MATH 2305.W02  
Discrete Mathematics I  
Department of Mathematics and Statistics  
Fall 2020

A. COURSE INFORMATION

Course number/section: CRN 51125, MATH 2305.W02  
Class meeting time: Asynchronous online delivery, except for the following synchronized WebEx meetings: August 20th (2:00pm-3:00pm) and November 5th (2:00pm-4:30pm). Students who cannot meet at those times, please email me for other arrangements.  
Class location: online via Blackboard  
Course Website: TAMU-CC Blackboard https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Valentina Postelnicu  
Office location: CI-357  
Office hours: T 3:30pm-5:30pm online via WebEx  
W & R 6:00pm-7:00pm online via WebEx  
T 7:00pm-8:00pm face-to-face and by appointment  
Telephone: (361) 825-3023 (office)  
E-mail: Valentina.Postelnicu@tamucc.edu  
Appointments: Please email me and include information about your availability during the week you would like to meet with me.

C. COURSE DESCRIPTION

Catalog Description  
An introduction to topics in discrete mathematics with an emphasis on applications in mathematics and computer science. Topics include formal logic, graphs, trees and related algorithms, and combinatorics and discrete probability.

D. PREREQUISITES/COREQUISITES

Prerequisites: MATH 1314 and 1316, or MATH 2312, or placement beyond MATH 2312.  
Corequisites: None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Textbook  
Discrete Mathematics with Applications by Susanna Epp, 5th edition, published by Brooks/Cole Cengage Learning, and WebAssign access. WebAssign access code is required. It’s available as a bundle with the textbook, or separately as a standalone access code at our TAMUCC bookstore. You can purchase the WebAssign access code online,
directly from WebAssign (use the Blackboard link Access WebAssign under Welcome). When you purchase the access code, it includes an electronic version of the textbook. Therefore, you are not required to buy the hardcopy version of the textbook unless you prefer to do so.

**Supplies**
Regular access to high speed internet and Microsoft Office applications (e.g., Word, Power Point).
Students will be responsible for providing webcams to be used during WebEx presentations and exams.

F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Demonstrate knowledge of elementary formal logic.
2. Apply knowledge of general-purpose proof methods, including direct proof, proof by contradiction, and mathematical induction to construct or understand elementary proofs in discrete mathematics.
3. Demonstrate knowledge of fundamental properties of graphs and trees.
4. Apply elementary combinatorial methods to the solution of counting and discrete probability problems.
5. Exhibit knowledge of other topics to include (as time permits) the asymptotic functional notations $\Theta$, $O$, and $\Omega$, sequences, and relations on sets.

G. **INSTRUCTIONAL METHODS AND ACTIVITIES**
This fully online course will be a combination of individual investigations and whole-class discussions via TAMUCC Blackboard and WebEx. All participants are expected to engage in group and whole class activities by contributing knowledge and thoughtful evaluation of others’ contributions.

H. **MAJOR COURSE REQUIREMENTS AND GRADING**
Grades will be based on the percentage of total points the student earns. There will be points given on the following:
**ACTIVITY/ASSIGNMENT** | **% of FINAL GRADE**
--- | ---
WebAssign Homework | 30%
Blackboard Discussion Forum | 15%
Exams (Midterm Exam 20%, Final Exam 10%) | 30%
Proofs Project and WebEx presentation | 25%

Specific directions for course activities/assignments (e.g., content, format, submission, deadlines, feedback) will be posted on TAMUCC-Blackboard, at [https://bb9.tamucc.edu/](https://bb9.tamucc.edu/). The Final Project and the assignments with essay-type of format or requiring a presentation will be graded using the following

**Grading Rubric:**

<table>
<thead>
<tr>
<th>Category</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
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<tbody>
<tr>
<td><strong>Subject knowledge 50%</strong></td>
<td>Exemplary</td>
<td>Good</td>
<td>Satisfactory</td>
<td>Unsatisfactory</td>
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<tr>
<td>Demonstrates subject knowledge throughout the entire assignment. All information is clear, appropriate, and accurate. The solutions to all problems are correct.</td>
<td>Demonstrates subject knowledge most of the time. Most of the information is clear, appropriate, and accurate. Most of the solutions to problems are correct, some solutions have minor errors.</td>
<td>Demonstrates some subject knowledge. Some information is clear, appropriate, and accurate. Some solutions to problems are correct.</td>
<td>Subject knowledge is not demonstrated. Information is confusing, insufficient, inappropriate, and inaccurate. Most of the problems have incorrect solutions.</td>
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<tr>
<td><strong>Organization 30%</strong></td>
<td>The sequence of information/proof is logical and well organized.</td>
<td>The sequence of information/proof is well organized.</td>
<td>Some parts of the sequence of information/proof is organized.</td>
<td>The sequence of information/proof is disorganized.</td>
</tr>
<tr>
<td><strong>Communication (written paper, and/or ppt and oral presentation) 20%</strong></td>
<td>Excellent written communication of ideas/ excellent integration of spoken and visual presentation.</td>
<td>Good written communication of ideas, most of the time/good integration of spoken and visual presentation, most of the time.</td>
<td>Some parts are well written, and ideas are communicated effectively / some parts of the presentation are coordinated orally and visually.</td>
<td>The written paper is hard to follow, ideas are not communicated effectively / the presentation is hard to follow, the spoken and visual presentation are not integrated.</td>
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Final grades will be assigned according to the following table:
### Percentage Grade

- ≥90.0%   A
- ≥80.0%   B
- ≥70.0%   C
- ≥60.0%   D
- Below 60%  F

### I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Week/Date</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>Aug 20*</td>
<td>Introduction to MATH 2305 and Ch. 1-3</td>
<td>WebEx Introduction (2:00pm-3:00pm)</td>
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<tr>
<td>Aug 24 - Aug 28</td>
<td><strong>Chapter 1 Speaking Mathematically</strong>&lt;br&gt;1.1 Variables&lt;br&gt;1.2 The Language of Sets&lt;br&gt;1.3 The Language of Relations and Functions</td>
<td>Discussion Forum &amp; WebAssign: Chapter 1</td>
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<td>Aug 31 - Sep 4</td>
<td><strong>Chapter 2 Logic of Compound Statements</strong>&lt;br&gt;2.1 Logical Form and Logical Equivalence&lt;br&gt;2.2 Conditional Statements&lt;br&gt;2.3 Valid and Invalid Arguments</td>
<td>Discussion Forum &amp; WebAssign: Chapter 2</td>
</tr>
<tr>
<td>Sep 8 - Sep 11</td>
<td><strong>Chapter 3 Logic of Quantified Statements</strong>&lt;br&gt;3.1 Predicates and Quantified Statements I&lt;br&gt;3.2 Predicates and Quantified Statements II&lt;br&gt;3.3 Statements with Multiple Quantifiers</td>
<td>Discussion Forum &amp; WebAssign: Chapter 3</td>
</tr>
<tr>
<td>Sep 14 - Sep 18</td>
<td><strong>Midterm Exam (Chapters 1-3)</strong></td>
<td>Discussion Forum &amp; WebAssign: Midterm Exam</td>
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<tr>
<td>Sep 21 - Sep 25</td>
<td><strong>Chapter 4 Elementary Number Theory and Methods of Proof</strong>&lt;br&gt;4.1 Direct Proof and Counterexample I: Introduction&lt;br&gt;4.3 Direct Proof and Counterexample III: Rational Numbers</td>
<td>Discussion Forum &amp; WebAssign: Direct Proofs 1</td>
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<tr>
<td>Sep 28 - Oct 2</td>
<td>4.4 Direct Proof and Counterexample IV: Divisibility&lt;br&gt;4.5 Direct Proofs and Counterexample V: Division into Cases</td>
<td>Discussion Forum &amp; WebAssign: Direct Proofs 2</td>
</tr>
<tr>
<td>Oct 5 - Oct 9</td>
<td>4.7 Indirect Argument: Contradiction and Contraposition</td>
<td>Discussion Forum &amp; WebAssign: Indirect Proofs</td>
</tr>
<tr>
<td>Oct 12 - Oct 16</td>
<td><strong>Chapter 5 Sequences, Mathematical Induction</strong>&lt;br&gt;5.1 Sequences</td>
<td>Discussion Forum &amp; WebAssign: Sequences</td>
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<td>Oct 19 - Oct 23</td>
<td>5.2 Mathematical Induction</td>
<td>Discussion Forum &amp; WebAssign: Mathematical Induction</td>
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<tr>
<td>Oct 26 - Oct 30</td>
<td><strong>Chapter 6 Set Theory</strong>&lt;br&gt;6.1 Set Theory</td>
<td>Discussion Forum &amp; WebAssign: Sets</td>
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<tr>
<td>Nov 5*</td>
<td><strong>Proofs Project</strong></td>
<td>Discussion Forum &amp; WebEx Proofs Project (2:00pm-4:30pm)</td>
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<tr>
<td>Nov 9 - Nov 13</td>
<td><strong>Chapter 9 Counting and Probability</strong>&lt;br&gt;9.1 Introduction&lt;br&gt;9.2 Possibility Trees and Multiplication Rule</td>
<td>Discussion Forum &amp; WebAssign: Probability and Counting</td>
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</tbody>
</table>
9.3 Counting Elements of Disjoint Sets: The Addition Rule

Nov 16 - Nov 20 9.5 Counting Subsets of a Set: Combinations Discussion Forum & WebAssign: Permutations and Combinations

Nov 23 - Nov 24 Graphs Discussion Forum & WebAssign: Graphs
1.4 Graphs
10.1 Trails, Paths, and Circuits

Dec 1 Final Exam WebAssign: Final Exam

*WebEx meetings. Students who cannot meet at those times, please email me for other arrangements.

Note: Changes in this course schedule may be necessary and will be announced on Blackboard. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

COVID-19
Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

Online delivery
This course will be delivered online. You can access it through TAMUCC-Blackboard at https://bb9.tamucc.edu/
Should you have difficulties accessing Blackboard, contact IT help: https://it.tamucc.edu/gethelp. For online office hours and meetings we will use WebEx. Instructions on how to use WebEx will be provided via TAMUCC-Blackboard.

Late Work and Make-up Exams
Late assignments will not be accepted, unless exceptional circumstances prevent you from completing them. Extension of deadlines will be at the instructor’s discretion. Late assignments may result in partial or total loss of credit. There are NO make-ups for missed assignments or synchronized online activities. Exceptional circumstances (e.g., documented illness, family situations) may be considered at the instructor’s discretion.

Extra Credit
There will be no extra credit for this course.

Participation
You are expected to be prepared and participate in all course activities.

K. COLLEGE AND UNIVERSITY POLICIES
• Academic Integrity (University)
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

• Classroom/Professional Behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• Statement of Civility
Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

• Deadline for Dropping a Course with a Grade of W (University)
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

• Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor.
For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  http://disabilityservices.tamucc.edu/

- **Civil Rights Complaints**
  Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

**Limits to Confidentiality.** Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in
the University Counseling Center.

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

### L. OTHER INFORMATION

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner via Blackboard.