CS 182: Foundations of Computer Science

Course Web Page:	Blackboard Learn
Lecture:	Mon, Wed, and Fri 8:30am-9:20am
	at Electrical Engineering Bldg 129
Instructors:	Prof. Ananth Grama and Prof. Petros Drineas
Office hours and locations:	see Blackboard Learn
Instructors' e-mails:	see Blackboard Learn
Required textbook:	K. Rosen,
	Discrete Mathematics and Its Applications,
	McGraw-Hill Science/Engineering/Math; latest edition.

Approximate Course Outline

(See the course web page for a detailed, lecture-by-lecture, course outline.)

- Basic Logic

- The Language of Mathematics

- Proof Techniques including Mathematical Induction

- Algorithms

- Basic Number Theory (and Number Representation)

- Basic Counting

- Discrete Probability

- Trees

- Boolean algebra and combinatorial circuits

- Finite state machines

- Context-free grammars and languages

Prerequisites and learning objectives

CS 180 and Math 161 (or equivalent). The main learning objectives are understanding and knowing how to apply fundamental discrete mathematical tools, facts, and reasoning relevant to computer science.

Requirements, Grading, and Expectations

The course work consists of homeworks, one midterm, and the final. The course grade is based on:

- **<u>Homeworks</u> (30%)**

  - There will be nine or ten homeworks. Homeworks must be submitted via Gradescope (absolutely no alternatives) before the stated deadline.

- Students are expected to type their assignments, using Latex, MS Word, or any editor of comparable quality. Submitted files should be Acrobat (.pdf) files (no .docx, .rtf, .txt, .html, etc.[1]). Figures, diagrams, and more complex mathematical notations can be handwritten and included into the final .pdf as an image.
- After submitting your homework, download the file and open it to ensure a valid file was uploaded.
- **No late assignments will be accepted. No exceptions.**

- **<u>Midterm</u> (30%)**

  - There will be one in-class midterm, accounting for 30% of the overall course grade. The midterm is closed book (no books, no laptops, no cell phones, no calculators, etc.).
  - You are allowed one double-sided A4 page of notes for the midterm. The material to be covered by the midterm will be announced via Blackboard.
  - The midterm date will be announced via Blackboard.

- **<u>Final</u> (40%)**

  - There will be a **cumulative** final exam (e.g., the final exam will cover material from the whole course). The date of the final exam is set by the university and it could be scheduled for the last day of the exam week. *Do not* make travel plans before the final exam schedule is released.
  - The final is closed book (no books, no laptops, no cell phones, no calculators, etc.). You are allowed **two** double-sided A4 page of notes for the final.
  - Taking the final exam is a requirement for passing the course. Date, time, and location will be announced at Blackboard learn.

Other

- **PSO (Practice/Study/Observation):** The goal of the PSOs is to practice material covered in class. All PSO sessions will cover the same material and the focus is on students solving additional problems. PSOs will be run by undergraduate TAs, under the supervision of the graduate TAs and the head TA. Attendance is strongly encouraged.

- **Channels of Communication:** Your first point of contact for questions related to the technical content of the lectures and homework problems should be the TAs (graduate or undergraduate). While you should contact the instructor in case of an emergency (e.g., if you are unable to make the midterm and have a valid medical excuse by the appropriate campus authorities), questions on content and homework should not go to the instructor as responses will not be happen promptly. Effort will be made to respond to email questions promptly. However, responses can take longer than 24 hours. Keep this in mind as you are working on homework problems and preparing for exams. Take advantage of office hours and PSOs as much as possible.

- **Regrading Requests.** If you request a **re-grade of a homework or midterm**, you must contact the head TA within **10 days** of receiving your homework or midterm back. There will be no re-grading after this time period has elapsed. You are expected to read and work through posted solutions before asking for a regrade.

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[1]There are multiple online converters that can convert files of any type to .pdf files.

- **Missed exam.** Missing an exam results in a score of zero unless you have a valid excuse covered under university policies. If you are unable to attend an exam due to an illness or an emergency, contact the instructor before the exam, if possible.

- **Announcements:** Announcements relevant to the course will be made in class and/or via the Blackboard course email list. You are expected to monitor Blackboard and your email for information related to the class.

- **Discussion forum:** There will be a discussion forum on Blackboard; instructions and guidelines will be posted in Blackboard. You are expected to be courteous, respectful, and professional when posting at the discussion forum.

Course and University Policies

Conduct and Courtesy: Students are expected to maintain a professional and respectful classroom environment. In particular, this includes: silencing personal electronics; arriving on time and remaining throughout the class; do not insult or deride others for any reason (even in jest); leave class promptly and wait to ask the instructor questions in the hall. You may use non-disruptive personal electronics during class.

Missing or late work: As discussed in the requirements and grading section, missing or late work will be counted as a zero.

Academic integrity: Behavior consistent with cheating, copying, and academic dishonesty is not tolerated. Depending on the severity, this may result in a zero score on the assignment or exam, and could result in a failing grade for the class. Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." (Part 5, Section III-B-2-a, University Regulations) Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." (University Senate Document 72-18, December 15, 1972).

You are expected to read both Purdue's guide to academic integrity (`http://www.purdue.edu/purdue/about/integrity_statement.html`) and Prof. Gene's Spafford's guide (`http://spaf.cerias.purdue.edu/integrity.html`) as well. You are responsible for understanding their content and how it applies to this class.

Attendance: Students are expected to be present for every meeting of the classes in which they are enrolled.

Grief Absence Policy: Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). According to GAPS Policy, students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.

Violent Behavior Policy: Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational

and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Students with Disabilities: Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with the Head TA or instructor within the first three (3) weeks of the semester in order to discuss any adjustments. It is important to talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (`http://www.purdue.edu/drc`) of an impairment/condition that may require accommodations and/or classroom modifications.

Emergencies: In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructors' control. Relevant changes to this course will be posted onto the course website and/or announced via email. You are expected to read your `purdue.edu` email on a frequent basis.

Emergency Preparedness: Emergency notification procedures are based on a simple concept: *If you hear a alarm inside, proceed outside. If you hear a siren outside, proceed inside.* Indoor Fire Alarms are meant to stop class and immediately evacuate the building. Proceed to your Emergency Assembly Area away from building doors. Remain outside until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave. All Hazards Outdoor Emergency Warning sirens mean to immediately seek shelter (Shelter in Place) in a safe location within the closest building. "Shelter in place" means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, a civil disturbance including a shooting or release of hazardous materials in the outside air. Once safely inside, find out more details about the emergency. Remain in place until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave. In both cases, you should seek additional clarifying information by all means possible: Purdue Home page, email alert, TV, radio, etc. Review the Purdue Emergency Warning Notification System multi-communication layers as well as the Emergency Response Procedures.

Please review the evacuation routes, exit points, emergency assembly area and shelter in place procedures and locations for our building. Video resources include a 20-minute active shooter awareness video that illustrates what to look for and how to prepare and react to this type of incident.

Nondiscrimination: Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its pro-

grams, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies.

Instructors' absence: Video lectures may be used to supplement missing class periods.

Changes to the course syllabus: This syllabus is subject to change. Updates will be posted at the course website.