MATH 241: Calculus IV
Sec05 meets in 38-0148 at 10:10-11:00am,  Sec12 meets in 38-0220 at 1:10-2:00pm

Instructor: Dr. Erin Pearse
Email: epearse@calpoly.edu
Office: 25-341 Faculty Offices East
Phone: 756-5558
Office Hours: MTRF 2:10–3:00pm, and by appt
Web site: https://polylearn.calpoly.edu/

Course goals: Functions of multiple variables, partial derivatives, optimization of functions of multiple variables, multiple integrals, introductory vector analysis.

Course prerequisites: Math 143.

Text: Thomas’ Calculus (12ed), by Weir & Hass. Copies are on reserve in the Kennedy Library.

Attendance and communication: Attendance is mandatory, and you must be aware of announcements made in class, posted on PolyLearn, or sent to you via email. It is your responsibility to have current information about this class; please check your email twice daily. Please email me to arrange any appointment; also with any questions on lectures or homework.

If you must miss class, you will still be responsible for the material discussed in class and any announcements made; this may include changes to the assignments, syllabus, exams, etc. Absence from exams will require a validated excuse, and should be arranged in advance if possible. Poor attendance may result in your final grade being lowered by one letter grade. “Poor attendance” is defined as missing more than 3 classes without validated excuses, starting from the 3rd day of classes. A “validated excuse” is a note signed by a doctor, priest(ess), law enforcement official, etc.

Classroom policies:
- All electronics should have sound turned off, esp. phones and laptops.
- Please avoid discussing personal matters (e.g. grading, attendance) during class.
- Read ahead (read the book!), come prepared, ask many questions.
- Etiquette for leaving class early: please let me know, and choose your seat accordingly.

Office hours: You should budget your time so as to be able to attend office hours at least 1–2 times per week. Office hours should be regarded as an inseparable part of this course. Coming to office hours demonstrates that you are a diligent student and will only reflect on you positively. I am available on a walk-in basis 2:10–3:00pm MTRF, and by appt, and by email.

Important dates: Exam 1 will be Apr. 28 and Exam 2 will be May 19. Final Exams will be Tuesday Jun. 13 at 10:10am-1:00pm for Sec05 and Tuesday Jun. 13 at 1:10pm-4:00pm for Sec12. Class does not meet May 29 in observance of Memorial Day.

Course grades, exams and important dates: Grades will be computed as the larger of:

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
<th>%</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
<td>10%</td>
<td>due Tue. and Fri.</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
<td>10%</td>
<td>most Fridays</td>
</tr>
<tr>
<td>Exam 1</td>
<td>20%</td>
<td>25%</td>
<td>Apr. 28</td>
</tr>
<tr>
<td>Exam 2</td>
<td>20%</td>
<td>25%</td>
<td>May 19</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
<td>30%</td>
<td>Jun. 13</td>
</tr>
</tbody>
</table>

Grades are posted on PolyLearn so that you can check that assignments were recorded correctly. PolyLearn is not capable of computing grades according to the above scheme.
**There is no curve.** Course grades will be based on the weighted average $X$ of all your grades, as described above, and assigned according to the usual flat scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$100 \geq X \geq 90$</td>
</tr>
<tr>
<td>B</td>
<td>$90 \geq X \geq 80$</td>
</tr>
<tr>
<td>C</td>
<td>$80 \geq X \geq 70$</td>
</tr>
<tr>
<td>D</td>
<td>$70 \geq X \geq 60$</td>
</tr>
<tr>
<td>F</td>
<td>$60 &gt; X$</td>
</tr>
</tbody>
</table>

$\pm$ grades will be given for scores in the top or bottom 3\% of each bracket. Borderline cases may be partially determined by improvement patterns of the student or attendance/participation. **Caveat:** If two of your exams earn a particular letter grade, your course grade may be restricted to be no higher than that letter grade, at the instructor’s discretion.

**Homework:** *The most important part of the learning process.* Homework will be assigned most class periods and posted to PolyLearn. HW assigned on Mon and Tue will be collected on Fri. HW assigned on Thu and Fri will be collected on Tue. *Your worked HW problems will be the best review material for the exams.* Exam questions strongly resemble homework problems. Consider each hour spent working the HW as an hour spent studying for the exams.

Homework can always be submitted early; *late homework will not be accepted without a compelling reason.* If your homework is almost complete but you are unable to finish a problem or two in time for in-class submission, please come to my office after class (or make an appt) and we can work it out together. **You can submit it at that time without penalty.**

**Format of homework assignments:**

- Neatness is worth 5\% of your Homework grade, and will be graded according to the following:
  - Homework papers must be presented in a clear, well-spaced handwriting.
  - HW problems should appear *in the order in which they appear in the assignment.*
  - **STAPLE your papers** and legibly PRINT your name.
  - Include sufficient space between problems and clearly indicate where a new problem begins.
  - Avoid cramming too many problems into the same page.

**Quizzes:** Most Fridays, there will be a short quiz, usually drawn from preceding HW or the Questions in the textbook; these will all be graded out of 100.

**Please keep all graded assignments.** In case a grade is misrecorded, you will need to have the original assignment in order to correct the error properly.

**Grading policy:** Every homework assignment will be assigned a score out of 100. The score for each exam will be recorded as a score out of 100\%; the point distribution among problems (and parts of problems) will be indicated on the test. Grading your work accurately and equitably is of utmost importance to me. Should you have any complaints about the grading of a test or homework, approach me within 3 class meetings from the day you received your graded paper. Late appeals will not be discussed except in the case of an absence with a validated excuse.

**Make-ups:** I strongly advise against any absences: the pace of this course is extremely fast, and you cannot afford missing classes.

- Make up tests will only be given in the case of a validated excused absence (see “Attendance and communication”, above). The same rule applies to late homework assignments.
- In the case of a planned absence, please notify me ahead of time, as early as possible. This includes school-authorzized events.

**Calculators:** Calculators with extended memory functions, graphing capabilities, etc, will **not** be allowed on exams. If you are unsure about your calculator, please see me before the exam.

**Collaboration and teamwork:** I encourage you to collaborate (discussing mathematics with your peers is an important skill), but you must write your own solutions. The rule for group work is: **no exchange of written material with anybody.**
Tips for success in this class (and any other math course):
Expect to dedicate at least 8 weekly hours to this course, in addition to time spent in the classroom. Here are some suggestions of activities to engage in:

- Read (at least lightly) the relevant section of the textbook prior to lecture.
- You should probably know if a HW solution is viable. If doubtful, ask.
- Formulate questions prior to attending office hours.
- Form small work groups of 2–3 students to discuss homework.
- Always use your own words and computations when writing up a solution.
- Do not look up solutions until after you have done your best to complete a problem.
- Make a point of using only standard notation in all your written work.

Here is a good criterion for an adequate solution: a person who knows about as much as you do, but who has not thought about the problem should be able to understand the solution by looking at your paper. That is, the person should be able to understand, without looking elsewhere: (1) what is the problem, (2) what is the idea behind your approach, and (3) what are the details of your solution.

If you actively engage with the material, you will gain deeper understanding, and remember it longer; the best way to study for the exam is to really learn the material now. And the best way to do that is to be rock-solid on the homework problems and the examples worked in class.

(The following is included per the policies of the College of Science and Mathematics)

Academic misconduct: Please note that all campus behavior is subject to the Student Code of Conduct, which you may wish to review here: [http://www.osrr.calpoly.edu/](http://www.osrr.calpoly.edu/).
All cases of suspected academic misconduct will be referred to the Dean of the College of Science and Mathematics for prosecution under the University’s Academic Misconduct Code. The penalties are quite severe. Don’t do it! For more details on University policies concerning academic misconduct, consult [http://www.osrr.calpoly.edu/academicdishonesty/](http://www.osrr.calpoly.edu/academicdishonesty/).

Students with disabilities: Cal Poly is committed to providing reasonable accommodation for all students with disabilities. If you require special accommodation in this course, it is your responsibility to contact me privately as early in the semester as possible. Students with disabilities must be registered with Disability Resource Center (DRC) in this course. The DRC is located in Student Services, across from Spanos Stadium, phone 805-756-1395 or (TDD only) 805-756-1399.
[http://drc.calpoly.edu/](http://drc.calpoly.edu/)

Approximate Course Schedule

<table>
<thead>
<tr>
<th>Partial Derivatives</th>
<th>Multiple Integrals</th>
<th>Integration in Vector Fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1: multivariable functions, continuity, partial derivatives</td>
<td>Week 5: double integrals and area</td>
<td>Week 9: line integrals, vector fields, work, circulation, flux</td>
</tr>
<tr>
<td>Week 2: chain rule, directional derivatives, gradients</td>
<td>Week 6: 2-variable substitutions: polar coordinates</td>
<td>Week 10: conservative fields and potential functions, Green’s theorem</td>
</tr>
<tr>
<td>Week 3: extreme values, optimization, Lagrange multipliers</td>
<td>Week 7: triple integrals, moments and centers of mass</td>
<td></td>
</tr>
<tr>
<td>Week 4: constrained optimization and Taylor’s formula</td>
<td>Week 8: 3-variable substitutions: cylindrical and spherical coordinates</td>
<td></td>
</tr>
</tbody>
</table>