

SE 3306 Mathematical Foundations

Course Information

<i>Course Number/Section</i>	SE 3306.001
<i>Course Title</i>	Mathematical Foundations of Software Engineering
<i>Term</i>	Fall 2025

Professor Contact Information

<i>Professor</i>	Meghana Satpute, PhD.
<i>Office Phone</i>	972-883-4799
<i>Class Meetings</i>	TR 11.30 am to 12.45 pm
<i>Classroom</i>	ECSS 2.415
<i>Email Address</i>	mns086000@utdallas.edu
<i>Office Location</i>	ECSN 2.926
<i>Office Hours</i>	MW 1 pm to 2.15 pm (for other times – by email and/or by appointment)

<i>Office Hours Location</i>	ECSN 2.926
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<i>Online Office Hours Location</i>	Microsoft Teams meeting Join on your computer or mobile app Click here to join the meeting Or call in (audio only) +1 737-220-2208,,820738800# United States, Austin Phone Conference ID: 820 738 800# Find a local number Reset PIN Learn More Meeting options
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Course Pre-requisites, Co-requisites, and/or Other Restrictions

(CE 2305 or CS 2305 or TE 2305) with a grade of C or better

Course Description

SE 3306 - Mathematical Foundations of Software Engineering (3 semester credit hours)
Boolean logic, first-order logic, models of first-order logic. Introduction to program verification, applications in software engineering. Completeness Theorem. Regular expressions, regular sets, finite-state machines, and applications in software engineering. Graph Theory, graph algorithms. State charts, Petri Nets and their role in software engineering. Credit cannot be received for both courses, CS 3305 and SE 3306. Double majors are required to take CS 3305.

Student Learning Objectives/Outcomes

After successful completion of this course, the following competencies are expected:

- 1) Ability to understand and use set theory
- 2) Ability to understand and use propositional and predicate logic
- 3) Ability to understand and construct valid deductive proofs
- 4) Ability to understand and use graph theory
- 5) Ability to understand and use regular expressions/grammars/languages
- 6) Ability to understand and use finite state machines and automata

Required Textbooks and Materials

Required Texts

1. Text: “Discrete Mathematics and its Applications”, 8th Edition, Kenneth H. Rosen, McGraw Hill

Attendance Policies

The University’s attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty.

Class attendance is mandatory. Students are expected to attend lectures in-person. They will be allowed to join class online and view lecture videos when they are unable to be present in classroom and expected to submit assignments before due date. Class attendance is seen from your activity submission, in-person presence or online presence on teams and elearning and completion of assigned work on time. In accordance with department policy, three consecutive unexcused absences will result in a one letter drop of the course grade, and four consecutive unexcused absences will result in a grade of F for the course.

Excused absences must be coordinated with the instructor prior to the absence, except for emergencies. A student who misses a class is still responsible for any handouts, announcements, reading material and contents of the missed class.

All make-up exams are scheduled and given at the discretion of the instructor.

Make-up exams are only given to those students who coordinate the missing of an exam prior to the originally scheduled exam date and time, or for an emergency.

Grading Policy

We will have four (pop-up) quizzes. One midterm exam and a final exam will be there. Problem sets will be given throughout the course. There will be 5 to 6 graded homeworks. The weights will be as follows.

Homework Assignments	25%
Midterm Exam	20%
In Class Activities	10%
Final Exam	25%
Quizzes	20%
Total	100%

If you miss a quiz or the midterm due to an excused absence, you can be given chance to make-up. For unexcused absence from a quiz or exam, you will get a zero.

(including percentages for assignments, grade scale, etc.)

97-100	A+	93-96.99	A	90-92.99	A-
87-89.99	B+	83-86.99	B	80-82.99	B-
77-79.99	C+	73-76.99	C	70-72.99	C-
67-69.99	D+	63-66.99	D	60-62.99	D-
Below 60	F				

Required Reading

Required reading is going to be assigned from the Rosen textbook and the class notes.

Homework Deadlines

Ample time will be given for doing the homework assignments. A 10% penalty will be charged per day for late homework. Please check elearning for due dates.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Student Conduct and Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year. The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating

Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391). A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings. Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's Handbook of Operating Procedures. In attempting to resolve

any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance. It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations.

The University of Texas at Dallas is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request. If you are seeking classroom accommodations under the Americans with Disabilities Act (2008), you are required to register with the Office of Student Access Ability, located in the Administration Building, Suite 2.224. Their phone number is 972-883-2098, email: studentaccess@utdallas.edu and website <https://studentaccess.utdallas.edu>. To receive academic accommodations for this class, please obtain the proper Office of Student Access Ability letter of accommodation and send it to me by email or meet with me and submit it to me at the beginning of the semester.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated. The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment. If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee. Off-Campus Instruction and Course Activities Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address given below. Additional information is available from the office of the school dean.
(http://www.utdallas.edu/Business_Affairs/Travel_Risk_Activities.htm)

Registrar's Intranet: please log in with your UTD NetID and password to access this site. Information that faculty need about grading, scheduling, and other essential aspects of our responsibilities related to teaching are made available and updated regularly in the Registrar's Intranet. This source of information can only be accessed by logging in with your UTD NetID and password. Many important faculty questions are answered here, and this is information that faculty members are expected to know and understand.

FERPA Guidelines: you will be asked to log in before you access the FERPA Guidelines webpage on the Registrar's Intranet. If faculty have additional questions about FERPA guidance, please contact the Office of the Registrar at records@utdallas.edu for the proper student consent forms and further instructions.

Honorlock: Online proctoring tool will be available for fully online courses and for classes with enrolled international students who are not yet in the United States.

UT System Resources for Creating Accessible Course Content: designed to assist faculty with developing course content

These descriptions and timelines are subject to change at the discretion of the Professor.