Contact Information:

Instructor: Shiva Houshmand  
Office: Faner 2138  
Office hours: Tue 11 AM-12 PM and Wed 10 AM-12 PM or by appointments.  
Email: shiva [at] cs.siu.edu

TA: Laleh Asadzadeh  
Office: Hands-on lab Faner 2131  
Office hours: Thurs 11 AM – 2 PM, or by appointments  
Email: asadzadeh [at] siu.edu

TA: Sharath Chandra Chitmalla  
Office: Hands-on lab Faner 2131  
Office hours: Mon, Wed, Fri 1 PM – 2 PM, or by appointments  
Email: sharathchandra [at] siu.edu

Class Schedule:

| Lectures | Tue & Thurs | 9 am – 10:50 am | Morris 722 |

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 Text:


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.
Grading:

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

2. The midterm dates will be announced in class and course calendar. The final exam will be during the assigned time slot (Thursday May 12, 2016 at 8:00 AM – 10:00 AM). Tests may include material covered in earlier tests.

   - (40%) Midterms: 2 x 20%
   - (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.
   - (5%) Attendance, and Class/Discussion Board participation: 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 incompletedes 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.

**Tentative Course Topics:**

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<thead>
<tr>
<th>Week</th>
<th>Section</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>1.1-3</td>
<td>Propositional logic, logic operators, truth tables, propositional equivalences, compound propositions, bits, bit strings</td>
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<td>2</td>
<td>12.1-4</td>
<td>Boolean functions, Representing Boolean functions, logic gates, Combinatorial circuits, Simplification of Boolean functions, K-Maps Predicate Logic</td>
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<tr>
<td>3</td>
<td>1.4-5</td>
<td>Predicates and Quantifiers</td>
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<td>4</td>
<td>1.6-7</td>
<td>Methods of Proof, Strategies</td>
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<tr>
<td>5, 6</td>
<td>2.1-3</td>
<td>Sets, Set Operations, Functions, Review, Exam 1</td>
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<tr>
<td>7,8</td>
<td>2.4-6</td>
<td>Functions, Sequences, Summations, Matrices</td>
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<tr>
<td>9</td>
<td>5.1-2</td>
<td>Mathematical Induction, Proofs by induction</td>
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<tr>
<td>10, 11</td>
<td>3.1-3, 8.1</td>
<td>Algorithms, Growth of functions, Complexity of algorithms</td>
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<tr>
<td>12</td>
<td>4.1-4, 4.6</td>
<td>Integers and Division, Applications of Number Theory, Integers and Algorithms, Cryptography</td>
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<td>13</td>
<td>6.1-5</td>
<td>The basics of counting, Pigeonhole principle, Permutations and combinations, Binomial coefficients</td>
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<td>14</td>
<td>7.1-3</td>
<td>Discrete probability, Probability theory</td>
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<tr>
<td>15</td>
<td>11.1-3, 13.2</td>
<td>Trees, Finite State machines, Catch-up, Review for exam</td>
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**Final Exam:** May 12, 2016 8:00 – 10:00
IMPORTANT DATES *
Semester Class Begins: .......................................................01/19/2016
Last day to add a class (without instructor permission): ...............01/24/2016
Last day to withdraw completely and receive a 100% refund: ............01/31/2016
Last day to drop a course using SalukiNet: ................................04/03/2016
Last day to file diploma application (for name to appear in Commencement program): .........................................................02/12/2016
Final examinations: ........................................................................05/09-05/13/2016

Note: For outreach, internet, and short course drop/add dates, visit Registrar’s Academic webpage http://registrar.siu.edu/

SPRING SEMESTER HOLIDAYS
Martin Luther King, Jr.’s Birthday Holiday 01/18/2016
Spring Break 03/12—03/20/2016

WITHDRAWAL POLICY ~ Undergraduate only
Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit http://registrar.siu.edu/catalog/undergraduatecatalog.html

INCOMPLETE POLICY ~ Undergraduate only
An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following 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, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. For more information please visit: http://registrar.siu.edu/grades/incomplete.html

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at http://registrar.siu.edu/catalog/undergraduatecatalog.html

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

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 come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code  http://srr.siu.edu/student_conduct_code/

MORRIS LIBRARY HOURS
http://www.lib.siu.edu/about

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, 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. For Information on Saluki Cares: (618) 453-5714, or siucares@siu.edu, http://salukicares.siu.edu/index.html

EMERGENCY PROCEDURES
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) programs. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website at www.dps.siu.edu (disaster drop down) and the Emergency Response Guideline pamphlet. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.

INCLUSIVE EXCELLENCE
SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well an essential preparation for any career. For more information please visit: http://www.inclusivexcellence.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/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: http://diversity.siu.edu/

Additional Resources Available:

SALUKINET: https://salukinet.siu.edu/cp/home/displaylogin

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

PROVOST & VICE CHANCELLOR: http://pvcaa.siu.edu/

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