

Department of Computer Science  
University of Texas Rio Grande Valley

**Instructor:** Liyu Zhang; office: LHSB 2.722, East Campus; phone (956) 882-6631; email: [liyu.zhang@utrgv.edu](mailto:liyu.zhang@utrgv.edu); web page: <http://faculty.utrgv.edu/liyu.zhang/>; office hours: MW 3-430, TR 9-1030, and by appointment.

**Course Information**

Credit hours: 3

Lecture times: TR 1050AM-1205PM in LHSB 1.402.

Webpage: <https://my.utrgv.edu/home>, login and click on the Blackboard Icon, and then click on the link for CSCI3310.03, Spring 2017.

Required Online Learning Materials:

Signup at zyBooks.com, Enter zyBook code UTRGVCSCI3310ZhangSpring2017, and Click subscribe. There is a one-time fee of \$48 for the subscription. See [vimeo.com/135692064](https://vimeo.com/135692064) for detailed tutorial on signing up the course.

Recommended Textbooks:

K. Rosen, *Discrete Mathematics and Its Applications*, 7/e, McGraw-Hill Education, 2011, ISBN: 978-0073383095.

**Catalog Course Description:** An introduction to some of the more important concepts, techniques, and structures of discrete mathematics. It provides a bridge between computer science and mathematics. Topics include functions and relations, sets, countability, groups, graphs, propositional and predicate calculus, and permutations and combinations. Students will be expected to develop simple proofs for problems drawn primarily from computer science and applied mathematics.

**Course Prerequisites:** MATH 2413 with grade of ‘C’ or better; and CSCI/CMPE 1370 (or CSCI/CMPE 1378).

**Course Objectives:** 1) To acquaint the students with various key concepts in discrete mathematics. 2) To stimulate and practice critical thinking. 3) To apply the mathematical concepts to problems in computer science.

**Learning Outcomes:** After completing this course students will be able to

- Apply formal methods of symbolic propositional and predicate logic.
- Describe how formal tools of symbolic logic are used to model algorithms and real life situations.
- Know how to use formal logic proofs and logical reasoning to solve problems,
- Understand various proof techniques and determine which type of proof is best for a given problem.

- Understand basics of number theory and matrices and their application to algorithms.
- Relate the ideas of mathematical induction to recursion.
- Understand the basic terminology of and perform basic operations associated with functions, relations, and sets.
- Relate practical examples to the appropriate set, function, or relation model, and interpret the associated operations and terminology in context.
- Understand basic counting principles, such as the pigeonhole principle, and their applications.
- Compute permutations and combinations of a set and interpret the meaning in application problems.
- Calculate probabilities of events and expectations of random variables, and be able to differentiate between dependent and independent events.

**Course Organization** The class meet for lecture twice a week. Students must study the material assigned by the instructor and complete assignments. There will be in-class quizzes and one **mid-term exam to be held on Thursday, March 9<sup>th</sup>, 2017**. There is also a final exam at the end of the semester. Both quizzes and exams will be based on materials covered in lectures and assignments. Please do not plan to travel at the end of semester until the final exam is over.

**Course Assessment and Grading** All course learning outcomes will be assessed through class participation, quizzes and exams. For assignments, they are in general not graded and hence won't count directly towards your overall scores for this course. Please see the Assignment Expectations for details and exceptions. Your final grades for this course will thereby be based on your class attendance and participation, quizzes, exams and extra credit earned from assignments, if any. A breakdown of weights for each grading component is as follows.

Class Attendance and Participation 20%, Quizzes 30%, Exams 50% (25% for each exam), Extra Credit earned through assignments.

The instructor will NOT make changes in final grades unless the student can document an error on his grade records in a timely manner (See Regrading).

The following line indicates the number to letter grade mapping that will be used to assign final letter grades at the end of the course.

100% >= A >= 90% > B >= 80% > C >= 70% > D >= 60% > F.

The instructor reserves the right to curve up (but not curve down) grades when and if he feels necessary. In addition, students can request exemption from any of the above non-exam grading components. Then the percentage weights of exempted grading components will be distributed proportionally among remaining grading components. To activate this option, however, students must notify the instructor no later than **February 1<sup>st</sup>, 2017**.

**Regrading** If you have a question about the grading of any piece of work, you should consult with the instructor of the course within one week of the date that you received the grade. In other words, if you do not pick up your work in a timely fashion, you may forfeit your right to question the grading of your work.

**Session expectations:** Students must study the material assigned in each session. Students should be

responsible for reading the entire content of the assigned material by the end the course, even if the instructor did not explicitly assign the corresponding readings during sessions. Students should read and attempt seriously the exercises on the corresponding chapter. Students should be able to repeat and derive by themselves any definition, proof or exercises given in the material assigned. In this course, as in any course, you are expected to put in additional time beyond the scheduled class times. Professors generally expect that for each credit hour a class carries, a typical student will put in 2 – 3 hours of time each week outside of class. Since this is a 3-credit course, that translates into 6 – 9 hours of time outside of lecture times each week. During this time you should read the material before coming to class and then again in greater detail after each class. You should also attend office hours as needed and digest course materials thoroughly by doing assignments.

**Exam and quiz expectations:** Exams and quizzes will be about assignments, readings, and material related to the course. Quizzes are usually held in class on Wednesday and so are tentatively scheduled for the following dates:

Quiz #	1	2	3	4	5
Date	1/26/17	2/2/17	2/9/17	2/16/17	2/23/17
Quiz #	6	7	8	9	10
Date	3/2/17	3/30/17	4/6/17	4/13/17	4/20/17

There are a total of ten quizzes. Each quiz takes 15 to 20 minutes. The instructor will drop the two lowest grades and count the remaining eight. Possibly there will also be additional unscheduled quizzes for extra credit.

**Communication rules:**

Use your UTRGV email account for email correspondence with the instructor regarding course related matters, following netiquette below, which is subject to change.

**Netiquette:** The following rules are recommended in any e-mail. If an email is received which conflicts with one of the rules, the conflict will be pointed out and the student may resubmit the email in order to be answered.

1. Write a brief subject reflecting the content of the message (for example: Homework due October 10).
2. Start the message with a salutation to the recipient followed by a comma (for example: Dear Mr. Smith, or simply Dr. Rogers,).
3. The message itself should start in the next line.
4. Do not use all capital letters as it may be interpreted as shouting and it offends (FOR EXAMPLE: SHOUTING).
5. Do not use all small letters as it is incorrect and difficult to read (for example: hello, i am mailing the book harry potter to the university of texas at brownsville at 80 forth brown).
6. Check for spelling and grammar errors.
7. Do not use slang as it may not be understood and is not professional.
8. Avoid using sarcasm and humor. Without facial expressions and tone of voice, they do not translate easily through email and may be inflammatory to groups of people.
9. Do not send abusive, harassing or threatening messages, which are called flaming.
10. Finish with a warm farewell (for example: Regards, or Respectfully).
11. Always sign with your complete name, student id number and course and section number (for example, John Smith, id number 000000, CIST 4444.80)

12. If you are upset or angry, do not send a message or reply to one. Wait until you are calm.
13. Remember that all laws governing copyright, defamation, discrimination and other forms of written communication also apply to email.

**Assignment Expectations:** In this course you will need to understand many mathematical concepts and notations and learn to use them to write solutions and formal proofs. This can be achieved only through working at assignments. Therefore, it is very important for you to do the assignments seriously. Assignments in this course are mainly for practice purpose and so will not be graded quantitatively; rather they will be put into one of the two categories: unsatisfactory (0) and satisfactory (1), where unsatisfactory assignments includes no or flimsy submissions and a satisfactory assignment must demonstrate serious effort in attempting all assignment problems. The instructor will keep a record of each student's number of satisfactory submitted assignments and consider that among other factors in determining how much/whether the student's overall course grade will be curved at the end of the semester. The instructor will try his best to correct your assignments but cannot guarantee that every assignment or every problem in any assignment will be reviewed due to limited time and effort. However, solutions to all assignment problems will be given and discussed in class if needed. One exception to the handling of assignments as stated above is that instructor may occasionally assign extra-credit problems, which will be graded, and any extra credit earned through those problems will be incorporated into students' overall scores. Assignments will usually be assigned every week and due on Wednesday of the next week. To repeat, you must complete all assignments although they're not quantitatively graded, for otherwise you will not understand the material well and hence perform poorly on quizzes and exams. Typed submissions are recommended, though not required. You must staple your submission if it is more than one page and write/type clearly your name, student ID number and due date on the first page. Late assignments or assignments not meeting submission requirements, for instance, unstapled assignments, are generally not accepted. However, the instructor understands that things may happen due to uncontrollable situations occasionally that prevent students from submitting assignments properly and timely. Hence, the instructor will accept, without grade penalty, your late assignments or allow you re-submit assignments in order to meet submission requirements, for up to two incidents. No more exceptions will be made beyond two incidents. In addition no assignments will be accepted after solutions have been given regardless.

**Class Attendance and Participation:** 1) Students' attendance of lectures will be taken and counted towards their overall scores with a weight of 10%. Students are allowed to have two absences without excuse or penalty. In addition to attendance, you are also required to complete the participation activity in each learning unit in the zyBook for this course in order to receive 10% of your overall score assigned to class participation.

**Make-up's:** There will not be any makeup on quizzes, tests, exams, homework or assignments except on documented cases allowable by UTRGV policies. This will be at the discretion of the instructor. Under no circumstances will makeup exams be given when the solution to the original exam has been made available to students or the graded exams have been returned to students.

**Course Withdrawal Policy:** The course withdrawal process is the student's responsibility, not the instructor's. No incomplete grades "I" will be granted because of a wrong withdrawal process. Withdrawal dates are in the academic calendar posted by the university on its website.

**Class Misconduct (Cheating) Policy:** All work is individual unless expressly stated. Cheating on assignments or exams will be handled according to university policy that may include removal from the course with a grade of F. Improper conduct behavior, copying, cheating and plagiarism on any grade component will be penalized and prosecuted according to the university policy. Minimum punishment shall include lowering of the final grades at least one letter of any students

involved. Grade 0 will be assigned on such a component, and the case will be turned to the department head and the Dean of Students. Students involved in the case will be notified by an official memo about the action taken for misconduct. Final course grade will be reduced 20% in the first offense, and will be 'F' for the course in the second offense. Please do not distribute your assignments or exams. Students are required to read the university's student guide concerning cheating.

**Improper Conduct Behavior:** Includes but is not limited to the following: interruptions caused by phones and/or electronic devices; challenges to instructor's authority; demanding special treatment; dominating discussions; eating or drinking in the classroom; excessive tardiness; "I paid for this" mentality; making offensive, disrespectful or aggressive remarks or gestures; missing deadlines; overt inattentiveness; prolonged chattering; reading newspapers or other non-class materials in paper or online during class time; texting and or instant messaging during class time; sleeping; talking out of turn; unexcused exiting or prematurely preparing to exit class; shouting; using the computers for material not related to the class; and using the computers to use/access un-allowed software. The student demonstrating an improper behavior will be requested to leave the classroom without further warning and the final course grade will be reduced 10% in the first offense, 20% in the second offense, and to an 'F' grade in the third offense. An official memo will be sent and the case will be referred to the Dean of Students.

**Technical support:** The instructor is NOT responsible for any technical issues arising in the classroom, such as connecting to Blackboard and playing recordings. For Blackboard technical support contact COLTThelp@utrgv.edu, and copy the instructor.

**UTRGV Spring 2017 Calendar is available at:**

<http://www.utrgv.edu/en-us/student-experience/calendars/index.htm>.

## UTRGV Policies

**STUDENTS WITH DISABILITIES** If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. **Brownsville Campus:** Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at [accessibility@utrgv.edu](mailto:accessibility@utrgv.edu). **Edinburg Campus:** Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at [accessibility@utrgv.edu](mailto:accessibility@utrgv.edu).

**MANDATORY COURSE EVALUATION PERIOD** Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (<http://my.utrgv.edu>); you will be contacted through email with further instructions. Online evaluations will be available Apr 12 – May 3, 2017. Students who complete their evaluations will have priority access to their grades.

**SCHOLASTIC INTEGRITY** As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; submission for credit of any work or materials that are attributable in whole or in part to another person; taking an examination for another person; any act designed to give unfair advantage to a student; or the attempt to commit such acts. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

**SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE** In accordance with UT System regulations, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and so must report any instance, occurring during a student’s time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at [www.utrgv.edu/equity](http://www.utrgv.edu/equity), including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

**Tentative Course Calendar by Weeks:**

Week Of	Lecture Topics
1/16/2017	Syllabus, Formal Logic
1/23/2017	Formal Logic, continued
1/30/2017	Formal Logic, continued
2/6/2017	Formal Proofs
2/13/2017	Set Theory
2/20/2017	Functions
2/27/2017	Boolean Algebra
3/6/2017	Midterm Review and Exam
3/13/2017	Spring Break
3/20/2017	Relations and Diagraphs
3/27/2017	Induction and Recursion
4/3/2017	Integer Properties
4/10/2017	Introduction to Counting
4/17/2017	Discrete Probabilities
4/24/2017	Graphs and Trees
5/1/2017	Final Review

**Disclaimer: This is a tentative class syllabus and may be changed by the instructor with advanced notice to and/or agreement with students. Any changes will be kept to a minimum.**