**Instructor(s):** Ronald E. Cross

**Office Number:** ERB 549

**Office Telephone Number:** (817) 272-1728

**Email Address:** recross@uta.edu

**Faculty Profile: R.E. Cross -** https://mentis.uta.edu/public/#profile/profile/edit/id/16499/category/1

**Office Hours:** Tuesday, 12:30 to 1:50pm in ERB 549

**Section Information:** CSE 2315 Section 003

**Time and Place of Class Meetings:**

Section 003: WH 311, Tuesday & Thursday from 2:00 to 3:30pm

**TA Contact Information:**

***For Section 003***

TA: Akash Lohani

Email: akash.lohani@mavs.uta.edu

Office: ERB 504

Office Hours: M/W, 11:00am to 12:00 noon

**Description of Course Content:**

This course covers Propositional and predicate logic, mathematical proof techniques, sets, combinatorics, functions and relations, graphs, and graph algorithms.

**Student Learning Outcomes:**

Students successfully completing this course will:

* Have a clear understanding of selected fundamental formal theoretics and discrete mathematical concepts employed in problem abstraction and representation needed in the study of modern computer science, computer engineering and software engineering.
* Achieve familiarity and ease in working with mathematical notation and concepts.
* Be able to understand and employ proof techniques, including domain-specific, mathematical induction and proof by contradiction, and be able to decide what the appropriate technique in a given situation is

**Required Textbooks and Other Course Materials:**

Judith L. Gersting. Mathematical Structures for Computer Science. W.H. Freeman and Company, New York, NY, 7 th edition, 2014. Note that if you choose to use an earlier edition, it’s your responsibility to identify any differences in the editions.

**HANDOUTS –** will be placed on Blackboard, <https://elearn.uta.edu>

**Descriptions of grade assessment, major assignments and examinations:**

**GRADING:**

A: >= 90, B: 80 to < 90, C: 70 to < 80, D: 60 to < 70, F: <60 with points computed as follows:

Total Points System will be used where exams will be worth more points (100) than individual assignments (20) and quizzes (30). Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see “Student Support Services,” below. Final grade average will be rounded to the nearest unit: 89.4999 equals 89 where 89.5 equals 90.

**EXAMINATIONS:**

There will be two non-comprehensive exams given during this semester. An optional comprehensive final examination may be taken during finals week. This comprehensive final may be used to replace the lower of your first two exams. If you choose to take the comprehensive exam, it will replace the lower of your two regular exams no matter if it is higher or lower. See the lecture schedule for the dates. Examinations will be closed book and closed notes. Any class discussions, guest speaker presentation, and handouts in class or on the blackboard are testable content of this class. No make-up exams will be given without documented, critical and unavoidable reasons.

**Homework:**

Homework will be scheduled throughout the semester. Generally homework will not be graded but solutions will be placed on the blackboard after the students have had a chance to work through them on their own. If a homework assignment is assigned for grade, you must read, sign, and attach the academic integrity form as the last page your homework. If you do not attach it as the last page the assignment will not be accepted for grading. Please note in order to do well in this class it is necessary for the student to stay current with their studies and work problems on their own in order to build an experience base from which to pull from once pop quiz or exams are given. Doing the recommended homework, working extra problems on your own, working through textbook examples, working through the tutorials and with a study group will be beneficial to the student in this class.

**POP QUIZZES:**

Pop quizzes may be given at various times during the semester to gauge your understanding of the lecture and reading materials. No make-up quizzes will be given without documented critical and unavoidable reasons. If greater than 3 quizzes are given then the lowest quiz will be dropped.

**ACTIVE LEARNING:**

On occasion active learning exercises may be performed in class to help you better understand the topics being covered in the course. These exercises will typically be done in small groups or individually. All students are expected to participate.

**GUEST SPEAKERS:** Guest speakers from the college, industry and/or government agencies will be scheduled throughout the semester. Please see the lecture schedule for details. Guest Speaker’s Reports (GSR) will be turned in for grading. Please note that if you miss the Guest Speaker’s Presentation you will not be able to turn in a GSR. All reports are due at the beginning of the next class in hard copy format unless otherwise specified.

**Attendance:** At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator in student success. Each faculty member is free to develop his or her own methods of evaluating students’ academic performance, which includes establishing course-specific policies on attendance. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course.” UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Blackboard. This date is reported to the Department of Education for federal financial aid recipients.

As your instructor the following attendance policy will be invoked for this class:

1. You are expected to attend class and attendance will be checked on a regular basis.
2. Each student is responsible for all class material covered and discussions held during class.
3. If it is not possible for you to attend class stay current on what is due by having a classmate take notes for you. Check the Blackboard frequently (several times per week).
4. If you miss a class with a quiz or homework assignment due there is no make up for any missed work without an acceptable and documented excuse.

**Other Requirements:** None

**Expectations for Out-of-Class Study**: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, and team meetings.

**Grade Grievances**: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog.

<http://catalog.uta.edu/academicregulations/grades/#undergraduatetext>; for graduate courses, see <http://catalog.uta.edu/academicregulations/grades/#graduatetext>. For student complaints, see <http://www.uta.edu/deanofstudents/student-complaints/index.php>.

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

**Disability Accommodations:** UTArlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA),* and *Section 504 of the Rehabilitation Act.* All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of **a letter certified** by the Office for Students with Disabilities (OSD).Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

**The Office for Students with Disabilities, (OSD)** [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability).

**Counseling and Psychological Services, (CAPS)**: [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

**Non-Discrimination Policy**: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit[*uta.edu/eos*](http://www.uta.edu/hr/eos/index.php)*.*

**Title IX Policy:** The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX) or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or [jmhood@uta.edu](file:///C:\Users\gotcherxx\Downloads\jmhood@uta.edu).

**Academic Integrity**: Students enrolled in UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>.

**Lab Safety Training:** Note - Not applicable for this class since there is no lab requirement

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

1. The professor of this class will not answer emails sent from accounts other than the student’s assigned university email
2. Always include in the “Subject” line the class name and section number
3. Be specific as to your question and use professional language/academic language

**Class BlackBoard** – You are responsible for checking the class’s blackboard several times during the week (once per day is recommended). I do make announcements from time to time and also post material to the blackboard that is relevant to the class. Please note I may make changes to the class schedule based upon the progress and needs of the class and available of speakers.

**Campus Carry:** Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

**Student Feedback Survey:** At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent

directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** for semester-long courses**,** a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Please note this section is primarily addressing the Spring and Fall semesters.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located to your right as you exit the class room around the corner and them immediately left down the stairs. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

You are encouraged to subscribe to the MavAlert system that will send information in case of an emergency to directly to your cell phones or email accounts. Anyone can subscribe at <https://mavalert.uta.edu/> or <https://mavalert.uta.edu/register.php>

**Student Support Services**:UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](http://www.uta.edu/universitycollege/current/academic-support/learning-center/tutoring/index.php), [major-based learning centers](http://www.uta.edu/universitycollege/resources/college-based-clinics-labs.php), developmental education, [advising and mentoring](http://www.uta.edu/universitycollege/resources/advising.php), personal counseling, and [federally funded programs](http://www.uta.edu/universitycollege/current/academic-support/mcnair/index.php). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to

[resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/universitycollege/resources/index.php>.

**The IDEAS Center** (2nd Floor of Central Library) offers free tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email [IDEAS@uta.edu](mailto:IDEAS@uta.edu) or call (817) 272-6593.

**The English Writing Center (411LIBR):** The Writing Center Offers free tutoring in 20-, 40-, or 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Our hours are 9 am to 8 pm Mon.-Thurs., 9 am-3 pm Fri. and Noon-6 pm Sat. and Sun. Register and make appointments online at http://uta.mywconline.com. Classroom Visits, workshops, and specialized services for graduate students are also available. Please see [www.uta.edu/owl](http://www.uta.edu/owl) for detailed information on all our programs and services.

The Library’s 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library’s hours of operation. <http://library.uta.edu/academic-plaza>

**Librarian to Contact: Contact information** – look up here: <http://www.uta.edu/library/help/subject-librarians.php> [See the end of this document for additional information about library links that might be embedded in your syllabus or other course materials.]

Class Schedule on next page

**Course Schedule**

*As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the*

*educational needs of the students enrolled in this course. – R. E. Cross.*

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| --- | --- | --- | --- | --- |
| **Class Date** | **Class #** | **Class Activities/Lecture** | **Chp Section** | **Source of Material** |
| Week 1: 1/15/19 | 1 | Class Management - Syllabus & Schedule Review; Course Overview; Statements and Symbolic Representation | 1.1 | Lecture Notes on Blackboard |
| Week 1: 1/17/19 | 2 | Propositional Logic | 1.2 | Lecture Notes on Blackboard |
| Week 2: 1/22/19 | 3 | Quantifiers, Predicate Validity | 1.3 | Lecture Notes on Blackboard |
| Week 2: 1/24/19 | 4 | Predicate Logic | 1.4 | Lecture Notes on Blackboard |
| Week 3: 1/29/19 | 5 | Proof Techniques | 2.1 | Lecture Notes on Blackboard |
| Week 3: 1/31/19 | 6 | Induction | 2.2 | Lecture Notes on Blackboard |
| Week 4: 2/5/19 | 7 | Recursive Definitions | 3.1 | Lecture Notes on Blackboard |
| Week 4: 2/7/19 | 8 | Recurrence Relations | 3.2 | Lecture Notes on Blackboard |
| Week 5: | N/A | Sets and Set Operations | 4.1 | Lectures on Blackboard – No in-class lectures, self-study & testable material |
| Week 5: 2/12/19 | 9 | Counting | 4.2 | Lecture Notes on Blackboard |
| Weeks 5: 2/14/19 | 10 | Principle of Inclusion and Exclusion; Pigeonhole Principle | 4.3 | Lecture Notes on Blackboard |
| Week 6: 2/19/19 | 11 | Permutations & Combinations | 4.4 | Lecture Notes on Blackboard |
| Week 6: 2/21/19 | 12 | Exam #1 |  | Covers Chapters 1 through 4, inclusive of self-study (4.1) |

**Course Schedule, *continued***

*As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the*

*educational needs of the students enrolled in this course. – R. E. Cross.*

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| --- | --- | --- | --- | --- |
| **Class Date** | **Class #** | **Class Activities/Lecture** | **Chp Section** | **Source of Material** |
| Week 7: 2/26/19 | 13 | Exam Results, Relations & Topological Sorting Lectures | 5.1 & 5.2 | Lecture Notes on Blackboard |
| Week 7: 2/28/19 | 14 | Relations & Databases | 5.3 | Lecture Notes on Blackboard |
| Week 8: 3/5/19 | 15 | Functions | 5.4 | Lecture Notes on Blackboard |
| Week 8: 3/7/19 | 16 | Orders of Magnitude & Matrices | 5.5 | Lecture Notes on Blackboard |
| Spring Break 3/12/19 |  | No Class |  |  |
| Spring Break 3/14/19 |  | No Class |  |  |
| Week 9: 3/19/19 | 17 | Orders of Magnitude & Matrices | 5.7 | Lecture Notes on Blackboard |
| Week 9: 3/21/19 | 18 | Graphs & Trees | 6.1 | Lecture Notes on Blackboard, HmWk#6 Due in class after completion of Section 5.7 |
| Week 10: 3/26/19 | 19 | Graphs & Trees | 6.2 | Lecture Notes on Blackboard |
| Week 10: 3/28/19 | 20 | Directed Graphs & Path Problems | 7.1 | Lecture Notes on Blackboard |
| Week 11: 4/2/19 | 21 | Directed Graphs & Path Problems | 7.2 | Lecture Notes on Blackboard |
| Week 11: 4/4/19 | 22 | Path Problems & Graph Traversals | 7.3 | Lecture Notes on Blackboard |
| Week 12: 4/9/19 | 23 | Path Problems & Graph Traversals | 7.4 | Lecture Notes on Blackboard |
| Week 12: 4/11/19 | 24 | Boolean Algebra Structures & Logic Networks | 8.1 | Lecture Notes on Blackboard |
| Week 13: 4/16/19 | 25 | Boolean Algebra Structures & Logic Networks | 8.2 | Lecture Notes on Blackboard |
| Week 14: 4/18/19 | 26 | Exam #2 |  |  |
| Week 14: 4/23/19 | 27 | Review of Exam |  |  |
| Week 15: 4/25/19 | 28 | Circuit Minimization | 8/3 | Lecture Notes on Blackboard |
| Week 16: 4/30/19 | 29 | Dead Week – Circuit Minimization | 8/3 cont |  |
| Week 17: 5/2/19 | 30 | Dead Week – Review & Wrap Up w/Special Topics |  | Remember you must ***elect*** to take the optional comprehensive final exam |
| Week 18: 5/7/19 | 31 | Comprehensive Exam – WH311 from 2:00 to 4:30pm |  |  |

**Emergency Phone Numbers**: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

**RESOURCES FOR STUDENTS**

**Research or General Library Help**

**Academic Plaza Consultation Services**[**library.uta.edu/academic-plaza**](http://library.uta.edu/academic-plaza)

**Ask Us**[**ask.uta.edu/**](http://ask.uta.edu/)

**Library Tutorials**[**library.uta.edu/how-to**](http://library.uta.edu/how-to)

**Subject and Course Research Guides**[**libguides.uta.edu**](http://libguides.uta.edu/)

**Librarians by Subject**[**library.uta.edu/subject-librarians**](http://library.uta.edu/subject-librarians)

**Research Coaches** [**http://libguides.uta.edu/researchcoach**](http://libguides.uta.edu/researchcoach)

**Resources**

**A to Z List of Library Databases**[**libguides.uta.edu/az.php**](http://libguides.uta.edu/az.php)

**Course Reserves**[**pulse.uta.edu/vwebv/enterCourseReserve.do**](http://pulse.uta.edu/vwebv/enterCourseReserve.do)

**Study Room Reservations**[**openroom.uta.edu/**](http://openroom.uta.edu/)