

Math 11 Calculus 3
Section 2839
Fall 2018
Monday/Wednesday
6:55 –9:20 a.m.
MC 66

Instructor: Gail Edinger

Office: Math Complex 59

Campus Extension: (310) 434-3972

Office Hours in MC 59: Monday and Wednesday 9:30 – 10 a.m., Tuesday and Thursday 7 – 7:30 a.m., Tuesday 1 – 2 p.m.

Math Lab Hour: Monday 1 – 2 p.m. in MC84B

Email: edinger_gail@smc.edu

****Important note:** Due to problems with email from unknown senders, put the following in the subject section of all emails: **Your full name – Math 11.** If you do not have this in the subject section I will not read your email.*****

Catalog Description: Topics include vectors and analytic geometry in two and three dimensions, vector functions with applications, partial derivatives, extrema, Lagrange Multipliers, multiple integrals with applications, vector fields, Green's Theorem, The Divergence Theorem, and Stokes' Theorem.

Prerequisite: Math 8

Required Text and References: *Calculus, Text:* James Stewart, 8th Edition

This class will require students to read and understand significant amount of material from the textbook on their own. This includes, but is not limited to definitions, theorems and problem types. We will not have time to cover everything in every chapter in class. Exams will include material that is in the chapters, but not covered in class.

Homework & Other Collected Work: A list of homework problems is attached. (There may be changes as we move through the semester.) You are expected to complete the appropriate assignments after each class. We do not have time to go over homework in class, so for the most part, if you have questions, please feel free to come by office hours. You are expected to complete and understand all homework. There may be additional assignments given as handouts during the semester.

Homework for the prior week will be collected every Monday at the beginning of class. No late homework will be accepted for any reason. If you are fully absent from a Monday class, you may turn the work in on Wednesday, only. A sample of the problems will be scored. Each homework assignment will be worth 20 points. Four may be dropped from grading at the end of the semester. If work is incomplete additional points may be deducted. All work should be shown. Problems without full supporting work will not receive credit. All submitted work must be your

own. Work copied from the answer key, another student or the internet may be considered plagiarism and reported for academic dishonesty.

All work should be shown in homework problems. Problems where only the answers are given or answers are copied from the back of the text, will not be considered even partially done.

There may be other in-class work collected during the semester. This will depend on time available.

Exams: There will be four exams in this class. Please see the attached schedule for the dates. There will be **NO MAKE-UP EXAMS** for any reason, note the dates of all exams and make any necessary travel plans accordingly, you are responsible to be in class on all scheduled dates and assume all responsibility for missed days. If you miss one exam that grade will be replaced by your grade on the final. If you miss two or more exams a grade of 0% will be recorded for those exams that cannot be made-up or replaced in any way. The 0% will count toward your final average. At the end of the semester, if you have taken all three exams and your score on the final is higher than any ONE exam, the score on the final will replace the lowest exam score. This is the only way the grades will be curved. If your final exam score is lower than all three of your exams, all three exams will count individually and the final will count for the percentage listed below. The final cannot be skipped or replaced by any grade.

Grades: Grades will be assigned as follows:

90 – 100% = A; 80 – 89% = B; 70 – 79% = C; 60 – 69% = D; Below 60% = F

The grades will be calculated as follows:

10% homework & other collected work

65% 4 exams – 16.25% each

25% Cumulative Final.

Other than as explained in the exams section, grades will not be curved. Your grade will be assigned exactly as above and only your work during the semester will apply toward your final grade. I cannot and will not make deals, take personal situations into account (including but not limited to: transfer status, GPA, graduation status and any other personal situation you can think of). All students will be graded on the same scale.

Final: There will be a cumulative final, scheduled Wednesday, December 12, 8 a.m. – 11 a.m. You are expected to take the final with the class. This final will not be rescheduled for convenience, travel plans or any other reason. Please note the date now and schedule yourself accordingly.

Withdrawal

Students are responsible for their enrollment status in all SMC classes. If you intend to withdraw (earn a W grade) it is entirely the responsibility of the student to handle the withdrawal by the necessary date. Please see the SMC website for all dates and deadlines. If you miss the withdrawal deadline, you will receive a grade in this class. The instructor is no longer involved in the withdrawal process, please be sure you are aware of all dates and deadlines. Please see your Corsair Connect Account for all appropriate dates.

Calculator/Exam policy: No Calculators on Exams. You may use a calculator for homework problems.

Tutoring and additional help: Tutors are available through the math lab which is located behind the math department in MC 84. There is drop-in tutoring and appointments available. I am also available during my office and math lab hours, if you are unable to make those times we can arrange another time. You may also email or call for help, however, I will not respond to any anonymous messages of any kind. It is in your best interests to ask for help as soon as needed

Students with Disabilities: Santa Monica College accommodates students with disabilities. If you qualify for any special accommodations due to a disability, you need to officially process your request through the Disabled Students Programs and Services (DSPS) office as close to the beginning of the semester as possible. If you believe you have a learning disability that has not yet been documented, please see me and make an appointment at the DSPS office for assistance. The DSPS office is located in the Admissions/Student Services Complex, Room 101, and the phone numbers are (310) 434-4265 and (310) 434-4273 (TDD). Scheduling of accommodated exams will be arranged on a case-by-case basis.

Classroom Behavior and Participation:

- Classroom conduct:
Please conduct yourself as you would in a business environment: on-time attendance, respect for others, respectful language and personal integrity. Private conversations with the instructor should be held in office hours, not during class time. Here is a link to the Student Code of Conduct (.pdf file, AR 4410):
<http://www.smc.edu/StudentServices/StudentJudicialAffairs/Documents/AR4410.pdf>
- Food and Drink:
Food or drink is prohibited in the classroom with the exception of water bottles, which are permitted as long as they remain closed when not in active use, and are kept away from all equipment.
- Cell phones and other electronic forms of communication should be turned off during the class. Texting during class is an indication that you are not fully participating and sends me the message that you do not care about the class.

Student Learning Outcomes

1. Given vector-valued functions involving two or more variables, students will identify and use appropriate techniques to analyze the fundamental properties of those functions. Included would be partial and directional derivatives, gradients, differentials, and integrals over lines, surfaces and solid regions.
2. Students will be able to set up and solve physical application problems related to all aspects of motion along a curve. Included would be the arc length parametrization of a curve and the use of tangent, velocity, normal and binormal vectors, curvature and the tangential and normal components of acceleration and their relationship to the osculating plane containing the circle of best fit at a point on the curve.
3. Students will be able to apply Green's Theorem, Stokes' Theorem and Gauss' Divergence Theorem with the concept of divergence, curl and flux. Student will solve problems related to vector fields including magnetic fields, flow fields and conservative vector fields.

Math 11 – Stewart Text

All dates are approximate and subject to change. We may get ahead/behind depending on the pace of the class.

| Lecture | Section |
|---------|--|
| 8/27 | 12.1: Three Dimensional Coordinate System 12.2: Vectors |
| 8/29 | 12.2: Vectors 12.3 The Dot Product |
| 9/5 | 12.4 The Cross Product 12.5: Lines and Planes |
| 9/10 | 12.5: Lines and Planes 12.6 Surfaces |
| 9/12 | 13.1 Vector-valued Functions and Space Curves 13.2 Derivatives and Integrals |
| 9/17 | Review (45 min of questions, followed by a 15 minute break) Exam 1 (7:55 – 9:20) |
| 9/19 | 13.3: Arc Length and curvature and finish 13.2 if necessary |
| 9/24 | 13.3: Tangential and Normal Components of acceleration 13.4: Motion in Space |
| 9/26 | 14.1: Functions of Several Variables |
| 10/1 | 14.2: Limits and Continuity |
| 10/3 | Review Exam 2 (See exam 1 schedule) |
| 10/8 | 14.3: Partial Derivatives 14.4: Tangent Planes |
| 10/10 | 14.4: Linear Approximations 14.5: The Chain Rule |
| 10/15 | 14.6: Directional Derivatives |
| 10/17 | 14.7: Maximum and Minimum Values |
| 10/22 | 14.8: LaGrange Multipliers |
| 10/24 | 15.1/15.2: Double Integrals |
| 10/29 | Review Exam 3 (see exam 1 schedule) |
| 10/31 | 15.3: Double Integrals in Polar Coordinates |
| 11/5 | 15.4: Moments 15.5: Surface Area |
| 11/7 | 15.6: Triple Integrals |
| 11/12 | 15.7: Triple Integrals in Cylindrical Coordinates 15.8: Triple Integrals in Spherical Coordinates |
| 11/14 | 16.1: Vector Fields 16.2: Line Integrals |
| 11/19 | Review |

| | |
|-------|---|
| | Exam 4 (See exam 1 schedule) |
| 11/21 | 16.2: Line Integrals 16.3: Fundamental Theorem for Line Integrals |
| 11/26 | 16.3: Fundamental Theorem for Line Integrals 16.4: Green's Theorem |
| 11/28 | 16.4: Green's Theorem 16.5: Divergence and Curl |
| 12/3 | 16.7: Surface Integrals 16.8: Stokes' Theorem |
| 12/5 | 16.8: Stokes' Theorem 16.9: Divergence Theorem |
| 12/10 | Review for Final Exam |
| 12/12 | Final Exam 8 a.m. – 11 a.m. |

Do not ask me what you need on the final exam to get a certain grade. Grades will not be curved, and Final Grades will not be posted, you will have to call the number given by admissions.

Students are bound by the **Code of Academic Conduct and Reporting Policy** that addresses issues of academic dishonesty. If you are caught cheating on an exam, you will receive a grade of ZERO for that exam and the incident will be reported and become part of your permanent record. Examples of behaviors that are not permitted include but are not limited to: Copying another student's homework, inappropriate language or physicality in the classroom, and inappropriate behaviors during an exam (talking with another student, looking at or copying from another student's paper, using a disallowed PDA or calculator, using disallowed notes, leaving the room without prior permission, removing exam materials from the classroom). Please be extremely careful that you do not engage in any behavior that could even be construed as cheating.

There is and will be **no negotiating for grades** at the end of the term, that means your grade will be calculated as indicated above. There will be no extra credit, or any “deals” made regardless of how well you may think you can perform on the final exam. Do not even think of contacting me at the end of the term with such inquiries. I view emails, calls, office visits with such requests as harassment and will deal with them accordingly. **There is will be no extra credit, do not email me with your personal stories about how your life will be ruined if I do not give you a certain grade. You will receive the grade you earn.**

Student responsibilities:

<http://www.smc.edu/StudentServices/StudentJudicialAffairs/Pages/What-you-should-know.aspx>

Honor Council website:

<http://www.smc.edu/StudentServices/HonorCouncil/Pages/Honor-Code.aspx>

Administrative Regulation 4412 :

<http://www.smc.edu/ACG/AcademicSenate/Documents/AR%204412.pdf>

Disclaimer: All information in this syllabus is subject to change. This includes, but is not limited to dates of lectures and exams. Changes will be announced in class and all students are responsible for knowing all changes.

Course Objectives

Upon completion of this course, the student will be able to:

1. Perform the basic algebra of vectors including dot and cross products.
2. Determine equations of lines and planes.
3. Sketch planes, cylinders and quadric surfaces.
4. Differentiate and integrate vector-valued functions.
5. Represent curvilinear motion in vector form both algebraically and geometrically.
6. Evaluate the limit of a function of several variables at a point, or prove that it does not exist.
7. Find partial and directional derivatives of functions of several variables, using chain rules when necessary.
8. Determine whether a function of several variables is differentiable.
9. Write the equation of the tangent plane to a surface at a point.
10. Find extrema of functions of several variables both by the Second Derivative Test and by Lagrange Multipliers, and test for saddle points.
11. Use rectangular, cylindrical and spherical coordinates to set up and evaluate double integrals, triple integrals, line integrals and surface integrals.
12. Solve integral application problems including arc length, area, volume, surface area, center of mass and work.
13. Apply Green's Theorem, Divergence Theorem, and Stokes' Theorem.
14. Apply the concepts of the gradient, divergence and curl.

Math 11 – Stewart Text – Homework (subject to change)

| Section | Assignment |
|---------|--|
| 12.1 | 1-37 odd, 38,42,45 |
| 12.2 | 1-7 odd, 13,19,25,27,31,33,34,35,37,41,43,45 |
| 12.3 | 1-35 odd, 41,51,61,63 |
| 12.4 | 1,5,11,13,15,16,19,21-25 all, 29,33,37,39,44,47,53 |
| 12.5 | 3,4,7,1,13,17,19,21 (lines) 5,15,23-39 odd,44,,47,53,57 (planes) |
| 12.6 | 1-19 odd, 21-28 all, 31, 37, 43 |
| 13.1 | 1-19 odd, 21-26 all, 27,31,43,45 |
| 13.2 | 1,5,9,13,17,21,25,27,33-41 odd, 42 |
| 13.3 | 1,3,5,7,11,14,17-25 odd, 29,33,39,47 |
| 13.4 | 1,4,11,13,19,21,23,25,27,37,39 |
| 14.1 | 3,5,9-29 odd,32,33,35,37,45,47,56,59 |
| 14.2 | 1,5-21 odd,25-35 odd, 39,41 |
| 14.3 | 1,5,7,15-37 odd, 41-49 odd, 53-63 odd |
| 14.4 | 1-5 odd, 11-17 odd, 25-37 odd |
| 14.5 | 1-13 odd, 17,21,25,29,33,35,39,51 |
| 14.6 | 1,5,7,9,11,15,17,19,21,25,33,35,39,51 |
| 14.7 | 3,5,9,13,15,21,29,31,39,43,45,53 |
| 14.8 | 3-11 odd,17,19,31,35,39,45,51 |
| 15.1 | 1,3,7,11,13,15,17-33 odd,37,39,47,49 |
| 15.2 | 1,5,7-17 odd,21,23,27,47,49,51 |
| 15.3 | 1-13 odd, 19,29,31 |
| 15.4 | 1,3,5,9,15,17,21,22,27,29 |
| 15.5 | 1-11 odd |
| 15.6 | 3-13 odd, 19,20,25,33,35 |
| 15.7 | 1,3,5,7,9,11,17,21,23 |
| 15.8 | 1-13 odd, 17,19,21,25,29,30,35,41 |
| 16.1 | 3,5,9,11,13,21,23,25,33,35 |
| 16.2 | 3,7,11,15,17,19,21,33,35 |
| 16.3 | 3,5,7,11,13,15,19,21,23,25,31,33,35 |
| 16.4 | 1-13 odd,17,21,25,29 |
| 16.5 | 1-13 odd, 17-23 odd, 29,31 |
| 16.7 | 3,5,9,15,17,23,25,27,30,39 |
| 16.8 | 1,3,5,7,9,15 |
| 16.9 | 1,3,5,7,13,17,19,25,30,31 |

