

## MATH 127 – CALCULUS I – Fall 2019

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<b>Instructor:</b>	Caetano Souto Maior	<b>Time:</b>	T 18:00 – 21:00
<b>Email:</b>	<a href="mailto:caetano.soutomaior@nih.gov">caetano.soutomaior@nih.gov</a>	<b>Place:</b>	NIH Building 10, 4-3330

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### Course Pages:

1. <http://faesmath.github.io/math127.html> - general course information and login to online classroom
2. <https://my.faes.org/secure/student/student.aspx> - FAES student portal

**Office Hours:** Friday, 15:30, usual classroom (tentative)

### 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. (volumes 1 and 2) <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.

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

**Important Dates:** Exam dates are subject to change:

Class begins .....	September 10, 2019
Midterm I .....	Oct 1, 2019
Midterm II .....	Nov 5, 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 grade 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 grade 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.

**Course Policy:**

- We strongly recommend that you sign up with FAES; the course may be cancelled in the event of low registration.

**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.

**Policy on Academic Integrity from FAES:** The FAES Graduate School at NIH prides itself on providing quality educational experiences and upholds the highest level of honesty, integrity, and mutual respect. It is our policy that cheating, fabrication or plagiarism by students is not acceptable in any form. If a student is found to be in violation of any, or all of the below, his/her credits will be forfeited, and he/she will not be allowed to enroll in future courses or education programs administered by FAES.

**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 11	<b>Lecture 1:</b> Introduction/Review	Diagnostics, case studies
Sep 18	<b>Lecture 2:</b> Functions, inverse functions and Limits	1 (Stewart), 1,2 (Stewart & Day)
Sep 25	<b>Lecture 3:</b> Trigonometric, inverse trigonometric, exponential, and logarithmic functions	6 (Stewart), 1 (Stewart & Day)
Oct 2	<b>Lecture 4:</b> Derivative	2 (Stewart), 3 (Stewart & Day)
Oct 9	<b>Lecture 5:</b> Applications of differentiation ( <b>Midterm I</b> )	3 (Stewart), 4 (Stewart & Day)
Oct 16	<b>Lecture 6:</b> Integrals 4 (Stewart), 5 (Stewart & Day)	
Oct 23	<b>Lecture 7:</b> Applications of integration	5 (Stewart), 6 (Stewart & Day)
Oct 30	<b>Lecture 8:</b> Techniques of integration	7 (Stewart), 5 (Stewart & Day)
Nov 6	<b>Lecture 9:</b> Further application of integration ( <b>Midterm II</b> )	8 (Stewart), 5,6 (Stewart & Day)
Nov 13	<b>Lecture 10:</b> Differential equations	9 (Stewart), 7 (Stewart & Day)
Nov 20	<b>Lecture 11:</b> Parametric equations and polar coordinates	10 (Stewart), 7 (Stewart & Day)- <i>notes</i>
Dec 4	<b>Lecture 12:</b> Infinite Sequences and Series	11 (Stewart), 1 (Stewart & Day)

Dec 11	<b>Final exam</b>	
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**Additional learning resources:**

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

**MIT Open Courseware** <https://ocw-origin.odl.mit.edu/courses/mathematics/18-01sc-single-variable-calculus/index.htm>