COURSE SYLLABUS
Southern Illinois University

CS 215: Discrete Mathematics - Fall 2017

Contact Information:

Instructor: Dr. Shiva Houshmand  Email: shiva [at] cs.siu.edu
Office: EGR A0407D
Office hours: Tue and Thur 3:15-4:30 PM
           Wed 8-11:30 AM or by appointments.

TA: Ajay Mandapaka  Email: ajay.mandapaka [at] siu.edu
Office hours: Mon 1-3 PM  EGR A409 (tutoring center)
              Mon 6-8 PM  EGR A410
              Wed 1-3 PM  EGR A409 (tutoring center)

Class Schedule:

| Lectures | Tue & Thurs | 11 am – 12:50 pm | Neckers 218 |

Course Description:
Introduction to ideas and techniques relevant to the study of computer science. Topics include: Propositions, logic and truth tables, Boolean algebra, sets, sequences, summations, proofs, functions, relations, matrix operations, combinations, permutations, counting techniques, number theory, discrete probability, algorithmic complexity, recurrence relations.

Required Book:
1. Sign-up at learn.zybooks.com with your siu.edu email address
2. Enter zyBook code: SIUCS215HoushmandFall2017
3. Subscribe (The book costs $40)
4. Contact me as soon as possible with any issue regarding the book.

Optional Textbook:

Course Material:
Online course webpage available through SIU online (D2L) (http://online.siu.edu). All Lectures, Homework, and Announcements will be accessible through SIU online system. Please make sure that you all have access to the course material. It is your responsibility to check the announcements frequently to follow what is new about the course. We will be using the online interactive zyBook as our main book. There will be reading assignments and exercises that you will need to complete in the book. I will be able to see which sections you have read and completed and will be able to get a complete report from the system. If you are having any problem with the system, or any issues with
accessing a computer or Internet to complete your assignments, talk to me as soon as possible to find a solution.

**Grading:**

1. Your overall grade will be based on your exams (two midterms and one final), your homework (approximately ten), quizzes, participation and zyBook activities.

2. The midterm dates will be announced in class and course calendar. The final exam will be during the assigned time slot (Thursday Dec 14, 2017 at 10:15 AM – 12:15 PM). Tests may include material covered in earlier tests.

   - (30%) Midterms: 2 x 15%
   - (25%) Final exam
   - (30%) Homework and Quizzes: The homework assignments are due at the beginning of class on the due date. Please start working on your problem sets as soon as they are announced to have sufficient time to complete them. There can be pop-up quizzes in the class regarding the topic covered in the previous classes. This requires you to be prepared on the covered topics by reading the book and lectures and doing as many practice exercises as possible.
   - (10%) zyBook activities. You will need to complete the Participation Activities and the Challenge Activities in the zyBooks. The exercises at the end of each section are optional for your own practice. The sections from zyBooks are shown in the Schedule section of SIUonline website for each week. I will produce a report from zyBooks a week after the section is taught in class, which shows the progress you have made toward the book and will grade accordingly.
   - (5%) Attendance, and Class/Discussion Board participation: Due to the nature of the course and the frequency of assignments, attendance is mandatory. You should feel free to ask questions during lectures and provide correct and insightful responses to questions both in class and on discussion board. A general discussion board link has been set up in SIU online to help you during your studies. Feel free to create a new thread or topic to ask questions about lectures or problems (but do not post solutions to homework!). You should also try to help your fellow classmates by providing ideas to their given queries.

**General Policies:**

- Make-ups and incompletes will be given only in exceptional circumstances.

- **It is very important to complete all problem sets and do them by yourself. You are not to work in groups.** You may talk to me or the TA, discuss it
generally on discussion boards (without explicitly giving the answer) or talk to other students to help you get started on a problem, but you must do the problems individually.

- Cheating (including misrepresenting work from others as your own) is a serious offense! All students should read the Departmental Policies on Academic Dishonesty, which is applicable in all your academic work including in this course.

**Study Sessions:** This class is conducted with lecture and problem solving sections. Approximately one hour per week will be devoted to problem solving sessions led by the TA. These sessions are a great opportunity to explore material in a more in-depth manner.

**Late Policy:** Homework must be submitted at the beginning of class by the due time unless you have prior approval of the instructor. If you are unable to attend the class, submit your work by email before the class. Late submissions are not accepted unless you have talked to me prior to the due date.

**Time Management:** This course is an extremely time-demanding course. Please plan your time wisely, and start work on the assignments as soon as they are available.

**Tentative Course Topics:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>Propositional logic, logic operators, truth tables, propositional equivalences, compound propositions, bits, bit strings</td>
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<tr>
<td>2</td>
<td>Boolean functions, Representing Boolean functions, logic gates, Combinatorial circuits, Simplification of Boolean functions, K-Maps Predicate Logic</td>
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<td>3</td>
<td>Predicates and Quantifiers</td>
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<td>4</td>
<td>Methods of Proof, Strategies</td>
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<td>5, 6</td>
<td>Sets, Set Operations, Functions</td>
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<td>7, 8</td>
<td>Functions, Sequences, Summations, Matrices, Mathematical Induction</td>
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<td>9, 10</td>
<td>Algorithms, Growth of functions, Complexity of algorithms</td>
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<td>11, 12</td>
<td>Integers and Division, Applications of Number Theory, Integers and Algorithms, Cryptography</td>
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<td>13</td>
<td>The basics of counting, Pigeonhole principle, Permutations and combinations, Binomial coefficients</td>
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<td>14</td>
<td>Discrete probability, Probability theory</td>
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<tr>
<td>15</td>
<td>Trees, Finite State machines, Catch-up, Review for exam</td>
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**Final Exam:** Dec 14, 2017 10:15 – 12:15
IMPORTANT DATES *
Semester Classes Begin ........................................... 08/22/2017
Last day to add full-term course (without Dean’s signature): 08/27/2017
Last day to withdraw from the University with a full refund: 09/01/2017
Last day to drop a full-term course for a credit/refund: 09/03/2017
Last day to drop a full-term course (W grade, no refund): 10/29/2017
Final examinations: .................................................. 12/11–12/15/2017

Note: Please verify the above dates with the Registrar calendar and find more detailed information on deadlines at http://registrar.siu.edu/calendars. For add/drop dates that apply to shorter-than-full-term courses, please look at the Schedule of Classes search results at http://registrar.siu.edu/schedclass/index.php

SUMMER SEMESTER HOLIDAYS
Labor Day Holiday 09/04/2017
Fall Break 10/07—10/10/2017
Thanksgiving Break: 11/22—11/26/2017

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session must officially withdraw from that registration in a timely manner to avoid being charged as well as receiving a failing grade for those classes. An official withdrawal must be initiated by the student, or on behalf of the student through the academic unit, and be processed by the Registrar’s office. For the proper procedures to follow when dropping classes and when withdrawing from SIU visit: http://registrar.siu.edu/students/withdrawal.php

INCOMPLETE POLICY ~ Undergraduate only
An INC grade may be assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments for the course. An INC must be changed to a completed grade within one full semester (undergraduates), and one full year (graduate students), from the close of the term in which the course was taken or graduation, whichever occurs first. Should the student fail to complete the remaining course requirements within the time period designated, the incomplete will be converted to a grade of F and such grade will be computed in the student’s grade point average. For more information visit: http://registrar.siu.edu/grades/incomplete.php

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit more than once. For students receiving a letter grade of A, B, C, D, or F, the course repetition must occur at Southern Illinois University Carbondale. Effective for courses taken Summer 2013 or later, only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. This policy will be applied to all transferrable credit in that only the last grade will be used to calculate grade point average. Only those courses taken at the same institution are considered repeats under this policy. See full policy at http://registrar.siu.edu/students/repeatclasses.php

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please refer to the graduate catalog at http://gradschool.siu.edu/about-us/grad-catalog/

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must contact DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
See the Student Conduct Code http://srr.siu.edu/student-conduct-code/

MORRIS LIBRARY HOURS: http://libguides.lib.siu.edu/hours

ADVISEMENT: http://advisement.siu.edu/

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

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, and students, 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. For information on Saluki Cares: call(618) 453-1492, email siucares@siu.edu, or http://salukicares.siu.edu/

SIU’S EARLY WARNING INTERVENTION PROGRAM (EWIP)
Students enrolled in courses participating in SIU’s Early Warning Intervention Program might be contacted by University staff during a semester. More information can be found at the Core Curriculum’s Overview webpage: http://corecurriculum.siu.edu/program-overview/

EMERGENCY PROCEDURES
We ask that you become familiar with Emergency Preparedness at SIU. Emergency response information is available on posters in buildings on campus, on the Emergency Preparedness @ SIU website, and though text and email alerts. To register for alerts visit: http://emergency.siu.edu/

STUDENT MULTICULTURAL RESOURCE CENTER
The Student Multicultural Resource Center serves as a catalyst for inclusion, diversity and innovation. As the Center continues its work, we are here to ensure that you think, grow and succeed. We encourage you to stop by the Center, located in Grinnell Commons, to see the resources available and discover ways you can get involved on the campus. Visit us at http://inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website: Tutoring: http://tutoring.siu.edu/ Math Labs http://math.siu.edu/courses/course-help.php

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit: http://write.siu.edu/

DIVERSITY
Southern Illinois University Carbondale’s goal is to provide a welcoming campus where all of our students, faculty and staff can study and work in a respectful, positive environment free from racism and intimidation. For more information visit: http://diversity.siu.edu/

MILITARY COMMUNITY
There are complexities of being a member of the military community and also a student, and military and veteran related developments can complicate academic life. If you are a member of the military community and in need of accommodations please visit Veterans Services at http://veterans.siu.edu/

SIU ONLINE: https://online.siu.edu/

Need help with an issue? Please visit SALUKI SOLUTION FINDER at http://solutionfinder.siu.edu/

Office of the Provost http://pvcaa.siu.edu/ Fall 2017