

## MATH 2053 – P01 Discrete Mathematics, spring 2013

<b>Department of</b>	<b>Mathematics</b>	<b>College of</b>	<b>Arts and Sciences</b>
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<b>Office Hours:</b>	MWF: 8:30-9:50 AM, MW: 4:00-6:20 PM OR by appointment		
<b>Virtual Office Hours:</b>	<b>By Email</b>		
<b>Course Location:</b>	Woolfolk Soc & Pol Sci Bldg 110		
<b>Class Meeting Days &amp; Times:</b>	1:00 pm - 1:50 pm MWF		
<b>Course Abbreviation and Number:</b>	MATH 2053		
<b>Catalog Description:</b>	<b>MATH 2053 Discrete Mathematics (3-0)</b> 3 Credit hours. Designed to provide bridge between computational mathematics and theoretical mathematics. Topics include induction and recursion, combinatorics, graph theory functions, proofs and logic. Prerequisite: MATH 1124		
<b>Prerequisites</b>	Math 1124 (Calculus I)		
<b>Required Text:</b>	<b>DISCRETE MATHEMATICS with Graph Theory, Third Edition; By Edgar G. Goodair Michaels M. Parmenter .ISBN:0-13-167995-3</b>		
<b>Access to Learning Resources:</b>	PVAMU Library: phone: (936) 261-1500; web: <a href="http://www.tamu.edu/pvamu/library/">http://www.tamu.edu/pvamu/library/</a> University Bookstore: phone: (936) 261-1990; web: <a href="https://www.bkstr.com/Home/10001-10734-1?demoKey=d">https://www.bkstr.com/Home/10001-10734-1?demoKey=d</a>		
<b>Course Goals or Overview:</b>			
	The goal of this course is to provide basic knowledge of fundamental concepts of Mathematical logic and Discrete computational methods		
<b>Course Objectives:</b>			
<b>At the end of this course, the student will be able to:</b>			
		Alignment with Core Curriculum	
1	Understand and evaluate the fundamentals of mathematical logic that computer science and Math majors need to grasp and write the background of computer logic and artificial intelligence.	CT, CS and EQ	
2	Use tools of mathematical logic to solve and present more and more complex	CT, CS and EQ	

	problems by learning machine instruction from prime use of flow charts to the writing and expression of complete algorithms for execution by the computer.	
3	Have acquired elements of combinatorics and graph theory to highlight the role mathematics in the development of machine logic, artificial intelligence.	CS and EQ

### Course Evaluation Methods

This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course.

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**Exams** – written tests designed to measure knowledge of presented course material

**Exercises** – written assignments designed to supplement and reinforce course material

**Projects** – web development assignments designed to measure ability to apply presented course material

**Class Participation** – daily attendance and participation in class discussions

**Presentations** – Participation in presentations to the class including board-work.

### Grading Matrix

Instrument	Value (points or percentages)	Total
Assignments	10 assignments at 10 points each	100
Tests	4 Tests at 25 points each	100
Mid Term Exam	30	30
Class Participation/Projects Presentations/ Discussion	20	20
Final Exam	50	50
<b>Total:</b>		<b>300</b>

#### Grade Determination:

A = 300 – 270pts;

B = 269 – 240pts;

C = 239 – 195pts;

D = 194 – 165pts;

F = 164pts or below

### Course Procedures

#### Formatting Documents:

Microsoft Word is the standard word processing tool used at PVAMU. If you're using other word processors, be sure to use the "save as" tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.

#### Exam Policy

Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook).

## **University Rules and Procedures**

### **Disability statement (See Student Handbook):**

Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

### **Academic misconduct (See Student Handbook):**

You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

### **Forms of academic dishonesty:**

1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.
2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.
3. Fabrication: use of invented information or falsified research.
4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else's words, ideas, or data as one's own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one's own work also constitutes plagiarism.

### **Nonacademic misconduct (See Student Handbook)**

The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor's ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

### **Sexual misconduct (See Student Handbook):**

Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

### **Attendance Policy:**

Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student's course grade being reduced or in assignment of a grade of "F". Absences are accumulated beginning with the first day of class.

### **Student Academic Appeals Process**

Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have

adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

### **Technical Considerations for Online and Web-Assist Courses**

#### **Minimum Hardware and Software Requirements:**

- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
  - Sending and receiving email
  - A working knowledge of the Internet
  - Proficiency in Microsoft Word
  - Proficiency in the Acrobat PDF Reader
  - Basic knowledge of Windows or Mac O.S.

**Netiquette (online etiquette):** students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources.

**Technical Support:** Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282

#### **Communication Expectations and Standards:**

All emails or discussion postings will receive a response from the instructor within 48 hours.

You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

#### **Submission of Assignments:**

Assignments, Papers, Exercises, and Projects will distributed and submitted through your online course. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

#### **Discussion Requirement:**

Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

**It is strongly suggested** that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.

### Course outline.

#### Tentative Instructional Outline:

Week	Topic
1	Chapter 0. Mathematical Logics 0.1 Compound statements: And/or, implication 0.2 Proof in Mathematics: direct, by contrapositive and by contradiction Student presentations interpret compound statements to class.
2	Chapter 1. Logic 1.1 The Truth tables: implication, conjunction, disjunction and negation 1.2 The Algebra of propositions: De Morgan's Laws. Student presentation of Truth Tables, class evaluates process. Tables are presented by students to express DeMorgan's Law.
3	1.3 Logical arguments and review Student presentation reflects material cover in Chapter 1. Chapter 2. Sets and relations 2.1 Sets
4	2.2 Operations on sets 2.3 Binary Relations Student presentations reflect the operations on sets
5	2.4 Equivalence Relations 2.5 Partial orders Equivalence Relations Examples are delivered by student to the class as a group project.
6 and 7	Chapter 3. Functions 3.1 Basic terminology 3.2 Inverses and Composition. 3.3 One-to-one correspondence and the Cardinality of a set. Students present basic terminology examples to class. <b>Mid Term Exam</b>

8	Chapter 4. The Integers 4.1 The division Algorithm Student presentations explain the division Algorithm.
9	4.2 Divisibility and Euclidean Algorithm Different Algorithm Examples are delivered by student groups to solve.
10	4.3 The prime numbers 4.4 Congruence
11	4.5 Application of Congruence: Chinese Remainder Theorem/ Cryptography Student Presentation of Chinese Theorem as it relates today.
<b>12</b>	Chapter 5. Induction and Recursion 5.1 Mathematical Induction 5.2 Recursively defined sequences
13	5.3 Recurrence relations: The characteristic polynomial 5.4 Recurrence relations: Generating functions Student's presentations explain and express recurrence relations.
14 and 15	Student presentations which deliver an explanation of final exam review questions. <b>Course Review and Final Exam</b>