FLORIDA ATLANTIC UNIVERSITY

COURSE CHANGE REQUEST
Undergraduate Programs

Department Mathematical Sciences

College Science

UUPC Approval 11/6/23
UFS Approval _____
SCNS Submittal _____
Confirmed _____
Banner Posted _____
Catalog _____

***Current* Course Prefix and Number**	MGF 1106	***Current* Course Title**	Math for Liberal Arts 1

*Syllabus must be attached for **ANY** changes to current course details. See Template. Please consult and list departments that may be affected by the changes; attach documentation.*

Change title to:
Mathematical Thinking in Context I

Change prefix

From: **To:**

Change course number

From: 1106 **To:** 1130

Change credits*

From: **To:**

Change grading

From: **To:**

Change WAC/Gordon Rule status**

Add ☐ **Remove** ☐

Change General Education Requirements***

Add ☐ **Remove** ☐

*See Definition of a Credit Hour.

**WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See WAC Guidelines.

***GE criteria must be indicated in syllabus and approval attached to this form. See Intellectual Foundations Guidelines.

Change description to:

Through this course, students will utilize multiple means of problem solving through student-centered mathematical exploration. The course is designed to teach students to think more effectively and vastly increase their problem solving ability through practical application and divergent thinking. The course is appropriate for students in a wide range of discipline/ programs.

Change prerequisites/minimum grades to:

Change corequisites to:

Change registration controls to:

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

Effective Term/Year for Changes:	Fall 2024	**Terminate course? Effective Term/Year for Termination:**	

Faculty Contact/Email/Phone Kevin Drees, kdrees@fau.edu, 7-3340

Approved by	***Date***
Department Chair	10/19/2023
College Curriculum Chair	10/25/23
College Dean	10/25/23
UUPC Chair Korey Sorge	11/6/23
Undergraduate Studies Dean Dan Maroroff	11/6/23
UFS President	
Provost	

Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

MGF 1130
Mathematical Thinking in Context I

3 credits

Fall 2024
Dr. Kevin M. Drees
Office: SE 204
Office hours: TBA
Classroom: TBA
Email: kdrees@fau.edu

Course Description
Through this course, students will utilize multiple means of problem solving through student-centered mathematical exploration. The course is designed to teach students to think more effectively and vastly increase their problem solving ability through practical application and divergent thinking. The course is appropriate for students in a wide range of discipline/programs.

Instructional Method
In-Person. There is no remote option for this course.

Prerequisites
None.

Intellectual Foundation (General Education) Program Outcomes

Mathematics is a peculiarly human endeavor that attempts to organize our experience in a quantitative fashion. It aids and supplements our intuitions about the physical universe and about human behavior. The Mathematics and Quantitative Reasoning requirement is intended to give students an appreciation of mathematics and prepare them to think precisely and critically about quantitative problems.

Students who satisfy the Mathematics and Quantitative Reasoning requirement will be able to:

- SLO 1 - Identify and explain mathematical models and their applications.
- SLO 2 - Determine and apply appropriate mathematical and/or computational models and methods in problem solving.
- SLO 3 - Display quantitative literacy.

Course Objectives

1. Determine efficient means of solving a problem through investigation of multiple mathematical models. (SLO 1 & 2)
2. Apply logic in contextual situations to formulate and determine the validity of logical statements using a variety of methods. (SLO 2)
3. Apply mathematical concepts visually and contextually to represent, interpret and reason about geometric figures. (SLO 1 & 3)
4. Recognize the characteristics of numbers and utilize numbers along with their operations appropriately in context. (SLO 1)
5. Analyze and interpret representations of data to draw reasonable conclusions. (SLO 3)

Gordon Rule, Computational

This course satisfies the Gordon Rule, Computational requirements. Computational skills will be developed and assessed throughout the entire course by worked examples provided during lectures, and homework and exam questions, that require calculation of mathematical quantities by hand or with the aid of calculator.

Course Evaluation Method

Assessment Policies:

Category	Percentage
Homework	20%
6 Quizzes	20%
6 Tests (Top 5 scored)	60%

All grades will be posted in the Canvas gradebook.

1. Homework, Quizzes, and Tests will be completed online though Canvas. These assignments should be opened through the links in the course modules. All due dates for homework assignments and quizzes are posted on Canvas.
2. The free textbook for the class is available on Canvas through the "Textbook - Access" page near the top of the Canvas course homepage. At the beginning of each chapter's assignments is the chapter from the book corresponding to those assignments.
3. The Homework portion of the grade will be calculated as the average of all homework assignment scores. Homework assignments may be worked on until their due date and each question has unlimited attempts with no penalty for wrong answers. It is the responsibility of the student to know when each homework assignment is due. Homework not attempted by the due date will receive a grade of zero. Computer, internet, or Canvas trouble are not excuses for not being able to complete a homework assignment by their due date.
4. The Quiz portion of the grade will be calculated as the average of the six quiz scores. Each quiz question may be attempted a total of two times with no penalty for a wrong answer on the first attempt. Quizzes may be worked on until their due date. It is the responsibility of the student to know when each quiz is due. Quizzes not attempted by their due date will receive a grade of zero. Computer, internet, or Canvas trouble are not excuses for not being able to complete a quiz assignment.

5. The Test portion of a student's grade will be calculated as the average of the student's five highest test scores out of the six tests. Each test has a time limit of 50 minutes from when it is opened and each test question may be attempted a total of two times with no penalty for an incorrect answer on the first attempt. Test can be reopened during the 50 minute time limit of the test and can not be reopened after the 50 minute time period has expired. The tests are computer based and are completed on Canvas. If a password is needed, then it will be given by the instructor, and only the instructor; it is a violation for a student to share or receive a password from someone other than the course instructor. Tests that are not taken will receive a grade of grade of zero. Computer, internet, or Canvas trouble are not excuses for not being able to complete a test.
6. It is the responsibility of the student to keep up with due dates and times for the various assignments. The assignment due dates and times are available on Canvas. The student is responsible for completing each homework assignment, quiz, and test on time and during the time window it is available.
7. Students must give themselves ample time to complete assignments well before the posted due date as some assignments may take more time to complete when compared to other assignments.
8. Students must check the "Announcements" tab periodically for information regarding the class.
9. All course times are in Eastern Standard Time, that is Boca Raton, FL time zone.

Course Grading Scale

Letter Grade	Percent
A	100% - 93%
A-	<93% - 90%
B+	<90% - 87%
B	<87% - 83%
B-	<83% - 80%
C+	<80% - 77%
C	<77% - 65%
D	<65% - 55%
F	<55% - 0%

Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

If a student is unable to submit an assignment on time, it is the student's responsibility to contact the instructor and provide documentation prior to the due date of the assignment for consideration for a delayed submission. Circumstances for a delayed submission include situations that seriously disrupt and affect the health and well being of the student. Be mindful that these do not include changes in work schedules, vacations or "computer problems". Makeup tests will be given only under circumstances which coincide with university policy. If you will miss an assignment, you must provide the instructor a written, verifiable excuse prior to the deadline in order to make up the assignment. Documentation received by the instructor after the deadline for

the assignment will only be acceptable for emergency situations. Request for a make up should be forwarded to the course instructor and documentation for a legitimate excuse must be submitted along with the request. It is up to the instructor to approve or deny make up opportunities if appropriate documentation is provided and a make-up date can be reasonably found. The decision of the instructor to approve or deny make up opportunities is the final decision. Doctor notes from immediate family members are not accepted. If a make up is approved, then the make up must be completed in reasonable amount of time determined by the instructor. If the make up is not completed within the reasonable amount of time determined by the instructor, then no make up will be provided.

Special Course Requirements

Scientific calculator.

Policy on the Recording of Lectures

Because of a new Florida Statute in 2021, the following model language is suggested for inclusion in course syllabi, at the discretion of individual faculty:
Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

Attendance Policy

Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

Counseling and Psychological Services (CAPS) Center

Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to http://www.fau.edu/counseling/

Disability Policy

In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at www.fau.edu/sas/.

Code of Academic Integrity

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see University Regulation 4.001.

If your college has particular policies relating to cheating and plagiarism, state so here or provide a link to the full policy—but be sure the college policy does not conflict with the University Regulation.

Required Texts/Readings

Liberal Arts Textbook by Rex Albert and David Lippman (Free textbook provided in Canvas)

Course Topical Outline

Week 1	Syllabus 12.1 Numeration Systems: The Hindu-Arabic Numerals 12.2 Numeration Systems: Using Other Bases in the Hindu-Arabic System
Week 2	12.3 Numeration Systems: Egyptian Numerals 12.4 Numeration Systems: Roman Numerals
Week 3	Test 1 1.1 Sets: Basics 1.2 Sets: Unions, Intersections, and Complement

Week 4	1.2 Sets: Unions, Intersections, and Complement 1.3 Sets: Venn Diagrams 1.4 Sets: Cardinality
Week 5	Test 2 5.1 Logic: Statements 5.2 Logic: Compound Statements
Week 6	5.2 Logic: Compound Statements 5.3 Logic: Truth Tables
Week 7	5.4 Logic: Negations of Compound Statements and DeMorgan's Laws 5.5 Logic: Arguments
Week 8	Test 3 2.1 Statistics: Describing Data 2.2 Statistics: Grouped Frequency Distribution
Week 9	2.3 Statistics: Numerical Summaries 2.4 Statistics: The Normal Distribution
Week 10	Test 4 13.1 Graph Theory: Graphs 13.2 Graph Theory: Euler Circuits and Chinese Postman Problem
Week 11	13.2 Graph Theory: Euler Circuits and Chinese Postman Problem 13.3 Graph Theory: Hamilton Circuits and the Traveling Salesman Problem 13.4 Graph Theory: Spanning Tree
Week 12	13.4 Graph Theory: Spanning Tree Test 5
Week 13	4.1 Geometry: Similar Triangles 4.2 Geometry: The Pythagorean Theorem
Week 14	4.3 Geometry: Perimeter and Area 4.4 Geometry: Solve Geometry Applications: Circles and Irregular Figures
Week 15	4.5 Geometry: Volume and Surface Area