FLORIDA POLYTECHNIC UNIVERSITY

Syllabus: MAC 2311 Analytic Geometry & Calculus 1

Fall semester 2023

POSTED July 5, 2023
SUBJECT TO CHANGE

Course Information

Course Number and Title: MAC 2311 Analytic Geometry & Calculus 1

Credit Hours: 4

Current Academic Term: Fall 2022

Course Offerings and Instructors

MTWF 9:00 – 9:50AM – Dr. Aaron Bardall
MTWF 10:00 – 10:50AM – Dr. Aaron Bardall
MTWF 1:00 – 1:50PM – Dr. Justin Hoffmeier
MTWF 1:00 – 1:50PM – Dr. Alexander Joyce
MTWF 2:00 – 2:50PM – Dr. Justin Hoffmeier
MTWF 2:00 – 2:50PM – Dr. Austin Anderson
MTWF 3:00 – 3:50PM – Dr. Alexander Joyce
MTWF 3:00 – 3:50PM – Dr. Austin Anderson

Official Catalog Course Description: This course is an introduction to analytic geometry; limits; continuity; differentiation of algebraic, trigonometric, exponential and logarithmic functions; applications of the derivative; inverse trigonometric functions; differentials; introduction to integration; and the fundamental theorem of calculus.

Gordon Rule (6A-10.030): No

Prerequisites: Any of the following:

a grade of C in a MAC course numbered 1147 or higher

IB credit for a MAC course numbered 1147 or higher.

Required Text: Openstax Calculus 1 by Gilbert Strang et al.
ISBN-13: 978-1-394-01415-6

Equipment and Material: Online homework system for assessing and practicing fundamental skills. Particular system is TBD.

Course Objectives:
To help the students build up a solid foundation in mathematical reasoning by acquiring important building blocks and skills. Also, giving the students the tools to apply the learned knowledge to solve routine and

non-routine problems with emphasis placed on solving applications by mathematical modeling. At the end of this course, you should be able to:

Course Learning Outcomes: The following topic will be used to measure the student learning outcome to demonstrate fluency in mathematics concepts," which corresponds to the Mathematics Reasoning Competency:

1. Illustrate fundamental understanding and modeling uses for critical classes of STEM functions: linear, power, exponential, logarithmic, sinusoidal, and sigmoidal.
2. Interpret, use, and calculate derivatives of basic STEM functions and simple combinations of STEM functions.
3. Interpret, use, and calculate anti-derivatives of basic STEM functions and simple combinations of STEM functions.
4. Appreciate and demonstrate a computational and conceptual understanding of average and instantaneous rates of change.
5. Develop, analyze, and interpret mathematical models in an interdisciplinary setting.

Additionally:

6. Demonstrate a computational and conceptual understanding of accumulation of a function.
7. Use computers as appropriate to assist in analyzing and solving mathematical problems. Recognize data as fundamental to mathematical work.
8. Clearly communicate solutions to multi-step mathematics problems through careful, organized, and well-annotated work.

Grading Scale

A	B	C	D	F
90%	80%	70%	60%	< 60%

Plus and minus grades will be assigned at the discretion of the instructor.

(See also University Grading Policy).

Assignment/Evaluation Methods

Homework	10%
Projects	10%
Quizzes	10%
Exams	45%
Final Exam	25%
Total	100%

Schedule of Topics

1. Review of functions + using limits to describe function behavior (~1 week)
2. Derivatives: Approximation (w/ tools) + Limit approach (~1 week)
3. Derivatives: Forms and rules for all elementary functions (~4 weeks)
4. Linearization w/ applications (estimate error, Newton's Method?) (~1 week)
5. Generalized Rates of Change: Implicit & Related Rates (~1 week)
6. Shape, Critical Values & Extema/Optimization + Gradient/Multivariable (~3 weeks)
7. Antiderivatives & FTC (~3 weeks)