This is a course in single-variable calculus, covering limits, derivatives, and the basics of integration. The approach will be rigorous, but with emphasis on ideas and calculation, rather than proofs. A small fraction of the final grade (about 10%) will depend on your ability to write simple proofs; if you are looking for a more proof-based approach, consider 21:640:155: Honors Calculus; if you are looking for a less rigorous approach, consider 21:640:119: Basic Calculus.

Lectures: Mondays 2:30-3:50pm, Wednesdays 1:00-2:20pm @ Boyden Hall 100.

Instructor: Yiannis Sakellaridis, sakellar@rutgers.edu.

Office hours: Mondays 10:30-11:30am and Wednesdays 11:00am-12:00noon or by appointment @ Smith Hall 323.

Take advantage of office hours! Discuss any concerns with your instructor, ask for help to fill in your gaps, ask any number of “dumb questions” that you like, that’s what we’re here for!

Recitations: Section 01: Fridays 9:00-9:50am, Smith Hall B24
Section 02: Fridays 10:00-10:50am, Smith Hall B24
Section 03: Fridays 12:00-12:50pm, Smith Hall B24
Section 04: Fridays 1:00-1:50pm, Smith Hall B24
Section 05: Fridays 2:30-3:20pm, Smith Hall B24

Teaching assistant: Maria Quiroga, mquiroga@rutgers.edu.

Take advantage of recitations! They are your last chance during the week to understand the material covered; don’t leave any gaps and share with your TA any questions or difficulties that you have!

E-mail policy: We will do our best to answer your e-mails within 24 hours, but sometimes it may take up to 48 hours (or more on weekends). Act early and do not send in last-minute questions about the homework, as they may not be answered in time. We may choose to address your question via an announcement, instead of a personal e-mail. If you are not covered by the announcement, or think that your e-mail has been forgotten (which may, inevitably, happen sometimes) then please send us a reminder.


Remarks:

- The textbook will serve as our main compass, but we will not cover it entirely or in the same order.

- Access to MyMathLab is essential, since most of the homework will be given there. Students who have difficulty purchasing the package should contact the instructor as soon as possible – we will try to get a few free access codes from the publisher.
• Other editions of the book, which do not include the words “custom”, “early transcedentals” or “single variable”, are very similar and would work, too.
• No calculators will be allowed in the exams – feel free to complain at the bookstore for recommending that you bought one.
• For any concerns regarding the textbook and course access, please contact the instructor.

MyMathLab and enrollment: After you use your purchased code to create your personal account on MyMathLab, go to “Edit Profile”, choose “Enroll in classes” and type the Class ID: sakellaridis37294. Please do so early, as the first MyMathLab homework will be due on 13 September. (The first homework will be due on September 7, and will be submitted on BlackBoard.) Notice: Enrolling on MyMathLab does not register you for the class. You need to be officially registered for the class in order to receive any credit – no exceptions! Registering for the class automatically gives you access to the course on BlackBoard, [http://blackboard.newark.rutgers.edu/](http://blackboard.newark.rutgers.edu/), where most of the announcements will be posted.

Warning: Math is math, and nothing can replace sitting down over a sheet of paper and trying to solve problems or understand the theory. While the online resources might be helpful at times, don’t waste too much time on them – if you have time in your hands then opt to read your book, solve some exercises, read the Wikipedia, or go out for a walk!

Website: [http://andromeda.rutgers.edu/~sakellar/calculus/](http://andromeda.rutgers.edu/~sakellar/calculus/) (under construction)

Prerequisites: 21:640:114: Precalculus. Which means, according to the University Catalog that you should be comfortable with algebraic, rational, trigonometric, logarithmic, and exponential functions; functions and inverse functions; solutions of nonlinear inequalities; advanced factoring techniques. For example: which functions are called rational? Do you know the identities for the sine and cosine of the sum of two functions? What does the graph of the inverse tangent look like? What does $e^a$ mean? What other way to do have to write $(e^a)^b$? If you don’t feel sure about such questions, you must spend extra time during the first weeks reviewing them by yourself. Also, take advantage of recitations and office hours to ask for advice and fill in any gaps that you might have. We will start with Chapter 2 of your book. Chapter 1 is part of the prerequisites, so you should make sure that you are comfortable with it.

Historical notes: Have you ever thought about what it means for the speed of a car at a certain moment to be 50 mph? Sure, if we were talking about its average speed during one hour, it would mean that it travelled 50 miles during that hour. More generally, if we were talking about its average speed during an interval $t$ of time, it would mean that it travelled $t \times 50$ mph during that time. However, during that time its speed might have been going up and down, even if the time interval is very small, so what does really mean that its instantaneous speed is 50 mph at a certain moment? We should measure its average speed during small intervals, and let these intervals become smaller and smaller.

Such questions motivated great mathematicians (and physicists; and philosophers – those subjects were not really separate back at the time!) such as Leibniz (1646–1716) and Newton (1642–1726) to create the foundations of modern calculus, based on the notion of a limit.

Course contents: We will start by studying limits very carefully and rigorously. Limits are the mathematical notion of “letting something become smaller and smaller” without, however, becoming zero. It is not
an exaggeration to say that the rest of the course will be easy for whoever masters limits and precalculus. Afterwards, we will learn the derivative (which is precisely the instantaneous speed in the example of the car) and several applications of it. In the last few weeks we will introduce integrals. A tentative schedule of lectures will be posted at [http://andromeda.rutgers.edu/~sakellar/calculus1/schedule.html](http://andromeda.rutgers.edu/~sakellar/calculus1/schedule.html) and will regularly be updated so that if you miss a lecture you can look at the schedule to see what was covered there.

**Grades:** The final grade will be computed as follows:

- 40% Final exam.
- 20% Midterm 1 (on limits).
- 20% Midterm 2 (on derivatives and their applications).
- 20% Best 10 out of 12 weekly homeworks and quizzes.

In order to pass the course, you must have an average of at least 50% and a final exam grade of at least 35%.

**Remarks:**

- The best way to achieve good grades is to *forget about grades and focus on understanding the material!* 
- There will be no make-ups for missed midterms or homework: for students who miss them due to *documented* – i.e., they must bring a doctor’s notice – medical (or other serious) reasons the weight of the midterm or homework will *automatically be transferred to the final exam*. There will be a make-up exam in case someone misses the scheduled final exam for a *documented* medical (or other serious) reason, but notice that if we err with the level of difficulty of the make-up exam, it will probably be towards the difficult side.

**Important dates:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday 1 September</td>
<td>Classes start</td>
</tr>
<tr>
<td>Monday 6 September</td>
<td>No classes (Labor Day)</td>
</tr>
<tr>
<td>Thursday 9 September</td>
<td>Deadline for dropping the course without “W” Grade.</td>
</tr>
<tr>
<td>Friday 10 September</td>
<td>Deadline for adding the course.</td>
</tr>
<tr>
<td>Wednesday 8 September</td>
<td>Counts as Monday (lecture at 2:30pm).</td>
</tr>
<tr>
<td>Wednesday 6 October</td>
<td>Midterm 1</td>
</tr>
<tr>
<td>Wednesday 3 November</td>
<td>Deadline for dropping the course with a “W” Grade.</td>
</tr>
<tr>
<td>Wednesday 17 November</td>
<td>Midterm 2</td>
</tr>
<tr>
<td>Monday 22 November</td>
<td>Counts as Wednesday (lecture at 1pm).</td>
</tr>
<tr>
<td>Wednesday 24 – Friday 26 November</td>
<td>No classes (Thanksgiving).</td>
</tr>
<tr>
<td>Monday 13 December</td>
<td>Last day of classes.</td>
</tr>
<tr>
<td>Tuesday 14 – Wednesday 15 December</td>
<td>Reading period.</td>
</tr>
<tr>
<td>Monday 20 December</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>

**Disability Center and further support:**

Under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, the University has an obligation to make all programs sponsored by Rutgers accessible to those with disabilities. To ensure equal access, Rutgers must provide reasonable and appropriate modifications of its programs or courses unless to do so would fundamentally alter the nature of the program or course.

If you have some disability, or even some recurring problem which may hinder your participation in class or at exams, please contact the [University Office of Disability Services](http://robeson.rutgers.edu/sa/disabilities.php) to request accommodations for your condition. Feel free to contact your instructor if you have any concerns about your condition and how it could affect your participation. Visit also the website: [http://robeson.rutgers.edu/sa/disabilities.php](http://robeson.rutgers.edu/sa/disabilities.php) for further information on university resources that you can use to help you with disabilities, learning difficulties, reading or writing difficulties, psychological issues and other problems. These resources include the [Learning Center], the [Writing Center], the [Psychological and Counseling Services], and the [Louis Stokes Alliance for Minority Participation (LSAMP)].