ECE 225 Syllabus
Fall 2014

Instructor: Michael Cubley
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Office Phone: TBA

Office Hours: TR – 1:00 to 4:00 pm or by appointment

Lecture: MWF, 11:00 am – 11:50 am, ENGR A-220
Lab: TBA

Grading/Evaluation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework/Quizzes</td>
<td>20%</td>
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<tr>
<td>Laboratory</td>
<td>20%</td>
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<tr>
<td>Exam I</td>
<td>20%</td>
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<tr>
<td>Exam II</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
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A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: <60

Classroom Policies:

A. Attendance Policy: Attendance should be considered mandatory, will be taken at random times throughout the semester, and will be counted toward the final grade within the homework and quiz scores. Students are responsible for all announcements made in class and/or posted on SIU Online.

B. Late Homework/Missed Exams: Late homework will not be accepted. If an exam is to be missed for a legitimate reason, I should be notified in advance if at all possible and an alternate exam will be given at a designated time.

C. Mobile Technology Policy: Use of electronic devices within the classroom should be avoided. Your phone should be placed on silent when the class or lab begins. During exams or quizzes, all electronics will be placed under the desk or within your bag.

1 Pages 2 and 3 are for ABET
1. **Course number and name:** ECE 225 Introduction to Discrete Logic and Digital Systems
2. **Credits and contact hours:** 4 credits. Three 50-minute sessions per week. Four 4-hour experiments
3. **Course Committee:** D. Kagaris, S. Tragoudas, H. Wang
4. **Textbook(s), title, author, and year:**
   

**References or other supplemental materials:**


5. **Specific course information**
   
   
   2. **Prerequisites or co-requisites:** ECE-222, MATH-150

3. **Indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program:** Required for EE and CpE majors

4. **Professional Components (Credit Hours)**

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6. **Instructional Objectives (with SO’s)**

   The student is expected to have a clear understanding of:

   1. The concepts of propositional calculus, predicate calculus, numbering systems, set theory, summation of sequences, proof by induction, counting techniques, basic graph theory. (a, i)
   2. The use of Boolean algebra and K-maps in the design and optimization of digital circuits with logic gates. (c, e, i)
   3. Design of basic computer arithmetic components (adders, subtractors). (a, e)
   4. Modular design principles. (a, e, i)
   5. Use of multiplexers and decoders in the design of digital circuits (e)
   6. Hardware implementation of digital combinational designs using SSI/MSI parts. (b, c)
   7. Use of computer-aided design tools (XILINX) in the design of digital circuits. (a, b)
   8. Use of programming (in C or C++) for digital logic design tasks. (a, e)

7. **Brief list of topics (class, lab and project) to be covered (with hours)**

   a. Classroom Topic (classes)
      1. Propositional and predicate calculus 4
      2. Number systems and operations 3

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2 Subject to change at the instructor’s discretion
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3. Adders and 2’s complement 3
4. Sets, functions, sums and induction 5
5. Boolean algebra, gates and minimization 9
6. Graphs and basic graph algorithms 6
7. Combinational modules and modular design 6
8. Counting, combinatorics 6

b. Laboratory Projects (Hours)
   1. Hardware implementation of 1-bit adder/subtractor 4
   2. Xilinx simulation of 1-bit adder/subtractor 4
   3. Hardware implementation of 2-bit comparator 4
   4. Hardware implementation of a multifunction unit 4

c. Programming Projects (Hours)
   1. Addition of n-digit numbers in any given base 2
   2. Conversion of sum-of-products to sum-of-minterms 3
   3. Given a list of directed edges, construct the adjacency list 3

8. CAD and Computer Tools Used: Xilinx, C/C++ compiler

9. Assessment of the Contribution to Student Outcomes

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<tr>
<th>Outcome →</th>
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<th>b</th>
<th>c</th>
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<tr>
<td>Assessed →</td>
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University Policies

A. **Incomplete Grades:** An \textit{INC} is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An \textit{INC} must be changed to a completed grade within a time period designated by the instructor but not to exceed one year from the close of the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, not to exceed one year, or graduation, whichever comes first, the incomplete will be converted to a grade of \textit{F} and the grade will be computed in the student’s grade point average. Students should not reregister for courses in which an \textit{INC} has been assigned with the intent of changing the \textit{INC} grade. Re-registration will not prevent the \textit{INC} from being changed to an \textit{F}.

B. **Academic Integrity:** You are expected to submit your original work and adhere to the academic policies as stated in the SIU Student Conduct Code: \url{http://srr.siu.edu} (listed under Additional Links). Any act of academic dishonesty, cheating, or plagiarism in any form, including anonymous internet sources used in student papers, will be reported. These acts are taken seriously and the consequences may range from failing an assignment to expulsion from the university.

C. **SIU Email:** Your SIU email account is an official form of University communication. Your instructor will use SIU email as a primary means of electronic communication with students. Please make sure that you maintain a valid password and acquire the habit of regularly checking your SIU email account for important instructor and University announcements. You may view the official SIU Student Email Policy at: \url{http://policies.siu.edu/policies/email.html}.

D. **Emergency Procedures:** SIU is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with SIU Emergency Response Plan and building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT’s website at \url{http://www.bert.siu.edu/}, the SIU Department of Public Safety’s website \url{www.dps.siu.edu} (disaster dropdown and video, “Shots Fired”), and in the Emergency Response Guideline pamphlet. Know how to respond to each type of emergency. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. \textbf{It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.} The Building Emergency Response Team will provide assistance to your instructor in evacuating the building and sheltering within the facility.
**E. Supplementary Assistance:** SIU is committed to assisting students with disabilities. With the cooperation of SIU’s Disability Support Services (DSS), each student who qualifies for reasonable supplementary assistance has the right to receive it. Students requesting supplementary assistance must first register with DSS in Woody Hall, B-150, 618-453-5738 or 618-453-2293 (TTY), by email DSS@siu.edu, or http://disabilityservices.siu.edu/. Notice: If you have any type of special need(s) or disability for which you require accommodations to promote your learning in class, please contact me as soon as possible. The Office of Disability Support Services (DSS) offers various support services and can help you with special accommodations. You may wish to contact DSS to verify your eligibility and options for accommodations related to your special need(s) or disability.

**Student Services**

**A. Learning Support Services:** The Center for Learning Support Services (CLSS) assists students of all cultures, abilities, backgrounds and identities with enhancing their self-management and interdependent learning skills. Programs offered by CLSS include: group study sessions, math tutoring, academic coaching, early intervention program, and study skills seminars. For additional information please contact CLSS in Woody Hall, Room A-313, 618-453-2925, or www.tutoring.siu.edu.

**B. Writing Center:** The Writing Center offers free tutoring services and assistance with improving writing skills to all SIU undergraduate students and faculty. For center locations and hours, to schedule an appointment online, and to view information regarding the Online Writing Lab (OWL) contact the Writing Center at 618-453-1231 (Morris Library location), 618-453-2927 (Trueblood location), or www.write.siu.edu.

**C. Saluki Cares:** The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. To make a referral to Saluki Cares click, call or send: http://salukicares.siu.edu/index.html; 618-453-5714, or siucares@siu.edu.