and 418-461 of text and video on Learning Module 4</td>
<td>Continued modes of operation and block diagram along with microprocessors. Lab: locating processor boards &amp; service/attendant modes</td>
<td>Take Quiz 3 due per course calendar on Angel and review next week’s covered items.</td>
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<td>5 26</td>
<td>Chapters 3, 4, &amp; 5; pages 463-468 &amp; 757-758. Learning Module 5</td>
<td>Types of semiconductor memory used in Slot Machine. Lab/Demo: Key Chipping</td>
<td>Take Quiz 4 due per course calendar on Angel and review next week’s covered items.</td>
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<td>6 3 Oct</td>
<td>Pages 89-96; sections 6.2 and 6.3 starting on page 108. Learning Module 6</td>
<td>Bill acceptors and some less frequently used peripherals – coin acceptors and hoppers</td>
<td>Take Quiz 5 due per course calendar on Angel and review next week’s covered items.</td>
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<td>8 17</td>
<td><strong>MidTerm</strong> Review the linked videos and handouts on the Learning Module 9</td>
<td>Take test on-line Troubleshooting and configurationDemo/Lab on MEI’s Cash Flow Bill Acceptor. Future Logic Session on their GEN 1 and 2 printers.</td>
<td>Finish the Midterm before 11:55 PM on 23 Oct 2010. Review next week’s covered items.</td>
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<td>9</td>
<td>24 Sections 6.4.1 (starting on page 152), 6.4.2, and 7.4 (starting on page 264). Videos linked on Learning Module 10</td>
<td>Reel Stepper Motors, Reel Assemblies, Random Number Generators, virtual/physical reels, and pay tables</td>
<td>Review next week’s covered items.</td>
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<tr>
<td>11</td>
<td>31 Sections 6.5.1, 6.5.2, and pages 213-223. Learning Module 11/12</td>
<td>Random Number Generators, CRTs, LCDs, and touch screens used in Slot Machines.</td>
<td>Take Quiz 6 due per course calendar on Angel and review next week’s covered items.</td>
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<tr>
<td>12</td>
<td>7 Nov Continued Sections 6.5.1, 6.5.2, and pages 213-223. Learning Module 11/12</td>
<td>Continued Random Number Generators, CRTs, LCDs, and touch screens used in Slot Machines.</td>
<td>Take Quiz 7 due per course calendar on Angel. Review next week’s covered items.</td>
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<td>13</td>
<td>14 Linked Nevada State Gaming Regulations extractions, linked videos. Learning Module 13.</td>
<td>Hard/soft meters, maintenance and troubleshooting of Slot Machines. Lab: I/O Troubleshooting</td>
<td>Take Quiz 8 due per course calendar on Angel. Review next week’s covered items.</td>
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<td>15</td>
<td>Dec 5 Linked videos. Learning Module 14.</td>
<td>Resume writing/job interview skills, conversion of Slot Machines themes, and energy saving replacement components.</td>
<td>Study for the Final</td>
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<td>16</td>
<td>Dec 18 Final is due</td>
<td>On-line test</td>
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The above is a tentative schedule updates will be class handouts and the Web version will be updated. Information contained in this syllabus, other than the grading, late assignments, makeup work, and attendance policies, may be subject to change with advance notice, as deemed appropriate by the instructor.