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.

This course is 100% online. The student will progress based self-motivated and self-regulated study. The study materials (eBook, video clips, study plan, homework, quizzes, and tests) in the online course administered through MyLab. The course is completed in 5 weeks (May 12, 2016–June 15, 2016).

Instructor Information:

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

Office Hours: None. Allow up to 72 hours for email response, though typical response time is under 24 hours.

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.

The course material can be accessed through the MyLab and Mastering tab in Canvas. Achievement of learning outcomes will be facilitated via:

eBook: As part of MyLab and Mastering, you will have access to an eBook, video presentations, multimedia eText, and the Study Plan. 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, as long as it is submitted before the due date. 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.*

Tests: Test 1 covers Sets and Algebra. Test 2 covers Mathematical Systems and Geometry. The final exam is cumulative.

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 Tests (60 minutes each)	40%
Final exam (cumulative, 180 minutes)	30%

Each homework assignment and quiz is available from the very first day of the semester; this allows you to be flexible in scheduling your studying time. You are welcome to work ahead on all of the course material, except for the tests and final exam, which must be completed on the specified dates.

You must sign up for a proctor for each test. This course is administered through Canvas.

<center>http://courses.uncg.edu/log-in/</center>

To access the eBook, online homework, and online quizzes, first click the MyLab and Mastering, then MyMathLab with Pearson eText Course Home.

eBook: In the eBook tab, there are links to video presentations, multimedia eText, and the Study Plan. These activities are strongly encouraged, but not assessed for your grade.

Online homework: In the Homework and Quizzes tab, there is a homework assignment for each section of the textbook covered. You may attempt each homework assignment as many times as you wish until it the due date for full credit; only the highest score on each problem will count towards your grade. All exercises are accessible until June 15, 2016, but there is a 50% penalty for any homework submitted after its due date.

Online quizzes: In the Homework and Quizzes tab, there is a quiz for each section of the textbook. You may attempt each quiz up to three times until the due date; only the highest score of the three will count towards your grade. You will not be able to access quizzes after their due dates.

Tests: There are two multiple choice tests of 60 minutes each. The tests are proctored. 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: May 27, 2016
> Test 2 on Mathematical Systems and Geometry: June 13, 2016
> Cumulative final exam: June 15, 2016

The tests are proctored. See the Proctoring section below.

Final exam: The comprehensive final examination is multiple choice answer format on June 15, 2016. The exam is proctored. You have 3 hours to complete the exam. See the Proctoring section below.

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:

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

The actual printed textbook is optional, you are only required to purchase a MyMathLab access code. The code gives you access to an online version of the textbook, all online

assignments, and various interactive learning aids. If you wish to have a traditional textbook, you can buy a bundle which consists of the book and the MyMathLab access code, or purchase a used textbook (7th or 8th edition might be cheaper) separately. Further instructions are in Canvas.

Topical Outline/Calendar:

Due	Topic
5/13	Orientation, 2.1 Set Concepts
5/16	2.2 Subsets, 2.3 Venn Diagrams and Set Operations
5/17	2.4 Verification of Equality of Sets
5/18	2.5 Applications of Sets
5/19	6.1 Order of Operations
5/20	6.2 Linear Equationson One Variable
5/23	6.3 Formulas, 6.4 Applications of LInear Equations
5/24	6.5 Variation
5/25	6.6 Linear Inequalities
5/26	6.9 Quadratic Equations
5/27	Test 1 (Sets and Algebra)
5/31	4.3 Other Bases
6/01	4.4 Computations in Other Bases
6/02	10.1 Groups
6/03	10.2 Finite Mathematical Systems
6/06	10.3 Modular Arithmetic
6/07	9.1 Points, Lines, Planes, and Angles
6/08	9.2 Polygons
6/09	9.3 Perimeter and Area
6/10	9.4 Volume and Surface Area
6/13	Test 2 (Mathematical Systems and Geometry)
6/15	Final Exam (cumulative)

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: Your attendance in the course is measured by your ability to submit assignments by the corresponding deadlines. You are welcome to submit assignments early, but you are responsible for any announcements made to Canvas between May 12, 2016, and June 15, 2016.

Final Examination: The cumulative, multiple-choice final exam is scheduled for Wednesday, June 15, 2016. The exam is proctored. See the Proctoring section below.

Proctoring: The tests and final exam are proctored. You can schedule for on-campus protcoring (free) at specified times, or you can schedule with other UNC Online proctors. **The on-campus proctor is only available on May 27 at 9 am for Test 1, June 13 at 9 am for Test 2, and June 15 at 9:00 am for the final exam.**

Instructions for scheduling on-campus (free) proctor:

(1) Login to UNC Online at <http://proctors.northcarolina.edu>
(2) Beneath Term, use the drop down box to select Summer 2016
(3) Click Schedule Now
(4) Click on Find a Proctor, and once the map has loaded, click Invite in the top right corner
(5) Enter in `d_yasaki@uncg.edu` into the email box
(6) Once my email address is found, click the calendar button to the right of the UNCG Classroom TBA listing to schedule with this location
(7) Select your exam time (9:00 am) and click Submit to schedule your appointment

Instructions for scheduling other proctors:

(1) Login to UNC Online at <http://proctors.northcarolina.edu>
(2) Beneath Term, use the drop down box to select Summer 2016
(3) Click Schedule Now

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 12, 2016.
(2) The last day to Drop/Add is May 13, 2016.
(3) The last day to drop course for tuition/fees refund is May 14, 2016.
(4) Memorial Day is May 30, 2016.
(5) The course ends June 15, 2016. The final exam must be submitted by June 15, 2016.

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