MAT 112-01D: Contemporary Topics in Mathematics

Course Number: MAT 112-01D

Course Title: Contemporary Topics in Mathematics

Credits: 3:3

Prerequisites/Corequisites: None.

For Whom Planned: This course fulfills 3 hours of math credits required for many majors. It is not preparation for any other math course. Please check your major requirements in the Undergraduate Bulletin.

Instructor Information:

Instructor: Dr. Dan Yasaki (d_yasaki@uncg.edu)

Office Hours: By appointment. I am available for help during scheduled office hours and by email d_yasaki@uncg.edu. I will answer email within 2 business days. If your question is of general interest, I may also answer it in the discussion forum.

Bulletin Description: Practical mathematical topics including set theory, properties and operations of number systems, algebra, geometry and consumer mathematics. Additional topics may be selected from logic, systems of numeration, and mathematical systems.

Student Learning Outcomes: MAT 112-01D satisfies the Mathematics (GMT) requirement of the General Education Program. It is open to and appropriate for all undergraduate students, regardless of major. The General Education learning goals attached to the GMT marker are as follows:

- LG1 Foundational Skills: Think critically, communicate effectively, and develop fundamental skills in quantitative and information literacies.
- LG2 The Physical and Natural World: Understand fundamental principles of mathematics and statistics, and recognize their relevance in the world.

At the successful completion of this course, the student will be able to:

- SLO1 Reason in mathematical systems beyond data manipulation. (LG1, LG2)
- SLO2 Formulate and use mathematical models to solve real-world problems. (LG1, LG2)
- SLO3 Communicate mathematical solutions clearly and effectively. (LG1)

Course Objectives: The course covers four topics, namely:

(1) **Sets** (Sections 2.1, 2.2, 2.3, 2.4, 2.5): Apply set theory and Venn diagrams to order and arrange items, picture relationships between sets, and solve practical problems. (SLO1, SLO2, SLO3)

(2) **Algebra** (Sections 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.9): Simplify algebraic expressions, solve linear equations and inequalities, solve quadratic equations, and apply these skills to real life problems. (SLO1, SLO2, SLO3)

(3) **Mathematical Systems** (Sections 4.3, 4.4, 10.1, 10.2, 10.3): Use number systems with various bases and compute in other mathematical systems such as clock arithmetic and groups. (SLO1, SLO3)

(4) **Geometry** (Sections 9.1, 9.2, 9.3, 9.4): Find areas and perimeters of polygons and circles, compute volumes of solids, apply principles of basic geometry to geometric shapes in everyday life. (SLO2, SLO3)

Teaching Methods and Assignments for Achieving Learning Outcomes: Abstract reasoning (SLO1) and clear, effective communication (SLO3) are a part of every lesson and homework in this course. The student, through regular and frequent attention to the lessons and homework questions, will make progress on each of these learning objectives. The formulation and use of mathematical models in real-world problems (SLO2) are integrated in the application of the fundamental techniques covered in the course. Homework questions are designed to reinforce these mathematics learning objectives.

For each course objective, you can find a page with further resources and links to the assignments on MyMathLab.

Online Homework: Homework is the most important way to actually learn mathematics. It is a safe time before exams where making mistakes is ok and helps you understand why mathematics is done in a certain way. It is practice, the same as practicing sports or music. It is rehearsal, the same as rehearsing a speech or part in a play. It is preparation for when the work really matters. Homework can be accessed in MyMathLab either through the calendar on the Course Home page or through the corresponding topic page. There will be one homework assignment for each section we cover, several assignments per week. Homework does not have a time limit. Also, a homework assignment does not have to be finished in one sitting. While working on a homework problem you may get help by pressing Help Me Solve It, View an Example or Textbook on the right side of the Homework sheet. In the first case, the system will help you, in the second case the system will give you a similar example with answers. In the third case, the system will open the textbook to the place you need to refresh your knowledge. Some exercises may have Animate or Video help options or no help options at all. You can also print the question by pressing Print.

Online Quizzes: Quizzes can be accessed in MyMathLab either through the calendar on the Course Home page or through the corresponding topic page. There will be several quizzes every week, each covering up to three sections. *To be able to take a quiz you need to score at least 80% on the corresponding homework assignments.* You can take each quiz as often as you want before the deadline.

Tests: For each test, bring Number 2 (HB) pencil, eraser, and calculator (cell-phones or PDAs are prohibited). The dates for the tests are:

> Test 1 on Sets and Algebra: June 1, 2015, 9:00–10:40 AM in Petty 136
> Test 2 on Mathematical Systems and Geometry: June 15, 2015, 9:00–10:40 AM in Petty 136
> Cumulative final exam: June 17, 2015, 9:00 AM–noon in Petty 136

Evaluation and Grading: The primary student products are the tests and final exam. Due to the nature of the course, each test will address all of the SLOs. Specifically, SLO1 will be present in most of the questions. Several questions on each test will be designed to address SLO2 and SLO3. Since the final exam is cumulative, all of the SLOs will be addressed there. The student will demonstrate achievement of learning objectives through satisfactory completion of graded assignments and tests. The questions on graded assignments and tests are designed to evaluate each of the three learning objectives, and in this way the grade reflects the attainment of the objectives.

Online Homework Assignments (the lowest three dropped)	10%
Online Quizzes (the lowest two dropped)	20%
2 In-Class Tests (100 minutes each)	40%
Final exam (cumulative, 180 minutes)	30%

Letter grades are assigned on a 10 point scale.

A+ : 97–100	B+ : 87–89	C+ : 77–79	D+ : 67–69	
A : 93–96	B : 83–86	C : 73–76	D : 63–66	F : 0–59
A− : 90–92	B− : 80–82	C− : 70–72	D− : 60–62	

Required Texts/Readings/References: A MyMathLab/Mastering access code is required for this class. You can purchase the access code through the college bookstore, through online vendors, or through the publisher at http://pearsonMyLabandmastering.com. You will need to register for the course with the Course ID:

yasaki32387

on http://pearsonMyLabandmastering.com by Friday, May 15. The website allows students to register on a temporary basis and pay after a brief time period. **Anyone not registered in MyMathLab/Mastering by May 15 may be dropped from the course. The first homework assignment and the first quiz are due at midnight on Friday, May 15.**

Optional Textbook:

Allen R. Angel, Christine D. Abbott, and Dennis C. Runde, *A Survey of Mathematics with Applications*, 9th ed., Pearson Education, 2012.

There is an online version of the text available through MyMathLab/Mastering that is exactly the same as the 9th edition hardcover version.

Topical Outline/Calendar:

Due	Topic
5/15	2.1 Set Concepts
5/18	2.2 Subsets, 2.3 Set Operations
5/20	2.4 Equality, 2.5 Applications
5/22	6.1 Order of Operations
5/25	6.2 Linear Equations, 6.3 Formulas (Accepted on 5/26 because of Memorial Day)
5/27	6.4 Applications, 6.5 Variation
5/29	6.6 Inequalities, 6.9 Quadratic Equations
6/01	Test 1 (Sets and Algebra) 9:00 - 10:40 AM
6/01	4.3 Other Base, 4.4 Computations in Other Bases (Accepted 6/02 because of Test 1)
6/03	10.1 Groups, 10.2 Finite Systems
6/05	10.3 Modular Arithmetic, 9.1 Points
6/08	9.1 Points
6/10	9.2 Polygons
6/12	9.3 Area, 9.4 Volume
6/15	Test 2 (Mathematical Systems and Geometry) 9:00 - 10:40 AM
6/17	Final Exam (cumulative) 9:00 AM – noon

Academic Integrity Policy: You are expected to abide by the UNCG Academic Integrity Policy at all times, and any cases of academic dishonesty will not be tolerated. Each student is required to sign the Academic Integrity Policy on all major work submitted for the course.

I have abided by the UNCG Academic Integrity Policy on this assignment.
Signature _____ Date _____

More information can be found at

http://sa.uncg.edu/handbook/academic-integrity-policy/.

Attendance Policy: Regular and punctual attendance is expected. You are responsible for any missed work and material.

Final Examination: The cumulative, multiple-choice final exam is scheduled for Wednesday, June 17 from 9 AM to noon. The location will be announced closer to time for the exam. You must contact the instructor at least week in advance and have a valid excuse to take the final exam makeup.

Additional Information:

Calculator Policy: A calculator is required for the course. Bring it to every exam. The calculator must add, subtract, multiply, divide and have a square root key and an exponential key. The TI89, TI92 or other calculators with similar capabilities may NOT be used in this class.

Extensions: All Homework assignments and Quizzes are available to you from the date that classes start. Computers and networks are unreliable, therefore, you need to complete the assignments well before the due date. If you decide to work on the day it is due, you are taking a risk. Work ahead of the deadlines and this will not be a problem. Extensions may be granted at the discretion of the instructor and *only in the event of extreme circumstances*. Please note that computer issues on the evening an assignment is due do not meet this criteria!

Makeup exams: If you must miss an exam, you should contact the instructor before the exam in order to schedule a makeup exam. You must have a valid excuse and written evidence of it to be allowed to take a makeup exam.

Old tests: You can find old tests for practice on the page for each topic on MyMathLab.

MyMathLab Support: The MyMathLab Technical Support number is 1-800-677-6337. Also you can reach MyMathLab Tech Support 24/7 from the MyMathLab Sign In page: under *For Students*, click on *Support* and then click on *Live Chat*.

Some dates and holidays affecting this class:

(1) The course begins May 14.
(2) The last day to adjust your schedule with absolutely no penalty is May 15.
(3) Withdrawing from this course between May 16 and June 1 will use 3 out of the 16 hour withdrawal limit and will be indicated on a transcript with a grade of WX.
(4) Dropping this course on June 2 or later or in excess of the 16 hour limit will result in a grade of WF, which is equivalent to a grade of F for your GPA.
(5) Memorial Day is May 25.
(6) The course ends June 17.

Students with Disabilities: UNCG seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must be registered with the Office of Accessibility Resources and Services (OARS) in 215 Elliott University Center, 334-5440, http://oars.uncg.edu.

Copyright Policy: Selling or purchasing notes from classes for commercial gain is a violation of the UNCG Copyright Policy. Any student who sells notes taken in class for commercial gain, or who purchases notes taken by another student for commercial gain, is in violation of this policy and, by extension, is committing a violation of the Student Code of Conduct.

http://sa.uncg.edu/handbook/student-code-of-conduct/

Free Tutoring: The Department of Mathematics and Statistics provides free walk-in tutoring in the Curry 210. For the details, see

http://www.uncg.edu/math/mathhelpcenter

Student Success Center: Find more academic support at the Student Success Center.

http://success.uncg.edu/

Special Support Services: Tutoring may be available from Special Support Services.

http://success.uncg.edu/sss/tutoring.php

MyLab & Mastering
Student Registration Instructions

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To register for MAT 112-01D Summer I 2015:

1. Go to pearsonmylabandmastering.com.
2. Under Register, click **Student**.
3. Enter your instructor's course ID: yasaki32387, and click **Continue**.
4. Sign in with an existing Pearson account or create an account:
   - If you have used a Pearson website (for example, MyITLab, Mastering, MyMathLab, or MyPsychLab), enter your Pearson username and password. Click **Sign in**.
   - If you do not have a Pearson account, click **Create**. Write down your new Pearson username and password to help you remember them.
5. Select an option to access your instructor's online course:
   - Use the access code that came with your textbook or that you purchased separately from the bookstore.
   - Buy access using a credit card or PayPal.
   - If available, get 14 days of temporary access. (Look for a link near the bottom of the page.)
6. Click **Go To Your Course** on the Confirmation page. Under MyLab & Mastering New Design on the left, click **MAT 112-01D Summer I 2015** to start your work.

Retaking or continuing a course?

If you are retaking this course or enrolling in another course with the same book, be sure to use your existing Pearson username and password. You will not need to pay again.

To sign in later:

1. Go to pearsonmylabandmastering.com.
2. Click **Sign in**.
3. Enter your Pearson account username and password. Click **Sign in**.
4. Under MyLab & Mastering New Design on the left, click **MAT 112-01D Summer I 2015** to start your work.

Additional Information

See **Students** > **Get Started** on the website for detailed instructions on registering with an access code, credit card, PayPal, or temporary access.