

# South Plains College

## MATH 2415 –Calculus III

{ *Section 001, M W 8:30 – 10:35 am*  
 { *Section 200, M W 5:20 – 6:55 pm*

{ **Math Bldg., Rm. 105**  
 { **Reese, Rm. 221** , respectively

**Instructor:** Miss S. Davis  
**Office Hours:**  
**Office:** 103 MATH Bldg.  
**Phone:** (806) 716 – 2699  
**E-mail address:** [sdavis@SouthPlainsCollege.edu](mailto:sdavis@SouthPlainsCollege.edu)

**Text:** Calculus, 10<sup>th</sup> edition by Larson & Edwards  
 (ISBN: 9780547167022)

**Supplies:** Scientific calculator (preferably a TI-85 or higher), *3-Dimensional Graph paper*

**Purpose:** To provide a transferable course in Calculus III, to lay a foundation for the study of Differential Equations, and other more advanced mathematic &/or engineering courses.

**Prerequisites:** MATH 2414 (Calculus II)

**Attendance:** Attendance and effort are the most important activities for success in this course. **Records of your attendance are maintained throughout the semester. *If your lack of attendance (i.e., excessive absences) is determined by the instructor to put you at risk of failing the course, you may be dropped from the class with a F as a final grade.*** Excessive absences consist of two consecutive weeks or 4 cumulative days. If you unfortunately happen to incur an absence, please contact the instructor either by phone or email and refer to the website **to get and attempt** the assignment **before** the next class. Please read the “Drops and Withdrawals” policies in the current South Plains College catalog.

**Assignment Policy:** Homework will be assigned daily and taken up periodically to be graded. **Late homework is not accepted.** **Homework is to be completed and kept in a notebook.** Refer to Blackboard for the homework procedure and others to be used in this class.

**Grading Policy:** There will be quizzes given over the assigned homework in which no make-ups will be allowed. The total number of quizzes for the semester is unpredictable but only a portion will count as the quiz grade. Make-up quizzes will NOT be given. There will be four tests and a comprehensive final. If the final exam score is greater than the least non-zero major exam score then the final exam score replaces the least non-zero major exam score.

**Make-up Policy:** There is no automatic provision for making up exams. Only under extreme circumstances (e.g., death in the family or hospitalization) will make-up exams be given, and these circumstances must be documented. If at all possible, the instructor should be notified prior to missing an exam.

**Grading Scale:**

Final grade will be the average of the major exams, final exam, and homework/quizzes.

**Critical Dates:**

<i>Sept 3</i>	Labor Day	<i>Nov 12</i>	<b>WEB Pre-registration for Spring 2019</b>
<i>Oct 12</i>	FALL Break	<i>Nov 9</i>	<b>Advising Day for Math, Computer Science, &amp; Engineering majors only</b>
<i>Nov 15</i>	Last day to drop	<b>Final Exam</b>	
<i>Nov 21- 23</i>	Thanksgiving	<i>Dec 10</i>	(8 – 10am, Monday)
		<i>Dec 10</i>	(5:30 – 7:30pm, Monday)

**Borderline Grades:** These grades will be evaluated with regard to attendance and mature conduct in class.

**Study:** You should normally spend approximately 2-3 hours outside of class in study for each hour of lecture. Try to study the assigned lesson as soon after the class meets as is possible.

**Tutoring:** Free tutoring is available in the Math-Engineering building (room M116). Please remember to sign in when you seek help from a tutor.

**Video Tapes:** Videos for many of the review topics in this course are available online by the SPC Math. Department through Blackboard. The web address is as follows (<http://southplainscollege.blackboard.com>). For username and password, please use *mvideos*.

Tape	Topic
	<b>Analytical Geometry</b>
	Parametric Equations
335	Polar coordinates
310	Parabolas
320	Ellipses
325	Hyperbolas
	<b>Calculus III</b>
485	Double Integration
490	Double Integration with Polar Equations

**Blackboard:** A wealth of information is provided to you about this class on **Blackboard**. Syllabus (updated), homework assignments, worksheets, practice tests, keys, solutions, videos, previous semester student evaluations, etc. Visit Calculus III Blackboard page and peruse through it to become familiar with all the items.

**Student Responsibilities:**

- Attend class, be aware of announcements made in class, and ask questions when necessary.
- Work homework problems the day that they are assigned and, if possible, form study groups.
- Get help from tutors, tapes, and/or the instructor.
- **\*\*Please, turn off cell phones and pagers during class! \*\***
  - **If the instructor determines that activation of a cell phone, pager, PDA, or laptop interrupts the lecture or classroom discussion or impedes the progress of any student then the instructor will ask the student to leave the class temporarily or permanently.**
  - **No technologic devices such as cell phones, PDA's, etc. are to be used during tests or in-class quizzes.**
- **Follow the classroom policy, no food or drink allowed in the classroom if posted.**
- **In accordance to campus policy, no tobacco products are to be consumed in class.**
- **You will obtain your final grade for the class through TexanConnect/MySPC and MyColleague.**

**Cell Phone Policy:** All students will, during each class period and for its duration, place and keep their cell phone, provided that they are at the present time in possession of said device, face-down in the right-hand corner and on the top surface of their desk. If a student's cell phone activates and/or the student engages in text messaging during class at anytime during the semester, the student, by the instructor's discretion, could be permanently dismissed from the class for the remainder of the semester. If a student's cell is activated during class and/or the student engages in text messaging determined by the instructor, and **the student chose not to place their phone on top of their desk as mentioned above** then the student will be dismissed from the class by the instructor permanently.

**Academic Misconduct:** Complete honesty is required from students in all facets of course work including homework assignments, tests, and the final exam. See the South Plains College Catalog for more detail.

**Special Requests:** If you happen to become *ill* during the semester, please respect your instructor and your classmates by making your best effort to keep your germs to yourself.

**Questions:** I invite all your questions **except** the following:

1. I wasn't able to make it to class. [Did I miss anything?](#) (Yes.)
2. Is this going to be on the test? (Perhaps, not directly, but if the ideas were not important, I would not be discussing them in class.)
3. Do you have the tests graded? (I put forth my best effort to have the tests graded so as to return them the next class session. However, there are times due to uncontrollable factors that this may not be possible.)

**Diversity Statement:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

**Disability Statement:** Students with disabilities, including but not limited to physical, psychiatric or learning disabilities, who wish to request accommodations in this class should notify the Special Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Special Services Coordinator. For more information, call or visit the Special Services Office in the Student Services Building, 894-9611 ext. 2529.

**Non-Discrimination Statement:** South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

**Sexual Misconduct:** It is important for you to know that all faculty members are mandated reporters of any incidents of sexual misconduct. That means that I cannot keep information about sexual misconduct confidential if you share that information with me. Dr. Lynne Cleavinger, the Director of Health & Wellness, can advise you confidentially as can any counselor in the Health & Wellness Center. They can also help you access other resources on campus and in the local community. You can reach Dr. Cleavinger at 716-2563 or lcleavinger@southplainscollege.edu or go by the Health and Wellness Center. You can schedule an appointment with a counselor by calling 716-2529.

**Title IX Pregnancy Accommodations Statement:** If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations, you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact Chris Straface, Director of Health and Wellness at 806-716-2362 or email cstraface@southplainscollege.edu for assistance.

**Campus Concealed Carry:** Campus Concealed Carry - Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to the SPC policy at: ([http://www.southplainscollege.edu/human\\_resources/policy\\_procedure/hhc.php](http://www.southplainscollege.edu/human_resources/policy_procedure/hhc.php)) Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

**Objectives:** Upon completion of this course and obtaining a passing grade, the student will have mastered at least 70% of the course objectives. The course objectives provide that the student be able to:

- a.) Calculate derivatives of parametric and polar functions (9.5)
- b.) Calculate anti-derivatives of parametric and polar functions (9.5)
- c.) Calculate dot and cross product (10.3, 10.4)
- d.) Write equations of lines and planes in space using vector analysis (10.5)
- e.) Find maximum, minimum, and level curves of 3 D graphs;
- f.) Work with multivariable functions and calculate partial derivatives (12.3)
- g.) Perform double and triple integration (13.1 – 13.4, 13.6)
- h.) Green's Theorem;
- i.) Find area, volume, arc length, and surface area by use of double and triple integration. (13.2)

<b>Course Outline</b>		
This schedule is tentative and subjective to change. Changes will be announced in class.		
Week	Topics and Sections Covered	
1	8/27, Mon	Introduction 10.1 Conic Sections and Quadratic Equations – Parabolas, Ellipses, & Hyperbolas <a href="#">[PowerPoint]</a> Relative Extrema (Review) (Student responsibility) Area & Volume (Review) (Student responsibility)
	8/29, Wed	10.2 Parametric Equations – Graphing <a href="#">[PowerPoint]</a> 10.3 Parametric Equations – Derivatives and Tangents
2	9/3, Mon	<i>Labor Day</i>
	9/5, Wed	10.3 Parametric Equations – Relative Extrema, Area, Volume, Arc Length, Surface Area, & Centroids <a href="#">[PowerPoint]</a>
3	9/10, Mon	10.4 Polar Equations – Coordinates, Equations, and Graphing <a href="#">[PowerPoint]</a>
	9/12, Wed	10.5 Polar Equations – Area, Arc Length, & Surface Area <a href="#">[PowerPoint]</a>
4	9/17, Mon	11.1 Vectors <a href="#">[PowerPoint]</a> Trigonometric (Polar) Form of Complex Numbers 11.2 Vectors in Space
	9/19, Wed	11.3 Dot Product <a href="#">[PowerPoint]</a> 11.4 Cross Product <a href="#">[PowerPoint]</a>
5	9/24, Mon	TEST 1 (Parametric & Polar Equations, Ch 10)
	9/26, Wed	Resultant Vectors <a href="#">[PowerPoint]</a>
6	10/1, Mon	11.4 Lines and Planes in Space <a href="#">[PowerPoint]</a> (Equation of a Line & Plane, Distance from a point to a Line, and Distance from a point to a Plane)
	10/3, Wed	11.5 Lines and Planes in Space contd. <a href="#">[PowerPoint]</a> (The intersection of lines & planes and angle between two planes) 12.1 Vector-Valued Functions 12.2 Vector-Valued Functions – Calculus
7	10/8, Mon	12.3 Velocity & Acceleration <a href="#">[PowerPoint]</a> 12.4 Tangent & Normal Vectors (Acceleration)
	10/10, Wed	TEST 2 (Vectors, Ch 11)
8	10/15, Mon	12.4 Tangent & Normal Vectors (Acceleration) contd. 12.5 Arc Length & Curvature
	10/17, Wed	12.5 Curvature Contd. (Torsion & TNB frame) 11.6 Surfaces in Space (Cylinders and Quadric Surfaces) <a href="#">[PowerPoint]</a> Space Coordinates & Surface of Revolution
9	10/22, Mon	11.7 Cylindrical and Spherical Coordinates <a href="#">[PowerPoint]</a>
	10/24, Wed	TEST 3 (Vector-Valued Functions, Ch 12)
10	10/29, Mon	13.1 Functions of Several Variables <a href="#">[PowerPoint]</a> 13.3 Partial Derivatives 13.5 The Chain Rule: Implicit Differentiation (only) 13.6 Directional Derivatives & Gradients <a href="#">[PowerPoint]</a>
	10/31, Wed	13.7 Tangent Planes & Normal Lines <a href="#">[PowerPoint]</a> 13.8 Extrema of Functions of Several Variables <a href="#">[PowerPoint]</a> 13.9 Applications of Extrema of Multivariable Functions 13.9 Applications of Extrema of Multivariable Functions contd. 13.10 Lagrange Multipliers <a href="#">[PowerPoint]</a>
11	11/5, Mon	14.1 Area in the Plane (Double Integrals) <a href="#">[PowerPoint]</a> 14.2 Double Integrals & Volume 14.3 Polar Coordinates – Double Integrals <a href="#">[PowerPoint]</a>
	11/7, Wed	14.3 Polar Coordinates – Double Integrals contd. 14.4 Centers of Mass & Moments of Inertia <a href="#">[PowerPoint]</a> 14.5 Surface Area <a href="#">[PowerPoint]</a>
	11/9, Fri	SPC Math, CS, & Engineering Advising Day
12	11/12, Mon	TEST 4 (Multi-Variable Functions, Ch 13)
	11/14, Wed	14.6 Triple Integrals in Rectangular Coordinates 14.7 Triple Integrals in Cylindrical and Spherical Coordinates

		<i>Intro to Engineering Projects</i>		
13	11/19, Mon	14.8Jacobian		
	11/21, Wed	<i>Thanksgiving</i>		
14	11/26, Mon	15.1 Vector Fields		
	11/28, Wed	15.2 Line Integrals 15.3 Conservative Vector Fields & Independence of Path 15.4 Green's Theorem		
15	12/3, Mon	15.5 Parametric Surfaces 15.6 Surface Integrals 15.7 Divergence Theorem		
	12/5, Wed	15.8 Stoke's Theorem		
16	12/10,	<i>FINAL EXAM:</i>	<i>001</i>	8 – 10 a
			<i>200</i>	5:30 – 7:30 p

MATH 2415 (4:4:1)

CALCULUS III

MATHEMATICS DEPARTMENT

Division of Arts & Sciences

*South Plains College*

FALL 2018

Shirley Davis