# Math 260 #5437– Calculus and Analytic Geometry III MiraCosta College

## **Instructor Information**

Name: Mr. Zyburt jzyburt@miracosta.edu http://www.miracosta.edu/home/jzyburt/

# **Student Learning Outcomes**

Math SLO:

• For a given set of problems, the student will demonstrate quantitative reasoning by developing a problem-solving strategy, performing appropriate analysis and computation, and critically assessing the meaning of the conclusion or outcome.

Math 260:

- State and apply basic definitions, properties, and theorems of multivariable Calculus.
- Apply vector operations in two and three dimensions and use vector methods to analyze plane and space curves, and curvilinear motion.
- Apply standard techniques of multivariable calculus, both differential and integral, to solve selected applied problems
- Apply standard techniques of vector analysis to analyze and solve problems involving vector fields and (line, surface, or flux) integrals.

#### Prerequisite

MATH 155 with a grade of "C" or better or approved equivalent (A score of at least a 3 on the AP Calculus BC exam).

#### **Course Materials**

Required Text: Calculus, Early Transcendentals, James Stewart, 6E

#### **Important Dates**

Class Duration	1st day of Instruction	Last day of Instruction	Add Deadline	Deadline to drop class with no record & receive refund	Deadline to file for Pass/No Pass grading option	Deadline to drop with a " W" grade (withdraw)
18-week 8/17 – 12/22	8/17	12/20	9/5	9/5	9/27	11/19

#### **Course Policies:**

*Grading:* Each assignment/test will have an assigned point value. These point values will be varied dependent on the type of assignment and the number of questions/problems.

Assignment	Possible Points
Chapter/Unit Test (Quiz)	100 (50) points
Homework	10 points
Classwork Notes Packet	30 points
Final Exam	200 points
Tests/Quizzes/Final Exar	n = 90% of Course Grade
Homework/Classwork =	= 10% of Course Grade

A	В	С	D	F
≥ 90%	89% - 80%	79% - 70%	69% - 60%	<60%

# **Instructor Drop Policy**

Students may be dropped (up until the last day to drop that class) for the following reasons:

- Non-attendance
  - Miss class at all during the first two weeks of class
  - Miss two consecutive class meetings
  - Miss a total of 4 class meetings the entire semester
- Students are responsible for dropping themselves from this class. Do NOT rely on your instructor to drop you if you no longer wish to be in the class.

# Note: If you miss a Quiz, Chapter Test, or the Final Exam you will automatically receive a zero on it and that 0 will be averaged into your grade in the class.

# **Pass/No Pass Grading Option**

You have the option to choose Pass/No Pass grading for this class. If you choose this option, you must submit a Petition for Pass/No Pass to Admissions & Records by (9/28). This option for grading is nonreversible once selected. The petition form is available online, or from Admissions & Records. Students planning to transfer should consult with a counselor before opting for Pass/No Pass to ensure this option is accepted by their intended transfer institutions. Check the MiraCosta College catalog or schedule for more detailed information.

#### **Incomplete Grade**

Students seeking an "Incomplete" grade must consult with me no later than the week prior to finals (12/13). Incompletes will only be considered for unforeseeable, emergency, and justifiable reasons at the end of the term, and only upon agreement of conditions for completing coursework.

#### **Library Resources**

The MiraCosta College faculty librarians assist students with their research questions, whether academic or personal. Students may obtain assistance from librarians online <u>HERE</u>. I strongly encourage you to take advantage of library resources. More information regarding the library may be found at their webpage: <u>https://library.miracosta.edu/homepage</u>.

#### **Internet Access and Harassment**

Parts of this class are conducted on the Internet, MiraCosta College supports academic freedom, and consequently, there are no filters or other controls placed upon access to electronic content, either on the Internet or otherwise. If you should find yourself subjected to offensive content, either sexual or otherwise, you should inform your instructor of this situation at the first opportunity.

#### Academic Accommodations

If you have a disability or medical condition impacting learning and have not yet been authorized to receive academic accommodations, you're encouraged to contact the <u>Student Accessibility Services (SAS)</u> office (formerly known as Disabled Students Programs and Services or DSPS). The SAS office can be reached at (760) 795-6658, or <u>sas@miracosta.edu</u>. The SAS office will help you determine what accommodations are available for you. If you're requesting my assistance utilizing any authorized accommodations, please contact me as soon as possible.

#### Campus Assessment, Resources, and Education (CARE) Program

It can be difficult to be present and maintain focus if you have challenges meeting basic needs like a place to live, access to food, consistent transportation, and more. These challenges may impact your personal and academic success and we are here to help. Our Campus Assessment, Resources, and Education (CARE) Department aids with finding resources on and off campus to meet those basic needs. I urge you to speak with me so that I may submit a CARE referral on your behalf. You may also visit <u>www.miracosta.edu/CARE</u> or contact <u>care@miracosta.edu</u> for further support, resources, or information.

# **College Support Services**

The <u>Tutoring and Academic Support Center</u> (TASC), the <u>STEM Learning Centers</u>, and the <u>Math Learning</u> <u>Center</u> resources and tutoring services to students. Services are free and available to all students during day and evening hours. I recommend that you take advantage of these academic support services.

# **Academic Integrity**

MiraCosta College highly values academic integrity. At the core, this means an honest representation of one's own work. MiraCosta College also promotes the approach that education is best accomplished as a cooperative, collaborative enterprise: we want you to work with and learn from each other. The line between academic integrity and collaborative education is not always easy to define and may vary from one discipline to the next and from one instructor to the next. Many

aspects of cheating and plagiarism are universally recognized, while others are subject to debate. This policy provides some broad and general guidelines. Please ask me for clarification of any specific behavior.

Examples of academic dishonesty include but are not limited to:

<u>Cheating:</u> Copying from another student or using unauthorized aids during an examination. <u>Plagiarizing:</u> Copying someone else's work or ideas and misrepresenting them as one's own. <u>Falsification:</u> Making up fictitious information and presenting it as real or altering records for the purpose of misrepresentation.

Facilitation: Helping another student to cheat, plagiarize, or falsify.

Remedies for violations of academic integrity may include a verbal warning, a lowered assignment grade, submission of an Academic Integrity Report to the office of the Vice President of Student Services or designee, or even a recommendation to the Vice President of Student Services for suspension from the class for repeated or egregious offenses. For more information, consult the MiraCosta College Catalog under Student Rights and Responsibilities (Administrative Procedure VIII.E.02.c).

\*\*Students found cheating on any Quiz, Chapter Test, or the Final Exam will receive a zero (0 points = 0%) on that particular assignment and will not have the ability to drop that score in consideration to the Final Course Grade, not be able to re-take the assessment, or not be allowed to make-up the assignment at a later date.\*\*

#### **Classwork Notes Packet**

There are a total of 5 Notes packets that need to be printed and completed. Students are expected to follow along on the printed notes packet for that unit and complete all problems. Questions that are not completed during class are required to be completed by the student outside of class. The completed notes packet is due the class meeting prior to the Unit/Chapter Test or Quiz.

\*\*Students are expected to complete homework assignments by themselves without assistance from anyone else that completes the problem/question for the student and/or a student plagiarizes another's work.\*\*

#### **Homework Procedure**

Homework assignments can be found in your Canvas online materials. These homework items are found in the 'Assignments' or 'Modules' area and are grouped based on Chapter Modules. **The due date for all assignments in the same Chapter Module are due on the same date.** Please do not wait to complete these assignments. These are meant for you to **begin immediately** and **then complete the entire Chapter Module assignments on or before the due date.** You may choose to do your Homework assignments at home, at work, etc. When you feel that you have learned the material well enough (watching videos, reading the eBook, going through the Power Point slides, working out the examples, etc.), then, go to the 'Assignments' section and choose the Homework you need to do. Homework assignments must be completed by the due date. You have an <u>unlimited</u> number of attempts on or before the due date for each assignment.

Please do the Homework assignments on your own because some of your other class assessments do not allow for use of books, notes, friends, etc.

### Quizzes, Midterms, and the Final Exam In-Person Learning Procedure

There are No make-up exams/quizzes and/or re-take exams/quizzes given. A student missing an exam/quiz will receive a zero on the exam/quiz. The lowest unit/chapter test/quiz will be dropped in computing a student's final course grade, this may include the missed exam/quiz. Students are required to place all belongings in the front of the class prior to taking their assigned seat on the date of a test/quiz, with the exception of the necessary items and tools needed for the test/quiz. All electronic devices (except for approved calculators) must be turned-off (not on silent mode) and safely put-away in a manner that it cannot be in direct view by any student/teacher. Students that do not have a backpack or similar bag, may "check-in" electronic devices to Mr. Zyburt for the duration of the testing session. Electronic devices are to be turned-off and put away for entire testing session. It is the determination of Mr. Zyburt for when the testing session has been completed. This typically is when all students have completed the test and all material has been collected.

Date Assigned	Class Meeting #	Notes Sections	Topic(s)	Assignments Links Resources	HW Date Due
Now	0	Chapters 1 - 10	Calculus Review Topics: Derivatives, Integrals, FTC, polar - parametric - rectangular - vectors	Required:         Watch the below videos both as an overview of the entire 1s semester and an introduction to Chapter 12 (our first chapter). Just watch and listen. Do not take notes, just focus on concepts being presented. We will have notes and details in class.         1) Introduction to Multivariate Calculus         2) Watch 2A, 2B, 3A, and 3B         3) Lecture 1: MIT OpenCourseWare (Dot Product) – look how many chalkboards this guy has!!         4) Lecture 2: MIT OpenCourseWare (Determinants & Cross Products)	
Tues 8/17	0	Intro & Review	3-D Coordinates	Sign into Aeries and Sign Syllabus online <u>Chapter 12 Notes Packet</u> (to be completed in class)	Notes packet = 9/7

Thurs 8/19	0				
Mon 8/23 Coll.	1	12-1 12-2	2-D vectors 3-D vectors	Hw1: 12-1, 12-2 = online Videos: $2A$ $2B$	9/8
Wed				+ <u>Notes (blank)</u> + <u>Notes (completed)</u>	
8/25	2	12-3 12-4	Dot product Projections	Hw2: 12-3, 12-4, 12-5 = online Videos: $\underline{4A}$ $\underline{4B}$ $\underline{4C}$ +Notes (blank)	9/8
		12-5	Cross products	+ <u>Notes (completed)</u>	
Fri 8/27	3	12-5	Cross Products	Hw3: 12-6, 12-7 = online	9/8
		12-6 12-7	Lines and Planes in Space	Video: <u>7</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	
Tues 8/31	4	12-8	Surface in Space	Hw4: 12-8, 12-9 = online Video: <u>8</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u> Video: <u>9A</u> <u>9B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	9/8
Thurs 9/2	5	12-9	Cylindrical and Spherical Coordinates	Hw4: 12-8, 12-9 = online No Videos	9/8
Tues 9/7	6	Review	Review	Cls: Practice Test Chapter 12 Notes Packet due today	

Thurs 9/9	7	Exam #1	Test	Exam 1 [Chapter 12] Chapter 13 Notes Packet (to be completed in class) Hw: Cls8 Prep <u>Video</u> : 6 + <u>Notes (blank)</u> + <u>Notes (completed)</u> (optional): Intro to Parametric & Vector Calculus ( <u>Notes/V1/V2/V3/V4/V5/V6</u> , <u>WS/KEY</u> )	Notes packet = 9/29
Mon 9/13 Coll.	8	13-1	Vector-Valued Functions	Hw8: 13-1 = online No Videos	9/30
Wed 9/15	9	13-2 13-3	Calculus with VV Functions Position, Velocity, Speed, and Acceleration	Hw9: 13-2, 13-3 = online <u>Cls10 Prep Video</u>	9/30
Fri 9/17	10	13-3 13-4	Position, Velocity, Speed and Acceleration Tangent Vectors & Normal Vectors	Hw10: 13-3, 13-4 = online <u>Cls11 Prep Video</u>	9/30

Tues 9/21	11	13-4 13-5 13-6	Tangent Vectors & Normal Vectors Arc Length & Arc Length Function Curvature Review Limits and Continuity Functions of Several Variables	Hw11: 13-4, 13-5, 13-6 = online <u>Cls12 Prep Video</u>	9/30
Thurs 9/23	12	13-5 13-6	Arc Length & Arc Length Function Curvature	Hw12: 13-5, 13-6 = online <u>Cls13 Prep Video</u>	9/30
Mon 9/27 Coll.	13	13-6	Curvature	Hw13: 13-6 = online No Videos	9/30
Wed 9/29	14	Review	Review	Cls: Practice Test Hw: Study for Exam No Videos <u>Chapter 13 Notes Packet</u> due today	
Fri 10/1	15	Exam #2	Test Review Limits and Continuity	Exam 2 [Chapter 13] Chapter 14 Notes Packet (to be completed in class) Hw: Review limits/Continuity Read #1 Read #2 Video: 10 +Notes (blank) +Notes (completed	Notes packet = 10/27

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10/5	16	14-1	Functions of Several Variables	Hw16: 14-1 = online <u>Videos: 11A_11B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	10/28
Thurs 10/7	17	14-2 14-3	Limits and Continuity Partial Derivatives	Hw17: 14-2, 14-3 = online <u>Video: 13</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	10/28
Mon 10/11 Coll.	18	14-4	Differentiability and Differentials	Hw18: 14-4 = online <u>Video: 15</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	10/28
Wed 10/13	19	14-5	The Chain Rule	Hw19: 14-5 = online <u>Video: 14</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	10/28
Fri 10/15 End of Quarter*	20	14-6	Directional Derivatives	Hw20: 14-6 = online <u>Videos: 16A 16B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u> In-Class Video lessons: 1. <u>Implicit Differentiation with Several Variables</u> 2. <u>Directional Derivatives and The Gradient Vector</u> 3. <u>Tangent Planes and Normal Lines</u>	10/28
Tues 10/19	21	14-7	Tangent Planes and Normal Lines Intersection of Surfaces Angle of Inclination of a Tangent Plane	Hw21: 14-6, 14-7 = online <u>Videos: 17A 17B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u> In-Class Video lessons: 1) <u>Gradient Vector and Directional Derivatives</u> <u>Visual</u> 2) <u>Directional Derivative vs. Gradient (part 1)</u> 3) <u>Directional Derivative vs. Gradient (part 2)</u>	10/28

Thurs 10/21	22	14-8	Absolute and Relative Extrema	Hw22: 14-8, 14-9, 14-10 = online <u>Videos: 18A 18B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u> Hw: p.940 (1,2), (3-17)odd, (20) No Videos	10/28
Mon 10/25 Coll.	23	14-9 14-10	Applied problems in Optimization LaGrange Multipliers	Hw22: 14-8, 14-9, 14-10 = online No videos	10/28
Wed 10/27	24	Review	Review	Cls: Practice Test Hw: Study for Exam No Videos <u>Chapter 14 Notes Packet</u> due today	
Fri 10/29	25	Exam #3	Test	Exam 3 [Chapter 14]	
			Review Riemann Sums, Average value, and Integration by Parts Double Integrals	<u>Chapter 15 Notes Packet</u> (to be completed in class) Hw: Review Riemann Sums, Average Value, and Integration by Parts <u>Videos: 19A 19B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	Notes packet = 11/17
Tues 11/2	26	15-1	Review Riemann Sums, Average value, and Integration by Parts Double Integrals Iterated Integrals	Chapter 15 Notes Packet (to be completed in class) Hw: Review Riemann Sums, Average Value, and Integration by Parts Videos: 19A 19B +Notes (blank) +Notes (completed) Hw26: 15-1 = online Videos: 20 +Notes (blank) +Notes (completed)	Notes packet = 11/17 12/1

Mon 11/8 Coll.	28	15-3	Volume in Rectangular Form	Hw28: 15-3 = online <u>Videos: 21</u> + <u>Notes (blank)</u> +Notes (completed)	12/1
Wed 11/10	29	15-4	Volume in Polar Form	Hw29: 15-4 = online <u>Videos: 23</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	12/1
Mon 11/15 Coll.	30	15-5 15-5b	Definition of Triple Integral Center of Mass	Hw31: 15-5, 15-5b = online Videos: <u>33A (Calculus I)</u> <u>33B (Calculus I)</u> + <u>Notes (blank)</u> +Notes (completed)	12/1
Wed 11/17	31	Review	Review	Cls: Practice Test Hw: Study for Exam No Videos <u>Chapter 15 Notes Packet</u> due today	
Fri 11/19	32	Exam #4	<b>Test</b> Review Vector Fields	Exam 4 [Chapter 15] Chapter 16 Notes Packet (to be completed in class)	Notes Packet = 12/20
11/22 – 11/26	Break	Break	Break	Fall Break	
Tues 11/30	33	16-1	Vector Fields	Hw35: 16-1 = online <u>Videos: 26</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	12/21
Thurs 12/2	34	16-2	Curl and Divergence	Hw37: 16-2 = online Curl and Divergence: (procedures and examples) 1) <u>https://www.youtube.com/watch?v=5wYkZLUX9gY</u> 2) <u>https://www.youtube.com/watch?v=LhH6rjTIS54</u> Grad, Div, Curl relationship (3 part series): [optional]	12/21

				<ol> <li><u>https://www.youtube.com/watch?v=ynzRyIL2atU</u></li> <li><u>https://www.youtube.com/watch?v=Cxc7ihZWq5o</u></li> <li><u>https://www.youtube.com/watch?v=vvzTEbp9Irc</u></li> </ol>	
Mon 12/6 Coll.	35	16-3	Line Integrals, Work, and Flux	Hw38: 16-4 = online <u>Videos: 27A 27B</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	12/21
Wed 12/8	36	16.4	FTC of Line Integrals	Hw41-42: 16.5, 16.5b = online <u>Videos: 28</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	12/21
Fri 12/10	37	16.5	Green's Theorem	Hw41-42: 16.5, 16.5b = online <u>Videos: 29</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u> Videos: 1) <u>https://www.youtube.com/watch?v=93TBP1OYgzg</u> 2) <u>https://www.youtube.com/watch?v=vFQm6lkDLw0</u> Vector form of Green's Theorem: 1) <u>https://www.youtube.com/watch?v=ONj-m4743YA</u>	12/21
Tues 12/14	38	16.6 16.7	Parametric Surfaces Surface Integrals	Hw43: 16.6 = online Hw44: 16.7 = online <u>Videos: 30</u> + <u>Notes (blank)</u> + <u>Notes (completed)</u>	12/21

Thurs					
12/16	39	16.8	Stokes'	$\frac{\text{Hw45: } 16.8 = \text{online}}{16.8 = 0.000}$	12/21
			Theorem		
		16.9		Hw46: 16.9 = online	
			Divergence	Vide en 20	
			(Gauss)	VIGEOS: 32	
			Theorem	+ <u>Notes (completed)</u>	
				Intuitive Explanation of Stoke's Theorem	
				The Big picture of Integrationa and Stokes	
				Theorem:	
				https://www.youtube.com/watch?v=IZ5AF5mITnA	
				The Divergence Theorem:	
				https://www.youtube.com/watch?v=pmrS0dSipC4	
Mon					
12/20	40	Review	Review	Cls: Practice Test	
				<u>Chapter 16 Notes Packet</u> due today	
Wed					
12/22	41	Test	Test	Chapter 16 Test [100 pts]	