MAC 2233
SPRING 2024

SYLLABUS

COURSE TITLE: Survey of Calculus 1

CATALOG DESCRIPTION: Geometric and heuristic approach to calculus; differentiation and integration of simple algebraic and exponential functions; applications to graphing, marginal analysis, optimization, areas and volumes.

COURSE DESCRIPTION: MAC 2233 is the first in the two-semester sequence, MAC 2233 and MAC 2234, surveying the important ideas of calculus but emphasizing its applications to business, economics, life, and social sciences. The course covers important precalculus topics: basics of functions and graphing and their applications as models (linear, quadratic, rational, exponential, and logarithmic), as well as calculus topics: limits, differentiation and applications of the derivative, introduction to integration and its applications including area (volume is not covered). This course does not cover trigonometry.

In SPRING 2024, you are assigned to the following course meeting time:
MAC 2233   0117 (21828)   SURVEY OF CALC 1   MWF 3   TURL L007

INSTRUCTOR: **Dr. Larissa Williamson**
        Office: LIT 380
        Office Hours: in-person: M5, W6, F5
                               or by Appointment (via Zoom or in-person)
        E-mail: lwill@ufl.edu
        Webpage: https://people.clas.ufl.edu/lwill/

TEACHING ASSISTANT: **Nursultan Kuanyshov**
        Office: LIT 461
        Office Hours: M5, F5 in LIT 461
                               M4 – in LIT 215 (tutoring center)
                               or by Appointment (via Zoom or in-person)
        E-mail: nkuanyshov@ufl.edu
        Webpage: https://people.clas.ufl.edu/nkuanyshov/

Request for an Office Hour by Appointment must be sent at least 48 hours in advance.

The Course Management System is E-Learning (Canvas): https://elearning.ufl.edu/

E-MAIL: The **instructor** will communicate with the students and reply to **all** email messages received from the students ONLY via Canvas **Inbox** tool.

PREREQUISITES: Any of the following minimal acceptable scores on the online mathematics placement exam, a minimum grade of C in a MAC course numbered 1140 or higher; AP credit on MAC 2311; IB credit for a MAC course numbered 1140 or higher.

MAC 2233 assumes that the students have essential precalculus skills necessary to succeed in calculus, and we will review the most important topics of precalculus at the beginning of the term. We strongly recommend that the students who are having difficulty with the precalculus material consider taking MAC 1140, a 3-credit review of Precalculus Algebra.

Note: you may adjust your class schedule on ONE.UF only during the drop-add week.

General Education Credit

- Mathematics

This course accomplishes the General Education objectives of the subject area listed above. **A minimum grade of C is required for General Education credit**. Courses intended to satisfy General Education requirements cannot be taken S-U.

Delivering Content

TEXTBOOK & ACCESS CODE: We use the following textbook in this course:

Calculus with Applications, 12th edition,
by Margaret L. Lial, Raymond N. Greenwell, Nathan P. Ritchey*

Access code to **MyLab and Mastering** is required in the course. **Access code can be obtained through UF All Access program by authorizing charges to your student financials account and is provided at a reduced price. ** This option will become available starting one week prior to the beginning of the semester and ends three weeks after the first day of class.

If you do not wish to authorize charges to your student financials account, you may purchase access code at the Campus bookstore instead (https://www.bkstr.com/floridastore), which will be more expensive than opting-in.

* Registration with MyLab gives you access to an electronic version of the textbook. If you wish to have a printed text, you may purchase it at the bookstore.

**See Course Tools & Technology → Course Materials & Registration Instructions on E-Learning (Canvas) for the complete information on obtaining access code through UF All Access and registration with Pearson's MyLab and Mastering.

LECTURE NOTES: Lectures in this course are delivered using Lecture notes shells, which can be printed from each Module on Canvas or from the Canvas page Lecture Notes. Lecture notes shells make note taking easier and are recommended in the course. The whole set of Lecture Notes (Course Pack) will be available for purchase by the beginning of the term at the Target Copy (1412 W University Ave, Gainesville, FL 32603, http://target-copy.com/).

The completed lecture notes are posted in Canvas Modules.

TEXTBOOK READINGS: Reading the textbook is a part of the learning process. The students are strongly recommended to read the corresponding sections of the textbook after (or before) viewing a lecture and before doing homework on MyLab (see Lectures and Online Homework in this Syllabus). The pages of the textbook that match the content of the lectures are listed in Canvas Modules.

Course materials are divided into **5 Units** with 36 conceptual Modules, M01-M36.

Unit 1: Review of Algebra

Goal: Review of the most important topics in algebra.

M 01	Polynomials & Factoring (Sect. R1, R2)
M 02	Polynomial Division & Rational Expressions (Sect. R3)
M 03	Equations: Linear, Quadratic, and Rational (Sect. R4)
M 04	Inequalities: Linear, Quadratic, and Rational (Sect. R5)
M 05	Exponents & Radical (Sect. R6, R7)

Unit 2: Functions & Mathematical Models

Goal: Learn to work with the functions and mathematical models.

M 06	Slopes & Equations of Lines (Sect. 1.1)
M 07	Linear Functions & Applications; The Least Squares Line (Sect. 1.2, 1.3)
M 08	Properties of Functions (Sect. 2.1)
M 09	Transformations of Graphs & Quadratic Functions (Sect. 2.2)
M 10	Polynomial and Rational Functions (Sect. 2.3)
M 11	Exponential Functions (Sect. 2.4)
M 12	Logarithmic Functions (Sect. 2.5)
M 13	Applications: Growth & Decay; Math in Finance (Sect. 2.6)

Unit 3: Limits & Derivatives

Goal: Learn concepts of the Limit and Derivative and use them in applications.

M 14	Limits (Sect. 3.1)
M 15	Continuity (Sect. 3.2)
M 16	Rates of Change & Tangent Line (Sect. 3.3, 3.4)
M 17	Definition of the Derivative & Graphical Differentiation (Sect. 3.4, 3.5)
M 18	Techniques of Differentiation (Sect. 4.1)
M 19	Derivatives of Product and Quotient (Sect. 4.2)
M 20	The Chain Rule (Sect. 4.3)
M 21	Derivatives of Exponential Functions (Sect. 4.4)
M 22	Derivatives of Logarithmic Functions (Sect. 4.5)

Unit 4: Derivatives & Applications

Goal: Apply the Derivatives to investigating properties of functions

M 23	Increasing and Decreasing Functions (Sect. 5.1)
M 24	Relative Extrema (Sect. 5.2)
M 25	Higher Derivatives, Concavity, Second Derivative Test (Sect. 5.3)
M 26	Curve Sketching (Sect. 5.4)
M 27	Absolute Extrema & Applications (Sect. 6.1, 6.2)
M 28	Business Applications of Extrema (Sect. 6.2, 6.3)
M 29	Implicit Differentiation, Related Rates (Sect. 6.4, 6.5)
M 30	Differentials: Linear Approximation (Sect. 6.6)

Unit 5: Integration and Applications

Goal: Learn techniques of integration and use them in applications

M 31	Antiderivatives (Sect. 7.1)
M 32	Method of Substitution (Sect. 7.2)
M 33	Area & Definite Integral (Sect. 7.3)
M 34	The Fundamental Theorem of Calculus (Sect. 7.4)
M 35	The Area between Two Curves (Sect.7.5)
M 36	Numerical Integration (Sect. 7.6)

Spring 2024	Monday	Tuesday	Wednesday	Thursday	Friday
January	8 M1 L	9	10 M2 L	11	12 M3 L
	15 Holiday	16	17 M4 L	18 HW M01-M03 due	19 M5 L
	22 M6 L	23	24 M7 L	25 HW M04-M06 due Bonus Project due	26 M8 L **Quiz-Unit1: M1-M5**
February	29 M9 L	30	31 M10 L	1 HW M07-M09 due	2 M11 L
	5 M12 L	6	7 M13 L	8 HW M10-M12 due	9 Review2 L
	12 M14 L	13 HW M13 due	14 M15 L **Exam1: M6-M13**	15 HW M14 due	16 M16 L
	19 M17 L	20	21 M18 L	22 HW M15-M17 due	23 M19 L
March	26 M20 L	27	28 M21 L	29 HW M18-M20 due	1 M22 L
	4 Review3 L	5 HW M21-M22 due	6 M23 L **Exam2: M14-M22**	7	8 M24 L
S P R I N G B R E A K : M A R C H 9 – 16					
	18 M25 L	19	20 M26 L	21 HW M23-M25 due	22 M27 L
	25 M28 L	26	27 M29 L	28 HW M26-M28 due	29 M30 L
April	1 Review4 L	2 HW M29-M30 due	3 M31 L **Exam3: M23-M30**	4	5 M32 L
	8 M33 L	9	10 M34 L	11 HW M31-M33 due	12 M35 L
	15 M36 L	16	17 Review5 L	18 HW M34-M36 due	19 Review-Unit2 L **Quiz-Unit5: M31-M36**
	22 Review-Unit3 L	23	24 Review-Unit4 L	25 Reading Day	26 Reading Day

The Final Exam will be given on Saturday, April 27, 7:30 am - 9:00 am

LECTURES: The students are <u>required</u> to attend live lectures on the dates indicated on the Calendar as "M# L", "Review# L", or "Review-Unit# L", and lecture participation will be taken during the class time (see section Lecture Participation below). If you are missing a live lecture, you can watch it from the corresponding Module on Canvas.

MODULES & DUE DATES: It is advisable to start working on a Module <u>no later</u> than on the date indicated on the Calendar as "M# L" or "Review# L", when the corresponding live lecture is delivered, so that you can stay on track and avoid having too many Modules to complete by the Due Date. Working on Modules requires watching Lectures and completing MyLab assignments, which include Online Homework (HW) and Learning Catalytics (LC) quizzes - the LC quizzes will be offered in class. Working on a Review module, which is the last one in each Unit, will help you to prepare for an Exam or a Quiz – there is no HW for a Review module. (For more details, please see sections Online Homework and Lecture Participation in this Syllabus.)

TEXTBOOK HOMEWORK: Textbook homework problems are assigned after each lecture. **They will not be graded** but should be considered as an additional tool for mastering the material. Lists of recommended Textbook Homework problems are posted in Canvas Modules.

Assessments

Assignment	Short Description	General Education Mathematics SLOs Met	% of Grade
Lecture Participation	Learning Catalytics Quizzes on MyLab	Communication, Content, Critical Thinking	10.03%
Online Homework	Sets of Problems on MyLab	Communication, Content, Critical Thinking	18.27%
Unit Quizzes	Quizzes on MyLab	Communication, Content, Critical Thinking	14.34%
Midterm Exams	Evening Assembly Exams	Communication, Content, Critical Thinking	43.02%
Final Exam	Assembly Exam	Communication, Content, Critical Thinking	14.34%

Detailed Description

ONLINE HOMEWORK: Each online **Homework assignment** (HW) is a set of problems assigned on MyLab and numbered according to the Module covered. A HW assignment will give you the necessary practice for mastering the material delivered in lecture. Each homework assignment is due at 11:59 pm on the due date, which is indicated on the Course Calendar, on Canvas, and on MyLab & Mastering. **A HW will be closed after the deadline and cannot be re-opened without a legitimate reason**. Credit for a HW will be given according to the percent value of the correct work completed. Review of a completed HW will be available via MyLab gradebook after the deadline – a non-attempted HW cannot be reviewed. There will be a total of 36 HW assignments offered, and the **2 lowest scores will be dropped** at the end of the term.

LECTURE PARTICIPATION: Starting on the second week of classes, lecture participation quizzes will be given in the lecture hall during each lecture. The students are required to register with **MyLab & Mastering** to use Pearson's **Learning Catalytics** (**LC**) software and get points for participation. The students will access LC from Canvas by clicking on the link **Access Pearson** on the left-hand navigation panel. The link to the active session will be shown on MyLab Homepage in the upper right corner. LC allows the student to use their smartphone, tablet, or laptop to respond to the questions in class, and their responses will be graded and recorded in the gradebook. A total of 39 sessions will be graded. There will be 2 questions per session. Each question is in a "multiple-choice" format and worth 1 point. The grade will be assigned as 75% for participation and 25% for correctness. The student will receive the full credit of 1.75 points by answering both questions and one of them correctly. If the student answers both questions correctly, they will receive 2 points for the session, which includes 0.25 bonus. **The 7 lowest scores on the LC quizzes will be dropped at the end of the term** to compensate for occasional absences, device failures, etc.

All issues with in-class LC quizzes must be reported in-person in the lecture hall **immediately** after the lecture **– late requests or requests sent via email will not be considered.**

EXAMS & UNIT QUIZZES: There will be three midterm Exams, two Unit Quizzes, and the Final Exam offered during the term.
All midterm Exams and the Final Exam are assembly exams: the midterm Exams will be given from 8:20 pm to 9:50 pm and the Final - from 7:30 am to 9:00 am on the dates indicated on the Calendar. Room assignments will be announced later. While taking an exam, the students will only be permitted to have pencils, pens, eraser, and a valid UF picture ID card. Scratch paper and scantrons will be provided. Each midterm Exam and the Final contains 22 questions at 4 points each, which includes 2 bonus questions. The time allowed is 90 minutes. The grade on each exam will be calculated out of 80 points (2 questions are for bonus).
Unit Quizzes, Quiz-Unit1 and Quiz-Unit5, are mandatory but not proctored. They are "open note" quizzes. The Quizzes must be taken from within MyLab and Mastering on the dates indicated on the Calendar: each Quiz opens at 12 am and closes at 11:59 pm on the same day. The time allowed is 75 minutes. A Unit Quiz contains 20 multiple-choice questions at 2 points each and will be graded out of 40 points (no bonus). Review of a completed Quiz will become available after the deadline and can be accessed from MyLab gradebook.
The mandatory Final Exam is cumulative: it covers Units 1-5. The score for the Final Exam will appear in Canvas Gradebook **twice**, one time as the **Final (**in the category Final Exam), and second time as the **MakeUp** (in the category Exams) – see Makeup Policy in this syllabus.
For more information on Exams and Unit Quizzes, please visit the link Exam Information on the Canvas course main page.

Software Policy

Scientific calculators are required on the course. A graphing calculator is needed for some homework problems, but it can be replaced with suitable software, such as MATLAB, which is available via UF Apps. **Calculators are not allowed on Exams!**
The students will have an option to learn MATLAB programming environment in relation to the topics covered in the course, but **it is not required**. There will be a **Bonus MATLAB Project** offered at the beginning of the term, which is worth 10 points. The score earned on the Bonus

Project will be added to the score on Quiz-Unit5 at the end of the term. **For more information on the Bonus MATLAB Project, please visit the link MATLAB Project on Canvas.**

Makeup Policy

MAKEUP POLICY ON ONLINE HOMEWORK AND QUIZZES**:** If you are missing a deadline for a **HW** on a **legitimate reason** (being sick, being away on the UF business, family emergency, religious holidays), you can send an email to Dr. Williamson via **Canvas Inbox** tool no later than three (3) days after the deadline and **request** an extension.
A lecture, missed on a legitimate reason, cannot be "excused" but can be made-up: to make-up a lecture with a **LC quiz**, the student **must send an email** to the Instructor no later than on the date of the lecture with a **request to make-up the specific lecture**, and the instructor will email the student the ID for make-up LC session, which will be due on the following day at 11:59 pm.
If you miss a Unit Quiz, you need to send a request for make-up no later than within three (3) days after the deadline. Missing a Quiz without a legitimate reason will result in a 5-point penalty.

MAKEUP POLICY ON EXAMS: It may be necessary to miss a midterm Exam, or you may not be satisfied with one of your grades earned on Exams. For these reasons, the score for the **Final** will appear second time in the category Exams as **MakeUp,** and **the one lowest score** on four exams, **Exams 1-3** and **MakeUp,** will be dropped in the category Exams at the end of the term.
If you are missing a midterm Exam due to a legitimate reason (being sick, being away on the UF business, family emergency, religious holidays, conflict with an assembly exam of a higher number course), you can request an **early make-up** and save the make-up option of the Final. A request must be sent to Dr. Williamson **via Canvas e-mail** either prior to the regular exam or within one (1) day after the exam. **The early make-up** will be given after Exam 3, from 8:20 pm to 9:50 pm – the date and location will be announced later.
Note: our assembly exams have precedence over the classes, non-assembly exams, and assembly exams of the lower number courses.
If you miss the Final Exam, you must send a request for make-up no later than within one (1) day after the Final Exam. Missing the **Final Exam** without a legitimate reason will result in a 10-point penalty. The **make-up** for the Final will be given during the Final Exams week – the date, time, and location will be announced later.

IMPORTANT NOTES:
A legitimate reason for requesting extension/make-up on the specified assignments must be clearly stated in the student's email, and the instructor may ask for documentation, which must be presented in a timely manner. Providing only the documentation, **without sending a timely request specifying the assignments**, will not result in giving the student extension/make-up. **Late requests and late documentation will not be accepted!**

You can discuss with your Instructor a midterm Exam, Unit Quiz, HW, LC quiz, and MATLAB Project **within three (3) days,** and the Final Exam – **within one (1) day** upon receiving the grades if there is a grading error or any other problem**. Late requests will not be accepted!**

All issues with Canvas, MyLab & Mastering, UF Apps/MATLAB **must be reported immediately and documented** when sending a request for an extension or retake**.**

Grades & Miscellaneous

COURSE GRADE: The course grade is assigned based on the student's performance on the following weighted categories:

32	Lecture Participation	@ 1.75 points	56 points	10.03 %
34	On-line homework	@ 3 points	102 points	18.27 %
2	Unit Quizzes	@ 40 points	80 points	14.34 %
3	Exams	@ 80 points	240 points	43.02 %
1	Final Exam	@ 80 points	80 points	14.34 %
		Total:	558 points	100 %

The course grade is the grade satisfying the conditions below and **will be adhered** to:

	Minimum %			Minimum %
A	90 %	C		66 %
A-	86 %	C-		62 %
B+	82 %	D+		58 %
B	78 %	D		54 %
B-	74 %	D-		50 %
C+	70 %	E		0 %

<u>Note</u>: **We have a 0.5% round-up margin towards a higher letter grade.**

GRADE POSTING: All grades will be posted in a timing manner on E-Learning (Canvas) at https://elearning.ufl.edu/. We strongly recommend verifying your grades regularly. **You should immediately report any problem with your grade to your instructor.**

Grades: Grading will be in accord with the UF policy stated at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Help: In addition to visiting the office hours of your instructor and teaching assistant for help, the Little Hall Math Lab located in Little Hall 215 offers free drop-in assistance with math homework Monday – Friday from 10:30 am - 4:00 pm. There are other resources available – please check the Office of Academic Support link here: https://oas.aa.ufl.edu/students/tutoring/
For help with the course websites, please visit **Resources & Help** on Canvas.

Honor Code: "UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class."

Class Attendance: "Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx "

Accommodations for Students with Disabilities: "Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/
It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester."

Online Evaluations: "Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/."

Contact information for the Counseling and Wellness Center: https://counseling.ufl.edu/
392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the General Education learning outcomes as follows:

- **Content:** Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline. After completing this course, students will be able to employ strategies in solving problems in limits, differentiation, and integration. (Critical Thinking for Gen Ed Math, assessed through homework, lectures, quizzes, exams.)

- **Communication**: Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline. Throughout this course students will formulate and solve mathematical models using algebraic, exponential, and logarithmic functions, differentiation and integration, and will communicate mathematical solutions clearly and effectively. (Communication for Gen Ed Math, assessed through homework, lectures, quizzes, exams.)

- **Critical Thinking**: Students analyze information carefully and logically from multiple perspectives, using discipline-specific methods, and develop reasoned solutions to problems. In this course, students will reason in abstract mathematical systems, and they will apply mathematical models to business, economics, life, and social sciences using algebraic, trigonometric, exponential, and logarithmic functions, differentiation and integration, calculation of exact areas between curves, applications of rates of change, identifying the limits of algebraic and transcendental functions, using the derivative as a tool for approximation through differentials and linear approximation, solving optimization problems, among other applications of calculus to solving problems. They will also develop and solve mathematical models of real-world word problems. (Critical Thinking for Gen Ed Math, assessed through homework, lectures, quizzes, exams.)