MAT 127: Calculus C, Spring 2022
Additional Course Information

About Exams

Midterm I	02/24 (Th)	8:15-9:35**pm**	Location TBA
Midterm II	04/07 (Th)	8:15-9:35**pm**	Location TBA
Final	05/11 (Wed)	8:00-10:45**am**	Location TBA

Additional information for each of the exams (including the location) will be posted on the course website (see the *General Course Information* handout) 1-2 weeks ahead of time. There will be **no** make-up exams.

If you have a legitimate and well-documented reason for missing

- the first midterm, your score on the ODEs portion of the final exam

- the second midterm, your score on the sequences/series portion of the final exam

will be substituted instead. The scores to be substituted will of course be appropriately rescaled.

You must advise the course coordinator of your legitimate absence from an exam and provide supporting documentation as soon as possible; each of these must be done as soon as possible even if it is not possible to do them at the same time. Depending on circumstances "as soon as possible" may be months before the exam or immediately after. Having a conflict with another class is **not** a legitimate excuse.

If you would like to discuss how a specific problem on your exam was graded, please speak with the person who graded it; you must have a hard copy of the solutions to the exam with you when you meet with the grader. Since the aim is to grade everyone's work consistently, the grader may then re-examine how the entire problem (and possibly some other problems on your exam) was (were) evaluated; your total grade may then go up or down. Your grade will be changed (up or down) only if the grader is convinced that your problem was graded contrary to the grading scheme described in the solutions or if there was an inconsistency in grading. For the latter, you may need to show up with someone on whose exam the problem in question was graded differently; the score on either exam (and possibly both) will then be subject to change, up or down. If the scores on individual problems on your exam were added up incorrectly or if there is an issue with a multiple-choice question, simply let your instructor know. The deadlines for changing your grades for Midterm I and Midterm II are March 24 and May 5, respectively; if you miss the deadline, your grade will **not** be changed even if your scores were added up incorrectly.

> *You* **must** *bring your Stony Brook ID card to all exams.*

Homework Grading Policy

There will be 12 problem sets in this class, consisting of online problems (to be completed through *WebAssign*) and written problems (to be handed in to your instructor). Your lowest problem-set score (as percentage of the maximum possible score) will not be counted toward the total homework score for the semester. Each of the other 11 problem-set scores will contribute equally to the total homework score, even though the problem sets will be of different lengths. All homework scores will be recorded in *BlackBoard*, which will compute the homework grade and the weighted total.

$$\boxed{\textbf{NO late homework will be accepted}}$$

The above framed statement means **precisely** what it says; a deadline is a deadline. For example, if your paper assignment is due *before* 4pm and you attempt to hand it in after your instructor closes the envelope with the homeworks at 4pm (according to his cell phone), your homework will not be accepted. While this policy is relatively harsh, the reality is that "nice" policies on late assignments tend to harm the responsible students (those who in particular hand in their assignments on time). One of the reasons for this homework policy is that all rules (including deadlines) should be clear and should apply to everyone in the same way. If you have a 3pm class and thus might not get to your instructor's office before 4pm, please drop off your homework ahead of time or hand it in to him in lecture *earlier* in the week. If something completely unexpected comes up, then you'll benefit from the *lowest homework score dropped* policy. Since the homework counts for 16% of the total grade, it is quite possible for a late homework to effect your letter grade at the end of the semester; so **hand in your homework before it is due**.

If you would like to discuss how the written portion of your problem set was graded, please speak with the person who graded it; you must have a hard copy of the solutions to the problem set with you when you meet with the grader. Since the aim is to grade everyone's work consistently, the grader may then re-examine how the entire problem set was evaluated; your total grade may then go up or down. Your grade will be changed (up or down) only if the grader is convinced that your problem set was graded contrary to the grading instructions or if there was an inconsistency in grading *within* your lecture. As there is more than one grader for this course, there may be some differences in how the problem sets in different lectures are graded; however, any such differences should balance out over the course of the semester, as the graders will be rotated between the lectures.

Please be aware that the graders may choose to list scores for sets of problems, rather than for each individual problem. For example, some problems will be short and worth very few points; a score of 15/20 written next to one of such problems could indicate that the grader awarded you 15 points for several such problems. So if you do not see a score written next to some problem in your solutions, do not just assume that the grader missed the problem; instead please check the problem set solutions to see how many points each problem is worth, which should help you determine if your score for the given problem was combined with other scores.

You may receive no credit for problems containing grievous errors (see *About this Course* below), even if the rest of the solution to the problem is correct. Such errors will be crossed out with **X!**. The aim of this policy is to draw your attention to such errors in the hope that you would not repeat

them on an exam (when such errors would cost you way more).

Your solutions must be stapled *before* they are handed in. If they are not stapled, you may receive credit for the problems on only one of the sheets that has your name on it (whichever one your instructor sees first, not necessarily the one with the highest number of points). The problems in your solutions must be written in the order they are listed on the assignment (though you can still skip problems); the grader may choose to award no credit for any of the problems done out of order.

> All homework solutions must be stapled (no paper clips) and have your name and lecture number in the upper-right corner on the first page.

Please write your solutions legibly; the graders WILL disregard solutions that are not readily readable.

About WebAssign

You will need to complete some (many) of the homework problems online, through *WebAssign*, which can be accessed via *BlackBoard*. You will need to purchase a *WebAssign* access code if you do not already have one.

The *WebAssign* problems come in several forms. Some questions are multiple-choice (sometimes with just two possible answers to choose from). For some questions, you will simply enter numbers. Some questions require using math symbols, such as fractions and square roots; a *CalcPad* window would then appear after you click on the answer box. Some of the *WebAssign* problems are "tutored exercises"; these consist of a sequence of questions which must be answered in order (more or less) and which lead you to the answer. For all questions on *WebAssign*, you'll get feedback as soon as you submit your answer.

The *WebAssign* homeworks will be made available at least one week before they are due. You can print them out, work on them anywhere, and submit your answers later (before the deadline, of course). Since each of the problems has many variants, do not try to compare your answers with classmates, but you are encouraged to compare solutions. You can save and/or submit answers to an entire assignment or to each individual question. Please note that *WebAssign* will not automatically submit your answers for scoring if you only save your work; if you save your answers and forget to submit them before the deadline, you will *not* receive an extension.

With most *WebAssign* problems, you'll have five chances to get the answer right, losing 20% for each incorrect answer. For example, if you get the answer to a 3-point question right on the second try, you'll get 2.4 points. However, if you are given a choice between 2 possible answers, you'll have only one chance to get the answer right. Most *WebAssign* questions will come with bonus points for early completion. The bonus points will be a percentage of your score on the given question and will be specified in the assignment (on the handout from the course website and in the information box for each question on *WebAssign*). For example, if a 3-point question carries 20% early-completion bonus, allows 5 submissions, and you get the answer right on the second attempt (losing 20%), but before the early submission deadline, you'll receive 3*.8*1.2=2.88 points.

| Complete the *WebAssign* problems as early as possible in order to avoid any technical issues |

The *WebAssign* site for MAT 127 will be available starting Monday, January 24. You should have 2 weeks from this date to pay for your access to *WebAssign* (or enter an access code). Thus, you can submit the first *WebAssign* homework before paying for access. Please access *WebAssign* as soon as possible and contact them if you are unable to do so.

About Homework Assignments

The reading and written homework assignments will be posted on the course webpage, along with the deadlines for the *WebAssign* problems. The written assignments will generally be due **before** 4pm on Wednesdays. The *WebAssign* problems will be due usually **before** 9am on Wednesdays (the due time on *WebAssign* will be set to 8:59am).

You can*not* learn calculus without working on exercises. Nearly all of the assigned problems will be fairly routine exercises. In addition to working on the assigned problems, you should actually do *all* of the problems in the textbook; just looking at them and deciding that you know how to do them is not enough. This will be time-consuming at first, but if you actually figure out what is going on in each section, the exercises will take you seconds to do (a minute or two for longer ones) after you do the first few of them. This should greatly help you on the exams.

Most problem sets will contain an additional problem (or two) requiring more concentration, but no knowledge beyond the textbook and the notes. The aim of the fairly routine problems is to get you to memorize a bunch of techniques so that you can hopefully do enough routine problems on the exams to get a C for the course. While this is a good start (and unfortunately many of you will choose not to get even this far on the first attempt), the truth is that machines can handle such problems much quicker. The aim of the non-textbook homework problems is to get you to develop a deeper understanding of the subject and/or discover connections between different areas of mathematics, going beyond what machines can do. However, all problems on the exams will of the "standard" type, similar to past exams (these will be made available on the course website); understanding the non-textbook homework problem should help with the exams, but will not be necessary to pass the course (but you must be able to do the routine problems if you want to pass this course).

Starting on the homework as soon as possible after each class should save you a lot of time and help pass the course. You should try to do every homework problem by yourself first, not "with friends". If you can't figure out at least half of the problems *completely* by yourself, you are very unlikely to do sufficiently well on the exams to pass this course. If you are unable to do a problem, even after re-reading the relevant sections from the textbook, then discuss it with someone (other students, course instructors/graders, MLC/RTC tutors, etc.). While you are encouraged to compare your answers and solutions to the homework exercises with each other,

| you must **write your own solutions** to the problem sets |

Make sure to study the solutions to the problem sets after they are posted (even if you can do all homework problems); this may help you on the exams.

While 16% for the homework may not seem like a lot, in the end it will no doubt make a difference in your letter grade for the semester. If your weighted total for the semester (rounded to one decimal place) falls just .1 below the C cutoff, you will receive a D for the semester and would likely need to repeat this course (depending on your department's policy). You can avoid such an unpleasant scenario by putting more effort into the homework (as well as into the exams) throughout the semester and by making sure you *always* hand in your homework on time. Even more importantly, doing the homework should help you on the exams; you thus should not skip *any* homework assignment, even though the lowest homework grade is dropped. It is also essential that you actually *work* on the homework yourself, instead of copying it from friends or MLC/RTC tutors; the latter would help you with the homework grade, but is likely to hurt your exam scores and thus your chances of passing this course. The data shown in Table 1 below is a strong indication that doing the homework (and not copying it from someone else!) is necessary for doing well in this class.

grade / hws missed	A/A-	B±	C+/C	D/F
0	93%	58%	31%	11%
1	7%	28%	22%	16%
2	0	10%	20%	9%
3	0	3%	9%	5%
4-11	0	3%	18%	59%

Table 1: Percentage of MAT 127 Fall 09 students within each grade range who missed the specified number of problem sets (excludes those who withdrew from the course). Percentages in a column may not add up to 100 due to rounding.

Please read the assigned sections in the textbook thoroughly and *before* the lecture. Each section contains a number of examples that are worked out in detail. You should try to do these examples yourself before going through the book's explanation; this might help with the homework problems. *You will be responsible for the material contained in the assigned sections of the textbook, whether or not it is directly covered in lecture.* Please do not attempt the homework exercises until you have read the corresponding section in the book.

Since it is not possible to spend much time for review in each lecture, you are expected to be familiar with the material covered in the preceding lectures. Please keep up with the class; it will be harder to catch up later. You are encouraged to discuss any aspect of this class, including the material covered in lectures, the readings, and the homework exercises, with anyone, including other students in the class and the MLC/RTC tutors. You can also consult any source that may help you with the class in general and the exercises in particular.

Since this class is not "curved", please do not hesitate to help each other; by helping others understand the material, you may end up helping yourself as well. However, letting someone copy your solutions to the homework is not helping them, as it will hurt them on the exams.

About the Course

MAT 127 is the final part of the three-part one-variable calculus sequence MAT 125-126-127, but is fundamentally different from and significant harder than MAT 123, 125, and 126. MAT 127 is more like a 200-level, harder than MAT 200 and MAT 211. The enrollment in MAT 127 is roughly 1/5 of the enrollments in MAT 125 and 126 separately and includes a number of freshmen who did not take MAT 125/126 at Stony Brook. So at most 1/6 or so of the students in MAT 125/126 continue on to MAT 127, and these 1/6 likely tend toward those students who get A/B in MAT 125/126, not C. This all means that you should expect a *significantly* lower grade in MAT 127 than you got in MAT 126 if you put in a similar effort.

In order to take MAT 127, you must have either completed MAT 126 with a grade of C or higher or achieved at least level 8 on the Mathematics Placement Examination. Furthermore, you must have a solid understanding of the topics covered in MAT 123, 125, and 126. It is almost certainly the case that you have met the first, formal, requirement to take MAT 127. One reason why MAT 127 is much harder than MAT 125/126 is that you must meet the second requirement as well in order to have a reasonable chance of passing MAT 127. You may have gotten a C in MAT 126 because the class was "curved" and there were enough other students who did worse than you. If this is the case, you are almost certainly not ready for MAT 127 and will likely fail it, no matter how many other students do worse than you. Even if you got an A/B in MAT 126, there may be things from MAT 123/125/126 that you have forgotten, especially after a 1.5-month break (or longer). Since it is not feasible to review much of MAT 123/125/126 in class, it is your responsibility to ensure that you have a firm grasp of the material covered in MAT 123/125/126, in particular

Volume	1	1	1	1	2	2
Sections	1.3-5	2.2-4	3.1-9	4.1,2,5,8,9	1.1-6	3.1,4,7

Table 2: Some of the sections from the two volumes of the textbook to review before/at the beginning of the semester.

If you do not have a firm grasp of the above material, your grade in MAT 127 is likely to be *significantly* lower than in MAT 126. It is not uncommon for students signing up for this course to think that

$$\frac{1}{x \pm y} = \frac{1}{x} \pm \frac{1}{y}, \quad e^{x \pm y} = e^x \pm e^y, \quad \ln(x \pm y) = \ln x \pm \ln y, \quad \sin(x \pm y) = \sin(x) \pm \sin(y), \quad \text{etc.}$$

ALL of these **ARE WRONG**. You should have learned in junior high that these cannot be right[1] and the correct formulas for all of them by the end of pre-calculus. Such statements on the problem sets and exams will be considered grievous errors and will carry **severe penalties**: up to 10 points on the exams, which may result in a negative score on an entire problem. The aim of this policy is to get you to learn what you should have learned well before taking MAT 127 and to help you avoid failing this course by either convincing you to catch up quickly or to withdraw from the course and

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[1] only $f(x) = mx$ satisfies these assuming continuity

take it at a later time when you are ready.

Another reason why MAT 127 is much harder than MAT 125/126 is that the topics covered in MAT 127 are more conceptual/abstract.

Part I is an introduction to ordinary differential equations. It involves *lots of* graphing (without a calculator, of course), which is perhaps the topic that causes the most trouble in MAT 123/125/126. This part also requires *conceptual* understanding of derivatives: while you are likely able to compute derivatives of many functions, you must also know what this means, in terms of limits, rate of change, and graphs. There will be some integration as well, which will sometimes require use of *partial fractions*. Familiarity with the exponential and log rules will be essential in this part of the course.

Part II is an introduction to infinite sequences and series. It is very abstract and generally causes a lot of difficulty. A series is the sum of an infinite sequence (string of numbers), but how can one possibly sum up infinitely many numbers? This part will require *conceptual* understanding of integrals in terms of areas, as well as use of *partial fractions*. This will however be secondary to the main difficulties caused by the new concepts introduced in this part of the course.

Table 3 below clearly shows that you have little chance of passing this course (C or higher) without doing well on Part I.

MTI grade	F	D/C-	C/C+
chance of passing MAT 127	0	16%	37%

Table 3: Chance of passing MAT 127 in Fall 09 after poor scores on Midterm I (excludes those who withdrew from the course; so the actual chances are even lower).

Furthermore (also based on MAT 127 in Fall 09), the chance of your letter grade for the semester being higher than on the first midterm is just 7.6% (about 1/13), while the chance of it being lower is 55.7% (assuming the letter grades are combined as A/A-, B+/B/B-, C+/C, C-/D, F). As Part I is hard, but still easier than Part II, you need to put *lots of effort* into Part I from the first day of class (assuming you'd like to pass this course).

About G/P/NC

The purpose of this grading option is to encourage exploration of courses that are not directly required for one's degree. It can have unfortunate repercussions if used improperly for courses in which a C is needed for the degree. Before you choose to G/P/NC MAT 127 at $C+$ or higher, please consider whether repeating this course (and potentially delaying your graduation) if you get a C in it is preferable to getting a C on your transcript and being done with MAT 127.

Further Warnings

You are likely taking this course only because it is required for your degree. Nevertheless, you need to pass it and you must put in whatever effort is required to do so. If you fail this course,

(1) there is no guarantee you'll be allowed to repeat it at Stony Brook:

> https://www.stonybrook.edu/commcms/ceas-undergrad/current_students/retake_policy.php

(2) you may not be able to take other courses as planned, which may in turn delay your graduation;

(3) you may fail to satisfy the "good standing" requirements for your fellowship, financial aid, and/or enrollment at Stony Brook.

You should keep these things in mind from the beginning of the semester until you have taken the final exam. Once you have taken the final exam, it will be too late to do anything about your grade, even if you just barely miss the passing cutoff.

Do not fall behind in this course, as it will be much harder to catch up later. As soon as you are unable to figure something out after reading the textbook, ask someone for help: other students in the class, the course instructors/graders, MLC/RTC tutors, or anyone else.

If you are ready to take MAT 127, you should be able to pass it, but **only if** you decide to and actually put in whatever effort is required to do so (which is much more than for MAT 123/125/126).

Best wishes for the semester.