Digital Design Syllabus

CS 53305/CS43305

Fall 2018

Meeting Time and Locations: 2:15 – 3:30 pm in MSB-162 on Tues (until 10/9/18) and Thur; and 2:15 – 3:30 pm in MSB-139 on Tues (effective 10/16/18)

Instructor: Dr. Augustine Samba, asamba@kent.edu
Office: MSB-272
Phone: 330-672-9869
Office Hours: 10:45 – 12:30 PM on Tues & Thur
Other times by appointment
Grader: Deepshikha Bhati, dbhati@kent.edu

Course Description

This course describes techniques in the design of digital systems. Topics covered include combinational and sequential logic, gate-level minimization, registers and counters, memory and programmable logic, hardware description languages, digital communication including serial and parallel and synchronous and asynchronous methods. This is a 3 credit-hour course.

Prerequisites: Minimum C or better in CS 23001

Course Learning Outcomes
At the end of this course, students should understand the concepts and principles associated with:
- Design task of finding an optimal gate-level implementation of Boolean functions describing a digital circuit
- Combinational logic circuits: decoder, encoder, multiplexer and three-state gate
- Writing programs for gate-level Verilog model of a fundamental logic circuit
- Writing programs for hierarchical hardware description language (HDL) model of a combinational logic circuit
- Writing programs for simple testbench
- Distinguish a sequential circuit from a combinational circuit
- Develop HDL model of a machine given the FSM

Topics to be Covered

3  Boolean Algebra and Logic Gates
3  Gate Level Minimization
3  Combinational Logic
3  Synchronous Sequential Logic
3  Registers and Counters
Course Materials

The required textbook:

Assessment of Learning Outcomes

- **Homework**
  There will be two written assignments and three programming lab assignments for each course.

- **Project**
  CS59995 students are required to work in groups of two to four on an approved project on Digital Design

- **Examinations**
  There will be a midterm and a final examination, each designed to allow students to demonstrate mastery of the course concepts. The Final Exam is scheduled on Thursday, December 13, 2018 from 12:45 – 3:00 PM in MSB-162

Grading Information

<table>
<thead>
<tr>
<th>Exercises</th>
<th>CS43305</th>
<th>CS53305</th>
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<tbody>
<tr>
<td>Homework (Written)</td>
<td>30%</td>
<td>20%</td>
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<tr>
<td>Homework (Programming)</td>
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<tr>
<td>Project</td>
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<td>Midterm Exam</td>
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<td>Final Exam</td>
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**Grading Guidelines**

Grades will be assigned based on the range of percentages indicated below:

<table>
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<tr>
<th>Grade Level</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93% &lt; score &lt;= 100%</td>
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<tr>
<td>A-</td>
<td>90% &lt; score &lt;= 93</td>
</tr>
<tr>
<td>B+</td>
<td>86% &lt; score &lt; 90%</td>
</tr>
<tr>
<td>B</td>
<td>83% &lt; score &lt; 86%</td>
</tr>
<tr>
<td>B-</td>
<td>80% &lt; score &lt; 83%</td>
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<tr>
<td>D</td>
<td>63% &lt; score &lt; 66%</td>
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<tr>
<td>F</td>
<td>score &lt; 63%</td>
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**Academic Honesty**

Cheating means to misrepresent the source, nature, or other conditions of your academic work (e.g., tests, papers, projects, assignments) so as to get underserved credit. The use of the intellectual property of others without giving them appropriate credit is a serious academic offense. The University considers cheating and plagiarism very serious offenses and provides for sanctions up to and including dismissal from the University or revocation of a degree. The University’s administrative policy and procedures regarding student cheating and plagiarism can be found in the University Policy Register, 3-01.8. By submitting any material in this (or any other class) you are certifying that it is free of plagiarism. If you would like more information on plagiarism, what it is, and how to avoid it, please visit the following site:
http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml

**Withdrawal Deadline**

Withdrawal from any or all courses is permitted through the 10th week of the semester.

**Students with Disabilities**

University policy 3342-3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through the Student Accessibility Services (contact 330-672-3391 or visit www.kent.edu/sas for more information on registration procedures).

**Proper Enrollment**

Students have responsibility to ensure they are properly enrolled in classes. You are advised to review your official class schedule (using Student Tools in FlashLine) during the first two weeks of the semester to ensure you are properly enrolled in this class and section. Should you find an error in your class schedule, you have until cut-off date provided by the Graduate Office to correct the error. If registration errors are not corrected by the cut-off date and you continue to attend and participate in classes for which you are not officially enrolled, you are advised now that you will not receive a grade at the conclusion of the semester for any class in which you are not properly registered.

**Additional Information**

All items in this syllabus are subject to change at the discretion of the instructor and/or the office of academic affairs.

- **LIBRARY SUPPORT**

Extensive library resources and services are available online, 24 hours a day; seven days a week at http://www.library.kent.edu/page/10599.
Information and Library Services provides research assistance in creating search strategies, selecting relevant databases, and evaluating and citing resources in a variety of formats via its Ask a Librarian service:

http://www.library.kent.edu/page/13977

http://www.library.kent.edu/search_start.php?pageId=5020

Bursar’s Office Home Page - http://www.kent.edu/bursar/index.cfm