MATH 127 – Calculus I – Fall 2019

Instructor:	Caetano Souto Maior	**Time:**	T 18:00 – 21:00
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Course Pages:

1. http://faesmath.github.io/math127 – general course information and login to online classroom
2. https://faes.instructure.com/courses/199 – direct login to Canvas course page
3. https://my.faes.org/secure/student/student.aspx – FAES student portal

Office Hours: Friday, 15:30, usual classroom (subject to change)

Textbooks:

- James Stewart, Troy Day. Biocalculus (2016). Cengage Learning. ISBN: 9781305114036,
- **OR** James Stewart Calculus (2016). Cengage Learning. ISBN: 9781285740621 [**main texts, recommended**]
- Gregory Hartman, Apex Calculus v4.0. (books Q1 and Q2) http://www.apexcalculus.com/. CreateSpace Independent Publishing Platform [**alternative text, free**]

Course Description:
This course is an introduction to calculus and is aimed at students who have not taken calculus in their previous education. The course will begin with a review of pre-calculus topics, including functions and algebra, which are then used as the groundwork for exploring the core topics of limits, continuity, differentiation, and integration. Where possible, problems considered in class will be of a biological nature, and problem sets will be available to promote understanding.

Objectives: Understand the concept of functions, their limits and continuity. Become reasonably familiar with differentiation and integration of functions.

Structure of the course: This course will be divided into three units. The first unit will include a review of precalculus topics like algebra, trigonometry, and functions more generally, aimed at an audience with a diverse background not necessarily including extensive math training; the course will then move into the differential calculus topics of limits, derivatives, and its rules and applications. The second unit will further explore differentiation techniques and use that to define the other main topic of calculus and focus of this unit: integrals. The third unit will introduce slighlty more advanced concepts like Taylor series, and applications using the two main concepts from the previous units like differential equations, and how they are used to model real-world phenomena.

The Learning Process: The math courses will take into account the diversity of backgrounds and stage of career of students taking the courses, who may be less or more comfortable with a hard math class; therefore, the course will start slower, with a comprehensive review/introduction to the essential principles, both to assess the general level of the class as well as to make sure everyone is up to speed within a few lectures. If it is necessary

to compensate for the additional time spend on the basics, more esoteric details and proofs may not be explored in-depth; nevertheless, homework, office hours, and online lecture notes will be provided for any students who wish to gain deeper understanding of any topic. With this approach I expect to be able to be able to cover the entire syllabus of a standard Calculus I course without leaving anyone behind.

Prerequisites: Knowledge of trigonometry, basic algebra and graphing are required.

Important Dates: Exam dates are subject to change:

Class begins ..... September 10, 2019
Last day to drop ..... September 27, 2019
Midterm I ..... Oct 8, 2019
Midterm II ..... Nov 5, 2019
Last day to change status ..... November 15, 2019
Thanksgiving week (no class) ..... Nov 26, 2019
Final Exam/Presentations ..... Dec 10, 2019

Grading Policy:
Midterm 1 (25%), Midterm 2 (25%), Final (30%), Quizzes (20%). Quizzes and exams are cumulative. Extra credit can be obtained up to 10 points. 100 points is the highest grande in this course.

Grading Scale: The grading scale will be the following:

A	A-	B+	B	B-	C+	C	C-	D+	D
93+	$90-92$	$87-89$	$83-86$	$80-82$	$77-79$	$72-76$	$70-72$	$67-69$	$60-66$

Quiz Policy:
Approximately 10 quizzes will be administered in this course. The higher 50% quantile of scores will make up the final grande contribution. There are no make-up quizzes.

Homework Policy: Homework does not count directly to the final grade, but is strongly recommended as practice for both quizzes and exams.

Extra Credit: The students can earn extra credit in several ways:

1. Pointing out errors in any of the texts or presentations used in the course;
2. Writing 1-2 paragraphs about concepts they find difficult or think require clearer explanation;
3. Creating an account in the Stack Exchange Math forum and inform the instructor of their user name, and;
    - post questions about exercises or definitions, sending the link to the instructor, and getting replies;
    - or reply to question from others.

Extra credit is limited to one point per week.

Class Policy:

- Attendance in every class is strongly encouraged.

- Quiz and exam problems are not simple repetitions of textbook exercises – attendance is likely to increase familiarity with different styles of problems.
- Computers and regular-sized tablets are allowed in class for note-taking and occasional online consultations, please refrain from using any other resources, and especially social media. Cell phones are not allowed, please silence and put away your phones during class.

Comunication Policy:

- Any questions about lecture content should be asked using the Canvas online classroom platform
- Preferred (and likely fastest) communication method for other matters is e-mail, replies will normally be sent within 2 workdays
- Calls and text should be used only in urgent cases via Slack channel/direct contact during business hours (request to be added if you would like to be able to use this platform)

Policy on Academic Integrity from FAES:

Academic Policies: This course adheres to all FAES policies described in the academic catalog and student handbook, including the Academic Integrity policy listed on page 11 of the academic catalog and student handbook. Be certain that you are knowledgeable about all of the policies listed in this syllabus, in the academic catalog and student handbook, and on the FAES website. As a student in this program, you are bound by those policies.

Copyright: All course materials are the property of FAES and are to be used for the studentâĂŹs individual academic purpose only. Any dissemination, copying, reproducing, modification, displaying, or transmitting of any course material for any other purpose is prohibited, will be considered misconduct, and may be cause for disciplinary action. In addition, encouraging academic dishonesty by distributing information about course materials or assignments which would give an unfair advantage to others may violate the FAES Academic Integrity policy. Course materials may not be exchanged or distributed for commercial purposes, for compensation, or for any purpose other than use by students enrolled in the course. Distributions of course materials may be subject to disciplinary action.

Guidelines for Disability Accommodations: FAES is committed to providing reasonable and appropriate accommodations to students with disabilities. Students with documented disabilities should contact Dr. Mindy Maris, Assistant Dean of Academic Programs.

Dropping the Course: Students are responsible for understanding FAES policies, procedures, and deadlines regarding dropping or withdrawing from the course or switching to audit status.

Academic misconduct: Cheating, fabrication or plagiarism by students is not acceptable in any form. If a student is found to be in violation of acceptable conduct by any of the practices below, they will be stripped from the grade of that assignment and potentially others

Cheating is defined as an attempt to give or obtain inappropriate/unauthorized assistance during any academic exercise, such as during examination, homework assignment, class presentation.

Fabrication is defined as the falsification of data, information or citations in any academic materials.

Plagiarism is defined as using the ideas, methods, or written words of another, without proper acknowledgment and with the intention that they be taken as the work of the deceiver. These include, but are not limited to, the use of published articles, paraphrasing, copying someone else's homework and turning it in as one's own and failing to reference footnotes. Procuring information from online sources without proper attribution also constitutes plagiarism.

Tentative Course Schedule: Recommended reading may not align perfectly with lecture content. Importance of each section will be emphasized during lectures depending on profile/background of enrolled students and overall progress, and interest in specific applications (the latter applies to the statistical applications unit – the last third of course).

Date	Topic(s)	Reading
Sep 10	**Lecture 1:** Introduction/Review	*Diagnostics*, *case studies*
Sep 17	**Lecture 2:** Essential functions	1 (Stewart), 1 (Stewart & Day)
Sep 24	**Lecture 3:** Inverse functions, Limits	6,1 (Stewart), 1,2 (Stewart & Day)
Oct 1	**Lecture 4:** Derivatives	2 (Stewart), 3 (Stewart & Day)
Oct 8	**Lecture 5:** Applications of differentiation **(Midterm I)**	3 (Stewart), 4 (Stewart & Day)
Oct 15	**Lecture 6:** Integrals	4 (Stewart), 5 (Stewart & Day)
Oct 22	**Lecture 7:** Applications of integration	5 (Stewart), 6 (Stewart & Day)
Oct 29	**Lecture 8:** Techniques of integration	7 (Stewart), 5 (Stewart & Day)
Nov 5	**Lecture 9:** Further application of integration **(Midterm II)**	8 (Stewart), 5,6 (Stewart & Day)
Nov 12	**Lecture 10:** Differential equations	9 (Stewart), 7 (Stewart & Day)
Nov 19	**Lecture 11:** Parametric equations and polar coordinates	10 (Stewart), 7 (Stewart & Day), *notes*
Dec 3	**Lecture 12:** Infinite Sequences and Series	11 (Stewart), 1,3 (Stewart & Day)
Dec 10	**Final exam**	

Additional learning resources:

Khan Academy https://www.khanacademy.org/math/calculus-home

MIT OpenCourseWare https://ocw-origin.odl.mit.edu/courses/mathematics/18-01sc-single-variabl
index.htm