Discrete Mathematics I Math 2305
Mathematics and Statistics Department
Spring 2015

A. COURSE INFORMATION

Course number/section: Math2305.001
Class meeting time: TR 11:00 am- 12:15 pm
Class location: IH 268
Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. Jose H. Giraldo
Office location: CI 317
Office hours: TR 12:30-2:00 pm  W 11:00 am – 1:00 pm
Telephone: 361-8255827
e-mail: jose.giraldo@tamucc.edu
Appointments: Contact me through email to arrange meetings outside office hours.

C. COURSE DESCRIPTION

Catalog Course 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 combinatorial and discrete probability.

Extended Course Description
After reviewing the key concepts on sets, logic concepts are introduced. Then each of the key concepts will be revisited in a more formal manner. Attention will be placed into making conjectures and verifying or rejecting them with solid arguments.

D. PREREQUISITES AND COREQUISITES

Prerequisites
MATH 1314 and 1316, or MATH 2312, or placement beyond MATH 2312

Corequisites
None

E. REQUIRED TEXTBOOK, READINGS AND SUPPLIES

Required Textbook
There is not a required textbook but a recommended one.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

By the end of the course, a student will 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 $\theta$, BIG-O, and $\Omega$, sequences, and relations on sets.

The student should achieve the following general goals in this class:

1. Improve his attitude toward:
   - Appreciation and value of mathematics
   - The likelihood of success and satisfaction
   - Ways to learn math effectively
   - The link between math and the student’s discipline
2. Strengthen his general academic skills in:
   - Critical thinking
   - Writing
   - Giving clear verbal explanations
   - Working collaboratively
   - Assuming responsibility
   - When and how to use technology.
   - Improve his quantitative reasoning skills:
     - Ability to translate a word problem into a math statement, and back again to words.
     - Ability to form reasonable descriptions and judgments based on quantitative information.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

The class instruction will be based on lecturing and class discussions. Students are expected to read assigned material before coming to class. Students are expected to be active learners and not spectators.

In general each meeting is structured to have three parts:

1. Group discussion of homework or other assignments within your group, and then extended discussion to the whole class. 10-15 minutes max
II. Presentation of new concepts and activities aimed to the understanding of the new concepts. 20-25 minutes
III. Work in groups on problems dealing with the new concepts discussed in class. 20-25 minutes
IV. Evaluation of new concepts using “voting systems” 10 minutes

Group work and working on homework are the essential component of this class. These are the key components for you to understand the concepts and leading to your success.

Keep in mind that you CAN ONLY REMEMBER

- 10% of what you read
- 20% of what you hear
- 30% of what you see
- 50% of what you see and hear
- 70% of what you discuss with others
- 90% of what you teach someone else

In this course YOU will be an active participant in the learning process. I expect you to be a scholar, not a spectator.

You will work in groups of three or four. Research shows that students who work in groups tend to be more successful. From participating actively in the activities/problems assigned, you will reach the level that enables you to discuss the concepts with others, or teach those concepts to someone else. Writing and explaining to others are important component of this approach. For this reason, numerical answers without an accompanying explanation or interpretation are meaningless.

H. MAJOR COURSE REQUIREMENTS AND GRADING

All the activities leading to accomplishing the goals for this class will be considered for your final grade. The table below shows the instruments that will be used to determine your grade.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Mid term Assessments (10%, 15%, 15%)</td>
<td>40%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Quizzes</td>
<td>15%</td>
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<tr>
<td>Problems and Interview</td>
<td>15%</td>
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<td>Class Participation</td>
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**Midterm Assessments**

There will be three midterm assessments. Each assessment has two parts: **Basics**, and **Essay**. The part on **Basics** will assess the basic concepts you are expected to master in this class, including definitions. This part of the test is closed notes, closed book. It counts as 70% of the test grade. For the solutions in the **Essay part** you have to include full explanation of your work and principles used to receive credit. It counts as 30% of the test grade.

For the essay part of each test you will be allowed to use a standard card information you consider necessary, excluding examples and solutions to problems.

To see what is to be assessed in each midterm and the corresponding dates for them visit the calendar for the course. Review questions for each of the test will be available to the students and I DO EXPECT YOU TO WORK ON THE REVIEW. About 40% of the questions in the test will are similar to the review questions for the test.

In each test you are expected to show you know definitions and examples showing when the conditions are met and they are not met.

**FINAL EXAM**

The final exam will also have the basic and essay parts. The part on basics will cover all the topics included in the midterms. The essay part will be on particular topics to be announced during the review.

**QUIZZES**

There will be a weekly quiz. These are formative assessments and will tell you how well you are getting the key concepts for this course. Topics and rubric for them will be available in Black Board. The questions for the quiz will come directly out of the homework assigned. You can

**HOMEWORK**

There is homework assigned in each class either from the book or from Web Work (a web management system to be used in this class). You have to have a spiral devoted only to homework. It is important that you have the spiral with the homework available all the time. *You need to show evidence of your work when you ask questions about homework.* You will not receive a grade for your homework but all the weekly assessments are coming from the homework.
PROBLEMS AND INTERVIEW

You will receive a set of problems the second week of the semester. You have the whole semester to work on those. The solutions and defense of the solution through an interview will happen toward the end of the semester. Full details in Black Board.

I. COURSE CONTENT/SCHEDULE

<table>
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<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

More details available in Black Board
J. COURSE POLICIES

Attendance/Tardiness
Attendance is not mandatory but I will keep track of it. The attendance to class and participation in the class discussions are paramount for you to understand the subject matter.

Late Work and Make-up Exams
I will not collect any late work. No makeups unless there is an extreme situation fully justified. Do not ask for exceptions.

Extra Credit
There is no extra credit in this class. You have plenty of opportunities to show your understanding of the material throughout different assessments.

Cell Phone Use
Only allowed to deal with class related issues: surveys in class, Google data or info needed for a problem, etc.

Laptop Use
You are encouraged to bring your laptop to class. However, you are expected to use it only for class related activities. Social media, mail,

Food in Class
No food please.

Missed Exam
No makeups.

Participation
Your participation in any class discussions is highly encouraged.

Others

- Use the resources you have available: your classmates, the SI leader or the mentor, the Teaching Assistant, the professor, the Center for Academic Student Achievement (CASA). All of this will lead to our main objective, which is YOUR LEARNING.
- The course requires a solid and continuous effort. Since this is a four-credit course, you are expected to devote for each hour of class between two and three hours outside the class working on the subject. Some people need more time than others. Each individual has a different way to learn. All of us are different.
- I do expect that you come to each class prepare to talk about any assigned work and readings. One of the best ways to learn any subject and specially mathematics is by talking to others about a problem after you have read and attempted the problems on you
own. Listening to a solution without attempting to solve it and struggling through the process will not benefit you very much. Be aware that reading the solutions and be able to follow the explanation does not mean that you know how to do the problem and understand all what is involved in it.

- At the beginning of each class you have the opportunity to ask questions about the homework. Use that time wisely. Remember that making a serious attempt to solve a problem and later discuss your solution or to clarify doubts is key in the learning process.
- Feel absolutely free to ask any questions. Your question will benefit you and most likely others around you. One of the driving forces of mathematics is the questioning part. Why? Why? Why? Rote memorization is not a great help here but is needed too at some point.
- Do not hesitate to contact me in case you want to discuss your performance in the class. I am here to lead your learning but you are the one responsible for it. I AM THE COACH AND YOU ARE THE PLAYER.
- After you receive your grade you have up to the next class meeting to dispute it. I am the only person you can dispute your grade with. After the two days I assume that you accepted your grade. NO EXCEPTIONS. Grades are posted on the web immediately after I return a graded paper.
- You are expected to be on time for class. Arriving late or leaving the classroom before the end of the period will be considered impolite, and rude to your classmates and professor. BE ON TIME FOR EACH MEETING. Your attendance will be monitored. The attendance sheet will be in the front of the classroom for each meeting. Make sure you check it on daily basis.
- If at any point in the semester you are considering to drop the class, talk to me before you do it. I am here to help you in your learning experience and to help you to succeed in your college career.
- The most basic rule to work as part of a group is the respect to others. I will appreciate all your effort to make it the golden rule. Refer to others with respect.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

- **Classroom/Professional Behavior**

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course by. No student is eligible to receive a W without completing the official drop process by this
deadline. Visit the Office of the University Registrar for the Course Drop Form that must submitted. After April 10, 2015 a student will not be allowed to drop a course.

• **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, 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 encouraged 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.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). 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**
  Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

• **Academic Honesty**
  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, forgery, or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) For the complete statement, see [http://catalog.tamucc.edu/content.php?catoid=10&navoid=313%23Academic_Integrity#Academic_Honesty](http://catalog.tamucc.edu/content.php?catoid=10&navoid=313%23Academic_Integrity#Academic_Honesty)

L. OTHER INFORMATION

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 during regularly scheduled lecture periods.