

**MAT 301 - 1**

**Spring 2021**

**Discrete Mathematics**

**Instructor:** Angela Angeleska

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**Office:** SC 247

**Class time:** MWF 10:00 -11:10 in SC 211

Or via Zoom (links will be e-mailed 5 minutes before each class)

**Office hours:** Zoom MWF 11:15-13:00. Others by appointment.

(Please request a zoom link whenever you plan to attend the office hours).

**Prerequisites:** Intro to Higher Mathematics (MAT 299) with grade “C” or better.

**Course Description and Objectives:** Discrete Mathematics is intended, but not limited to math and math programming majors and minors. It reviews logic and set theory with relations and functions, and covers partial orders, Boolean Algebra, graph theory, and combinatorial analysis. After completing the course students will be able to:

1. Identify and describe the concepts of sets, sequences and mathematical structures.
2. Utilize logical operators, conditionals statements and various methods of proof to construct mathematical proofs.
3. Apply various counting principles to compute recurrence relations.
4. Analyze and apply the notion of a relation and a digraph and to use operations on relations to compute the transitive closure.
5. Apply the concepts of graph and graph invariants and use it to model and solve network related problems.
6. Identify partially ordered sets, lattices, and Boolean algebras and explain how they relate to computer circuit designs.

**Textbooks:** (primary) Essentials of Discrete Mathematics, by D.J.Hunter, 2<sup>nd</sup> edition, 2010 and

(secondary) Discrete Mathematics and Its Applications, by K.H.Rosen, 8<sup>th</sup> edition, 2019.

**Exams:** Three exams will be given remotely on Blackboard during the semester. Each exam will count as 20% of your final grade. There will also be a **2-hour Final Exam on Monday, May 3rd from 11:00 to 13:00.** The Final Exam will be cumulative and will count as 15% of your final grade.

The *tentative* dates for the exams are:

Exam 1 – February 19

Exam 2 - March 24

Exam 3 – April 26

Final Exam – May 3rd (not flexible)

**Makeup Exams:** The Final Exam can **only** be taken on December 11 from 11 to 13. Students will be eligible for a make up exam in cases such as: participation in University of Tampa school sponsored activities on the day of an exam, court-imposed legal obligations, medical procedures, etc. The make-up exam will be approved only if the instructor receives verification or a note from the sponsoring professor, coach, or doctor, prior to the date of the scheduled exam.

**Homework:** Four homework assignments will be given throughout the semester. Each assignment will contain 8-12 problems. The lowest homework grade will be dropped. The average of the three remaining grades will count as 25% of your final grade.

**Attendance:** Attendance will not be taken during the class, but it is expected. It is your responsibility to know what is going on in class. Your presence in class (in person or via Zoom) will be most helpful to you for mastering the material and prevent yourself from missing any work.

**Final Grade:** Your final grade will be determined by the following calculations:

<i>Three exams x 20%</i>	<i>60%</i>
<i>Final exam</i>	<i>15%</i>
<i>Average of HW</i>	<i>25%</i>
<i>Total</i>	<i>100%</i>

The following grading scale will be used for assigning the final grades:

A (92-100%); AB (89-91%); B(82-88%); BC(79-81%);

C(72-78%); CD (68-71%); D (60-67%); F(0-59%).

### **Week by week Schedule:**

Week 1 (Jan 19-22):	Introduction, Formal Logic, Propositional Logic
Week 2 (Jan. 25-29 :	Methods of Proofs, Predicate Logic
Week 3 (Feb. 1-5):	Sets, Sets Operations, Cardinality of Sets Homework 1
Week 4 (Feb. 8-12)	Functions, One-to-One and Onto Functions, Relations
Week 5 (Feb. 15-19)	Properties of Relations, Review and Exam 1
Week 6 (Feb. 22-26)	Partial Orderings, Definitions and Examples, Hesse Diagrams
Week 7 (March 1-5)	Topological Sorting, Boolean Algebras
Week 8 (March 8-12)	Graphs-basic definitions and terminology, Subgraphs, Graph Isomorphism
Week 9 (March 15-19)	Degree Counting, Eulerian and Hamiltonian Paths Homework 2.
Week 10 (March 22-26)	Review for Exam 2, Exam 2, Shortest Path Problem
Week 11 (March 19-2)	Trees, Spanning Trees, Application of Trees
Week 12 (April 5-9)	Basic Counting Techniques, Addition and Multiplication
Week 13 (April 12-16)	Permutations and Combinations, Homework 3
Week 14 (April 19-23)	Counting with Functions, the pigeonhole principle, discrete probability.
Week 15 (April 26-30)	Review for Exam 3, Exam 3, Review for the Final

### **Reading Days (NO CLASS)**

Tuesday, February 23  
Wednesday, March 10  
Friday, April 30

## COURSE POLICIES

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### SYLLABUS SUBJECT TO CHANGE

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This syllabus is informational in nature and is not an express or implied contract. It is subject to change due to unforeseen circumstances, as a result of any circumstance outside the University's control, or as other needs arise. If, in the University's sole discretion, public health conditions or any other matter affecting the health, safety, upkeep or wellbeing of our campus community or operations requires the University to make any syllabus or course changes or move to remote teaching, alternative assignments may be provided so that the learning objectives for the course, as determined by the University, can still be met. The University does not guarantee that this syllabus will not change, nor does it guarantee specific in-person, on-campus classes, activities, opportunities, or services or any other particular format, timing, or location of education, classes, activities, or services.

### EXPOSURE TO OR DIAGNOSIS OF COVID-19

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#### **What to do if you have an exposure or diagnosis of COVID-19**

If you have been diagnosed with COVID off-campus, please confidentially report this to UT's local contact tracers Rapid-Trace, so they can confidentially notify anyone else who may have been exposed, provide you resources, work with you on isolation/quarantine guidelines, and arrange notification to your professors as needed. Students can contact Rapid-Trace at (813) 699-3551, or [selfreport@rapid-trace.com](mailto:selfreport@rapid-trace.com). Rapid-Trace can be reached daily from 7 a.m.-9 p.m., with after-hours voicemail.

If you are diagnosed with COVID at the Dickey Health and Wellness Center - Rapid-Trace will contact you.

#### **Types of Close Contact that will be traced:**

There are three types of contact that Rapid Trace contact tracers will look for when a case has been identified:

- Physical contact – touching without protection
- Close contact – within 6 ft. for 15 minutes or more
- Proximate contact – More than 6 feet-but in the same room for an extended period (an hour or more). However, if students, faculty and staff were wearing masks and are 6ft or more apart then they would NOT be considered close contacts, regardless of class time or time in a room together.

*Please remember that these are general guidelines, and it is important to always follow UT's Spartan Shield directives for health and safety.*

If you feel you have been exposed to COVID and have not been contacted by Rapid Trace, please confidentially report the exposure to get assistance and guidance.

## TITLE IX & REPORTING SEXUAL MISCONDUCT

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Sexual misconduct, including, but not limited to: acts of sexual harassment, nonconsensual sexual intercourse, nonconsensual sexual contact, dating violence, domestic violence, stalking, gender-based harassment or sexual exploitation are prohibited by Title IX, the Student Code of Conduct and other University policies.

The University strives to maintain a safe and nondiscriminatory campus community, and to do so, it is important for the Spartan community to report any safety concerns, such as acts of sexual misconduct. If you experience or witness any of these University prohibited actions, the University encourages reporting these matters, so that the University is able to take prompt action to stop, prevent and remedy the effects of the harassment. University resources and grievance procedure information will be provided to individuals who may seek services or redress.

There are many options to making a Title IX/Sexual Misconduct report. You may report this information through the University's online [Title IX Report form](#).<sup>1</sup> The information will be forwarded and reviewed by the Title IX Coordinator or a Title IX Deputy Coordinator, who will contact you to provide further information on University grievance procedure options and resources that are available.

You may also make a direct report by contacting the University's Title IX Coordinator:

Donna Popovich, Title IX Coordinator

Southard Family Building Suite #266

[\(DPopovich@ut.edu\)](mailto:DPopovich@ut.edu) (813)-257-3723

If you decide to discuss an incident with your course professor, it is important to note that they are considered a Responsible Employee, and are obligated to report the information you share to the University's Title IX Coordinator.<sup>2</sup>

If you are not ready to disclose or report this information to the University, you may disclose the information to a confidential party, such as a Victim Advocate, or a Counselor or Health Clinician at the Student Health and Wellness Center, to discuss any further options and resources available before making a decision to report.

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<sup>1</sup> [https://ut-advocate.symplicity.com/titleix\\_report/index.php/pid419524?](https://ut-advocate.symplicity.com/titleix_report/index.php/pid419524?)

<sup>2</sup> There is an exception to this required reporting for preventative education programs and public awareness events or forums. For more information about exempt events, please contact the Title IX Office.

- The Victim's Advocacy Hotline: ([victimadvocacy@ut.edu](mailto:victimadvocacy@ut.edu)) (813) 257-3900.
- Health and Counseling Center ([healthcenter@ut.edu](mailto:healthcenter@ut.edu)) (813) 253-6250
- Dickey Health & Wellness Center ([wellness@ut.edu](mailto:wellness@ut.edu)) (813) 257-1877

For more information, see The University of Tampa's [Title IX webpage](#)<sup>3</sup> and the [Student Code of Conduct](#)<sup>4</sup> webpage.

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## ADA STATEMENT

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**Students with disabilities:** If you require accommodations because of a disability, please call (813) 257-5757 or e-mail [disability.services@ut.edu](mailto:disability.services@ut.edu) for information on registering with Student Disability Services. You can also submit your request for accommodations and supporting documentation via an [Accommodation Request](#)<sup>5</sup>. Please feel free to discuss this with me in private for more information.

If you encounter disability-related barriers accessing the online content for this course, please contact Sharon Austin, Academic Technology Accessibility Specialist, at [saustin@ut.edu](mailto:saustin@ut.edu). If the initial access to the content cannot be resolved, the university will provide individuals with disabilities access to, and use of, information and data by an alternative means that meets the identified needs.

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## CAMPUS CLOSURE STATEMENT

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**Course interruption due to adverse conditions:** In case of any adverse condition or situation which could interrupt the schedule of classes, each student is asked to access [UT Homepage](#)<sup>6</sup> for information about the status of the campus and class meetings. In addition, please refer to [UT Blackboard](#)<sup>7</sup> for announcements and other important information. You are responsible for accessing this information.

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## ACADEMIC INTEGRITY STATEMENT

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The University of Tampa is committed to the development of each student to become a productive and responsible citizen who embraces the values of honesty, trust, fairness, respect, and responsibility. Upholding academic integrity and promoting an ethical standard that does not condone academic misconduct is an important demonstration of these values and underpins how we live and learn in a community of inquiry. Students are expected to act ethically in the pursuit of their education and to avoid behaviors that run counter to participation in and demonstration of their learning. The [Academic Integrity Policy](#)<sup>8</sup> lists several common types of violations related to cheating, unauthorized collaboration or assistance, plagiarism, and more. While the policy lists common

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<sup>3</sup> <https://www.ut.edu/about-ut/university-services/human-resources/title-ix->

<sup>4</sup> <https://www.ut.edu/campus-life/student-services/office-of-student-conduct/student-code-of-conduct>

<sup>5</sup> [https://ut-accommodate.symplicity.com/public\\_accommodation/](https://ut-accommodate.symplicity.com/public_accommodation/)

<sup>6</sup> <http://ut.edu>

<sup>7</sup> <https://utampa.okta.com>

<sup>8</sup> <http://ut.smartcatalogiq.com/en/current/catalog/Academic-Policies-and-Procedures/Academic-Integrity-Policy>

violations and examples, it is not an exhaustive list and instructors may identify other types of conduct that impacts their ability to evaluate what has been learned substantively enough to constitute a violation of this policy. An instructor may impose a wide range of sanctions for academic integrity violations from completing a more difficult replacement assignment to an F in the course. Particularly severe violations or multiple violations throughout a student's academic career may result in suspension or expulsion from the University.

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## FACE COVERINGS/MASKS

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All face coverings, whether disposable or reusable, must

- be made with at least two layers of breathable material;
- fully cover the nose and mouth and secure under the chin;
- fit snugly but comfortably against the side of the face; and
- be secured with ties or ear loops, allowing one to remain hands-free.

Based on guidance from health authorities, the following are *not* acceptable face coverings: neck gaiters, open-chin triangle bandanas, and face coverings containing valves, mesh material, or holes of any kind. Unless a face shield is coupled with a face mask, it is *not* considered an acceptable masking practice on campus.

Failure to wear a mask will mean that one cannot enter a building nor attend class. Refusal to wear a mask within the classroom is considered disruptive behavior and will be handled through the classroom disruption policy. Refusal to wear a mask in other settings will be handled through Student Conduct or Human Resources if faculty or staff.

It is important to note that UT policy may vary from City and County Executive Orders. You may want to refer to local government websites as you travel the City and the County.

[City of Tampa](https://www.tampagov.net/emergency-management/covid-19/face-covering)<sup>9</sup>

[Hillsborough County](https://www.hillsboroughcounty.org/en/residents/public-safety/emergency-management/stay-safe/face-coverings-and-masks)<sup>10</sup>

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## CLASS DISRUPTION STATEMENT

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**Disruption policy:** Every student has the right to a comfortable learning environment where the open and honest exchange of ideas may freely occur. Each student is expected to do his or her part to ensure that the classroom (and anywhere else the class may meet) remains conducive to learning. This includes respectful and courteous treatment of all in

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<sup>9</sup> <https://www.tampagov.net/emergency-management/covid-19/face-covering>

<sup>10</sup> <https://www.hillsboroughcounty.org/en/residents/public-safety/emergency-management/stay-safe/face-coverings-and-masks>

the classroom. According to the terms of the University of Tampa Disruption Policy, the professor will take immediate action when inappropriate behavior occurs. Details of the policy may be found at [Disruption of the Academic Process](#)<sup>11</sup>.

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## STUDENT CODE OF CONDUCT AND COVID-19

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All students whether living on or off campus are responsible for their own behavior and their personal safety. In the current COVID-19 pandemic, it is imperative that students understand their responsibility to support not only their own health and safety, but also how their personal actions contribute to the safety and welfare of others, including those within and outside the UT community. Non-compliance with the Spartan Shield Health and Safety Plan has been incorporated into the [Student Code of Conduct](#)<sup>12</sup> to promote accountability.

Prohibited conduct includes, but is not limited to, violating isolation and/or quarantine restrictions, not maintaining appropriate physical/social distancing or not following the required use of approved facial coverings in public campus spaces indoors, and outdoors when physical/social distancing is not possible. Behavior that violates city, county and/or state executive orders specifically related to the public health emergency in the state of Florida due to the spread of COVID-19, is also prohibited. Engaging in any behaviors that violate the Spartan Shield Health and Safety Plan may result in disciplinary action ranging from a disciplinary reprimand through expulsion from the University.

As a community, we abide by the Spartan Code and express care for ourselves and each other by sharing the obligation of compliance and holding each other accountable to the health and safety measures outlined by the University's Spartan Shield Health and Safety Plan. Violations of University policy should be reported by contacting Campus Safety at (813) 257-7777 or by submitting a [student conduct incident report](#)<sup>13</sup>.

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<sup>11</sup> <http://ut.smartcatalogiq.com/en/current/catalog/Academic-Policies-and-Procedures/Disruption-of-the-Academic-Process>

<sup>12</sup> <https://www.ut.edu/campus-life/student-services/office-of-student-conduct/student-code-of-conduct>

<sup>13</sup> [https://ut-advocate.symplicity.com/public\\_report/index.php/pid148678?](https://ut-advocate.symplicity.com/public_report/index.php/pid148678?)