Syllabus for CS 303 Discrete Structures
General Information

Contact Your Instructor

Name: *Robert Sternfeld*
Email: *robert.sternfeld@indstate.edu*
Phone: *812-237-2137*
Office: Root Hall, *A-140F*

Lecture, Exam, Office Hours

Lecture: *TTh 8:00-9:15*
Room: *017 Root Hall*
CRN: *12126*
Credit Hours: *3*

Exam: *May 5 8:00* Also check the Office of the Registrar's exam schedule

Instructor Office Hours: *TTh 9:30-10:30; W 9:00-9:50;*
Also by appointment
I will usually be available in the mornings after class and 2-3 Wednesdays

GA Tutoring: See http://cs.indstate.edu/info/labs.html

Prerequisites

Prerequisites: A grade of C or better in CS 201

Recommended Texts

recommended text: Discrete Structures, Logic, and Computability, 4th Edition
by James L. Hein

recommended text: Discrete Mathematics and its Applications with Combinatorics and Graph Theory, 7th Edition
by Kenneth H. Rosen

Course Announcements

Announcements regarding the course will be made both during class and via email to your @sycamores.indstate.edu email address. You should regularly check this email account or have it forwarded to an account that you check regularly.

Classroom conduct

You may not use cell phones, iPods/music players, etc. during class. You should be civil and respectful to both the instructor and your classmates, and you should arrive to class a few minutes before the scheduled lecture so you are ready for lecture to begin on time. You may use your computer during class if you are using it to follow along with the examples that are being discussed. You may not check email, facebook, work on other courses, etc. during class.

Course Description

The official description of this course from the catalog is:

Mathematics content that is foundational to and useful for computer science. Topics include axioms and proofs, induction, graph theory, probability, finite automata, regular expressions, Turing machines, and the Church-Turing thesis.

Course Outline

- **Proof:** proof tables, existential quantification, universal quantification, proposition, propositional function, De Morgan's law
- **Sets**: sets, intersection, union, complement, Venn diagram, inclusion-exclusion principle
- **Proof techniques:** direct proof, contrapositive proof, proof by contradiction, weak induction, strong induction
- **Counting:** permutations, combinations, binomial theorem, identities (e.g. Pascal's identity) pigeonhole principle and applications, double counting
- **Discrete probability:** sample space, events experiments, outcomes, distributions, conditional probability, random variables, independence, expectation, linearity of expectation
- **Automata:** Deterministic, nondeterministic, regular languages, pushdown automata, context-free languages, Turing machines
- **Graph theory:** basic graph terminology, undirected graphs, bipartite graphs, degree of a vertex, handshaking theorem, matchings.

Learning Outcomes

Being capable of constructing rigorous proofs: Direct proofs, proofs by contradiction, proofs by induction, etc.

Expected Amount of Work

If you take this class seriously and get what you should out of it, some weeks you will likely be spending around ***8* hours/week** or more on the class. The students who get A's in their CS courses and have an easy time finding jobs do spend this much time on this course. Not everyone would need to spend this much time and not all weeks will be the same, but you should plan on putting in whatever time it takes.

Note - your classes should be more important than your part-time job.

Grading and Assignments

The students of this course have the following responsibilities: read assigned readings before lecture, attend lecture, complete homework assignments, take in-class quizzes, take exams, and complete a project.

Category	**Weight**
Homework	10
Quizzes	20
Tests	50
Final	20

Course Grade is computed in two steps. First, a percent grade in each of the 4 categories is computed. The Course Grade is the weighted average of the percent grades. 90 or above is an A. Below 90, but 80 or above is a B. And so on for C's and D's. Below 60 is F.

CS Course Policies

Note that this course follows all standard CS course policies. In particular check the CS course policies related to - cheating/plagiarism, attendance, missing exams. See http://cs.indstate.edu/info/policies.html for details.

Late Homeworks

Do not hand in late homework.
Start Homeworks Early

We suggest attempting a homework assignment the day it is given, or the day after, so that if you have a problem you can ask early. If you continue to have problems in trying to complete the assignment, you will have time to ask again. Many of the homework assignments require thought and problem solving, which takes “time on the calendar” not just “time on the clock”. By that we mean that spending two hours on 3 consecutive days may be more productive than trying to spend 6 hours at once on the assignment.

Blackboard

The course has a blackboard site. Click here to go to blackboard. You should see this course listed under your courses for the current term. The blackboard site is only used for giving you your grades (go to the course in blackboard, then click “My Tools”, and then “My Grades”). All course content, schedule, etc. is kept in this google doc (which you are currently viewing).

For online courses - if any parts of blackboard are used for the course, mention it here if appropriate.

Academic Integrity

Follow the standard CS course policies in terms of what is and is not allowed on assignments: http://cs.indstate.edu/info/policies.html

Please ask the instructor if you have doubts about what is considered cheating in this course.

Special Needs / Student Disabilities

Standard language included in the syllabi for ISU courses.

Indiana State University recognizes that students with disabilities may have special needs that must be met to give them equal access to college programs and facilities. If you need course adaptations or accommodations because of a disability, please contact us as soon as possible in a confidential setting either after class or in my office. All conversations regarding your disability will be kept in strict confidence. Indiana State University's Student Support Services (SSS) office coordinates services for students with disabilities: documentation of a disability needs to be on file in that office before any accommodations can be provided. Student Support Services is located on the lower level of Normal Hall in the Center for Student Success and can

be contacted at 812-237-2700, or you can visit the ISU website under A-Z, Disability Student Services and submit a Contact Form. Appointments to discuss accommodations with SSS staff members are encouraged.

Once a faculty member is notified by Student Support Services that a student is qualified to receive academic accommodations, a faculty member is obligated to provide or allow a reasonable classroom accommodation under ADA.

Disclosures Regarding Sexual Misconduct

Standard language included in the syllabi for ISU courses.

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report or the Title IX Coordinator, visit the Equal Opportunity and Title IX website: http://www.indstate.edu/equalopportunity-titleix/titleix.

The ISU Student Counseling Center – HMSU 7th Floor | 812-237-3939 | www.indstate.edu/cns
The ISU Victim Advocate – Trista Gibbons, trista.gibbons@indstate.edu
HMSU 7th Floor | 812-237-3939 (office) | 812-230-3803 (cell)
Campus Ministries - United Campus Ministries | 812-232-0186
http://www2.indstate.edu/sao/campusinistries.htm
www.unitedcampusministries.org | ucmminister2@gmail.com
321 N 7th St., Terre Haute, IN 47807

For more information on your rights and available resources
http://www.indstate.edu/equalopportunity-titleix/titleix