

## MATH 2163 Structure of Number System Summer 2019

**Instructor:** Camille S. Burnett, Ph.D.  
**Section # and CRN:** P01; 32463  
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**Office Hours:** MTWR: 3:30 p.m. – 4:30 p.m.  
 And by appointment  
**Mode of Instruction:** Face to Face

**Course Location:** JJPY 336  
**Class Days & Times:** MTWR, 1:00 p.m. – 3:20 p.m.

**Catalog Description:** A logical approach to elementary mathematics, with emphasis on the powers and techniques of the axiomatic approach in mathematics. Topics include sets, logic, number theory, equivalence relations and mathematical proofs in developing the characteristics of number systems.

**Prerequisites:** MATH 1113 or MATH 1103  
**Co-requisites:** N/A

**Required Texts:** Text  
 Miller, C. D., Hereen V. E., Hornsby, J., Hereen, C, Morrow, M. L., & Van Newenhizen J. (2016). *Mathematical Ideas plus MyMathLab with Pearson eText – Access Card Package*. (13<sup>th</sup> ed.) Boston, MA: Pearson. ISBN 978-0-321-97757-1 or 978-0-321- 97707-6. (MyMathLab access includes access to an electronic textbook.)  
**MML Access Code: burnett58766**

Calculator  
 Required: Scientific Calculator (TI-30XS)  
 Recommended: Graphing Calculator (TI-83 or TI-84 series)

Other  
 Ruler  
 Graph Paper

**Recommended Texts:** Sonnabend, T. (2010). *Mathematics for Teachers: An Interactive Approach for Grades K-8* (4<sup>th</sup> ed.). Belmont, CA: Cengage.

### Student Learning Outcomes:

	Upon successful completion of this course, students will be able to:	Program Learning Outcome # Alignment	Core Curriculum Outcome Alignment	Educator Standards
1	Perform operations with real numbers	1, 4	1, 3	1, 5, 6, 7
2	Perform the computations with ratios and percentages.	1, 4	1, 3	1, 5, 6, 7

3	Define factors, multiples and prime numbers.	1, 4	3	1, 5, 6, 7
4	Use the prime factorizations of numbers to find the greatest common factor and least common multiple.	1, 4	1, 3	1, 5, 6, 7
5	Apply problem solving skills to numerical applications.	1, 3, 4	1, 2, 3	1, 2, 5, 7
6	Represent and describe relationships among sets using the appropriate mathematical terminology and notation.	1, 4	1, 2, 3, 4	1, 5, 6, 7
7	Find the next term in a sequence or pattern.	1, 4	1, 2	2, 5
8	Use inductive and deductive reasoning to solve problems.	1, 3, 4	1, 3	1, 2, 5, 7
9	Solve word problems.	1, 3, 4	1, 2, 3	1, 2, 5, 7
10	Find the sum of sequences.	1, 4	1, 2, 3	1, 2, 5
11	Find the complement, union and intersection of a set.	1, 4	1, 3, 4	1, 5, 6
12	Solve linear equations.	1, 3, 4	1, 3	1, 2, 5
13	Find various forms of a conditional statement.	4	2, 4	1, 5, 6
14	Examine the properties of various numeration systems.	3, 4	1, 2, 4	1, 5, 6
15	Use historical numeration systems to represent Hindu-Arabic numerals.	4	1, 3, 46	1, 5, 6
16	Use manipulatives to teach mathematical concepts.	3, 4	1, 2, 3, 4	1, 2, 5, 6, 7
17	Demonstrate proficiency in using technology.	4	1, 2, 3	1, 5, 6, 7
18	Communicate about mathematics orally and in writing.	4	1, 2	2, 5

**Program Learning Outcomes:**

1. Demonstrate basic mathematical computational skills and distinguish uses of concepts in Calculus, Algebra and Applied Mathematics.
2. Demonstrate the ability to write mathematically rigorous proofs.
3. Demonstrate the ability to perform advanced mathematical computations.
4. Demonstrate a breadth and depth of knowledge in applied mathematics.

**Core Curriculum Learning Outcomes:**

1. Critical Thinking Skills
2. Communication Skills
3. Teamwork
4. Empirical and Quantitative Skills
5. Personal Responsibility
6. Social Responsibility

**Texas Examinations of Educator Standards:**

1. Number Concepts
2. Patterns and Algebra
3. Geometry and Measurement
4. Probability and Statistics
5. Mathematical Processes
6. Mathematical Perspectives
7. Mathematical Learning and Instruction
8. Mathematical Assessment
9. Professional Development

**Major Course Requirements**

**Method of Determining Final Course Grade**

Course Grade Requirement	Value	Total
1) Attendance	5%	5%
2) Homework Assignments	15%	15%
3) Quizzes	15%	15%
4) Exams	3 @ 15%	45%
5) Final Examination	20%	20%
<b>Total:</b>	<b>100%</b>	<b>100%</b>

**Grading Criteria and Conversion:**

- A = 90 – 100%
- B = 80 – 89%
- C = 70 – 79%
- D = 60 – 69%
- F = 59% and below

**Detailed Description of Major Assignments:****Assignment Title or Grade Requirement****Description**

Attendance	This includes prompt and regular attendance to class, including remaining in class for the duration of the designated time. It also includes active participation in class activities, both face-to-face and online.
Homework Assignments	Homework assignments will be done in MyMathLab to practice the concepts and skills learned in class.
Quizzes	Quizzes will cover specified chapters in the book, as well as information from class lectures and activities.
Exams (including Mid-Semester)	Exams will cover specified chapters in the book, as well as information from class lectures and activities.
Final Examination	The final examination will cover specified chapters in the book, as well as information from class lectures and activities.
Extra Credit	Extra credit points will be awarded for completing various tasks as determined by the instructor such as taking the relevant TExES Representative Exam.

**Course Procedures or Additional Instructor Policies****Taskstream**

Taskstream is a tool that Prairie View A&M University uses for assessment purposes. One or more of your assignments may be required for submission as an "artifact," an item of coursework that serves as evidence that course objectives are met. More information will be provided during the semester, but for general information, you can visit Taskstream via the link in eCourses.

**Attendance**

Per PVAMU, regular class attendance is required. An absence may only be excused with proper written documentation from relevant personnel. As such, attendance will be assessed using the following rubric at the end of the semester:

<b>Number of Unexcused Absences</b>	<b>Points</b>
0	100
1	50
2 or more	0

**Exam Policy**

Exams and quizzes must be taken as scheduled by the professor. Makeup examinations and quizzes will NOT be allowed except under documented, extreme emergencies (See Student Handbook).

## Semester Calendar (subject to change)

### Week One:

#### Topic Description

Assignment (s):

Inductive and Deductive Reasoning, Patterns and Problem Solving, Set Theory

M, 06/03: Section 1.1, 1.2, and 5.5

T, 06/04: Section 1.3 and 1.4, and **Chapter 1 Quiz**

W, 06/05: Section 2.1 and 2.2

R, 06/06: Section 2.3, **Chapter 2 Quiz**, and **Review for Exam 1**

### Week Two:

#### Topic Description

Assignment (s):

Numeration Systems, Operations, Algorithms

M, 06/10: **Exam 1** and Section 4.1

T, 06/11: Section 4.2 and 4.3, and **Chapter 4 Quiz**

W, 06/12: Operations

R, 06/13: Operations and Algorithms

### Week Three:

#### Topic Description

Assignment (s):

Number Theory, Real Number and Their Representations

M, 06/17: Algorithms, **Operations and Algorithms Quiz**, and **Review for Exam 2**

T, 06/18: **Exam 2** and Section 5.1

W, 06/19: Section 5.4 and 6.1, and **Chapter 5 Quiz**

R, 06/20: Section 6.2 and 6.3

### Week Four:

#### Topic Description

Assignment (s):

Real Numbers and Their Representations, Logic

M, 06/24: Section 6.4 and 6.5, and **Chapter 6 Quiz**

T, 06/25: TBD and **Review for Exam 3**

W, 06/26: **Exam 3** and Section 3.1

R, 06/27: Section 3.4 and 7.1, and **Chapter 3 Quiz**

### Week Five:

#### Topic Description

Assignment (s):

Algebra

M, 07/01: Section 7.2

T, 07/02: Section 7.3 and **Chapter 7 Quiz**

W, 07/03: **Review for Final Exam**

R, 07/04: **Independence Day Holiday (University Closed)**

F, 07/05: **Final Exam**

## **Student Support and Success**

### **John B. Coleman Library**

The library and its partners have as their mission to provide resources and instructional material in support of the evolving curriculum, as a partner in Prairie View A&M University's mission of teaching, research, and service and to support the University's core values of access and quality, diversity, leadership, relevance, and social responsibility through emphasis on ten key areas of service. It maintains library collections and access both on campus, online, and through local agreements to further the educational goals of students and faculty. <https://www.pvamu.edu/library/> Phone: 936-261-1500

### **University Tutoring Center**

The Center offers tutoring via peer tutoring. The services include workshops (i.e., Save My Semester, Recalculate Your Route), seminars (i.e., Tools You Can Use: TI-84), group review sessions (i.e., College Algebra Topic Reviews, GRE Preparation), group study opportunities (i.e., TSIA, HESI, Study Break, Exam Cram), and test-taking strategies (How to take Notes, Study Buddy, 5 Day Study Guide). The Learning Curve is a nationally certified tutoring program through the National Tutoring Association. The peer tutors are trained and certified by the coordinator each semester. Location: J.B. Coleman Library Rm. 307. Phone: 936-261-1561

### **The Student Academic Success Center**

The Student Academic Success Center is designed to help Prairie View students in their second year and beyond navigate towards graduation by providing the following services: Academic Advisement, Targeted Tutorials for Personalized Learning, Campus-Wide Referrals, and Academic & Social Workshops. Location: J.B. Coleman Library Rm. 306. Phone: 936-261-1040

### **Writing Center**

The Writing Center provides student consultants on all aspects of the writing process and a variety of writing assignments. Writing Center consultations assist students in such areas as prewriting, brainstorming, audience awareness, organization, research, and citation. Students taking on-line courses or courses at the Northwest Houston Center or College of Nursing may consult remotely or by email. Location: Hilliard Hall Rm. 121. Phone: 936-261-3724

### **Student Counseling Services**

The Student Counseling Services unit offers a range of services and programs to assist students in maximizing their potential for success: short-term individual, couples, and group counseling, as well as crisis intervention, outreach, consultation, and referral services. The staff is licensed by the State of Texas and provides assistance to students who are dealing with academic skills concerns, situational crises, adjustment problems, and emotional difficulties. Information shared with the staff is treated confidentially and in accordance with Texas State Law. Location: Owens-Franklin Health Center Rm. 226. Phone: 936-261-3564

### **Testing**

The Department of Testing administers College Board CLEP examinations, the HESI A2 for pre-nursing majors, LSAT for law school applicants and MPRE for second-year law students, the Experiential Learning Portfolio option, the Texas Success Initiative (TSI) Assessment, which determines college readiness in the state, and exam proctoring, among other service such as SAT and ACT for high school students. Phone: 936-261-3627

### **Office of Disability Services**

As a federally-mandated educational support unit, the Office of Disability Services serves as the repository for confidential disability files for faculty, staff, and students. For persons with a disability, the Office develops individualized ADA letters of request for accommodations. Other services include: learning style inventories, awareness workshops, accessibility pathways, webinars, computer laboratory with adapted hard and software, adapted furniture, proctoring of non-standardized test administrations, ASL interpreters, ALDs, digital recorders, livescribe, Kurtzweil, and a comprehensive referral network across campus and the broader community. Location: Evans Hall Rm. 317. Phone: 936-261-3585

### **Veteran Services**

Veterans Services works with student veterans, current military and military dependents to support their transition to the college environment and continued persistence to graduation. The Office coordinates and certifies benefits for both the G.I. Bill and the Texas Hazlewood Act. Location: May Hall Rm. 118. Phone: 936-261-3563

### **Office for Student Engagement**

The Office for Student Engagement delivers comprehensive programs and services designed to meet the co-curricular needs of students. The Office implements inclusive and accessible programs and services that enhance student development through exposure to and participation in diverse and relevant social, cultural, intellectual, recreational, community service, leadership development and campus governance. Location: Memorial Student Center Rm. 221. Phone: 936-261-1340

### **Career Services**

Career Services supports students through professional development, career readiness, and placement and employment assistance. The Office provides one-on-one career coaching, interview preparation, resume and letter writing, and career exploration workshops and seminars. Services are provided for students at the Northwest Houston Center and College of Nursing in the Medical Center twice a month or on a requested basis. Distance Learning students are encouraged to visit the Career Services website for information regarding services provided. Location: Evans Hall Rm. 217. Phone: 936-261-3570

## **University Rules and Procedures**

### **Disability Statement (Also See Student Handbook):**

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 contact Disability Services, in Evans Hall, Room 317, or call 936-261-3585/3.

### **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.

### **Title IX Statement**

Prairie View A&M University (PVAMU) is committed to supporting students and complying with the Texas A&M University System non-discrimination policy. It seeks to establish an environment that is free of bias, discrimination, and harassment. If you experience an incident of sex- or gender-based discrimination, including sexual harassment, sexual assault or attempted sexual assault, we encourage you to report it. While you may talk to a faculty member about an incident of misconduct, the faculty member must report the basic facts of your experience to Ms. Alexia Taylor, PVAMU's Title IX Coordinator. If you would like to speak with someone who may be able to afford you privacy or confidentiality, there are individuals who can meet with you. The Title IX Coordinator is designated to handle inquiries regarding non-discrimination policies and can assist you with understanding your options and connect you with on- and off-campus resources. The Title IX Coordinator can be reached by phone at 936-261-2123 or in Suite 013 in the A.I. Thomas Administration Building.

### **Class Attendance Policy (See Catalog for Full Attendance Policy)**

Prairie View A&M University requires regular class attendance. Attending all classes supports full academic development of each learner whether classes are taught with the instructor physically present or via distance learning technologies such as interactive video and/or internet.

Excessive absenteeism 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 during regular semesters and summer terms.

### **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 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***

### ***Minimum Recommended Hardware and Software:***

- Intel PC or Laptop with Windows 7; Mac with OS X; Smartphone or iPad/Tablet with Wi-Fi
- High speed Internet access
- 8 GB Memory
- Hard drive with 320 GB storage space
- 15" monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Most current version of Google Chrome or Firefox

**Note:** Be sure to enable Java & pop-ups in the Web browser preferences

### **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 (or a program convertible to 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 as directed. Students are to be respectful and courteous to others on discussions boards. Foul or abusive language will not be tolerated.

### ***Technical Support:***

Students should go to <https://mypassword.pvamu.edu/> if they have password issues. The page will provide instructions for resetting passwords along with whom to contact if login issues persist. For other technical questions regarding eCourses, call the Center for Instructional Innovation and Technology Services at 936-261-3283

***Communication Expectations and Standards:***

Emails or discussion postings will receive a response from the instructor, usually in less than 48 hours. Urgent emails should be marked as such. Check regularly for responses.

***Discussion Requirement:***

Online courses often require minimal to no face-to-face meetings. However, conversations about the readings, lectures, materials, and other aspects of the course can take place in a seminar fashion. This will be accomplished by the use of the discussion board. 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/they should be copied and pasted to the discussion board.