South Plains College

MATH 2415 –Calculus III
Section 001, T R 8 – 9:15 am
Math Bldg., Rm. 105

Instructor: Miss S. Davis
Office: 103 MATH Bldg.
Phone: (806) 894 – 9611 ext. 2699
E-mail address: sdavis@SouthPlainsCollege.edu

Text: Calculus, 10th edition by Larson & Edwards
(ISBN: 978-1-285-05709-5)

Supplies: Scientific calculator (preferably a TI-85 or higher), *(at least a **2.5 in** ring) notebook,* hole puncher, stapler, a staple puller & a red pen/pencil.

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
8 – 8:30a	9:15 – 9:30a	10:30 – 11a	9:15 – 9:30a	10 – 11:30a
10:30 – 11a	10:30 – 11a	4:15 – 5:15p		
4:15 – 5:15p	2:30 – 4:30p			

or by appointment
At the times with this designation, I will be in my office to help you. You **do not** need an appointment to come see me at these times. When you come, I will be doing something else, but I will stop and help you. I am available at other times, but please give me a call before coming to make sure I am there.

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) and, strategically, Analytical Geometry

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 5 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 be kept in a notebook that must accompany you to each class session. Refer to Blackboard for the homework procedure and others to be used in this class.

Blackboard: A plethora of information for this class will exist on Blackboard such as syllabus, homework, etc. Please be responsible to log in to Blackboard and navigate to the appropriate site for this class.

Assessments: There will be quizzes given over the assigned homework in which no make-ups will be allowed.

Tests: There will be four (possibly five) tests and a comprehensive final. If the final exam score is greater than any non-zero major exam score then the final exam score replaces the major exam score. In other words, the major exam score will be deleted and the final exam score will count two times (Honest Effort Rule (**H.E.R.**) policy).   See your OUTLINE for the approximate date for each test.

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 Policy: Your final grade will be based solely on major exam scores, homework (notebook), and a comprehensive final.

Grading Score: $\text{Final score} = \dfrac{\text{Test 1} + \text{Test 2} + \text{Test 3} + \text{Homework Score} + \text{Final Exam score}}{5}$

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 if possible. Additionally, read the book as the semester progresses! Refer to the "How to Study" sheet for further detailed studying suggestions.

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 review topics in this course are available through the Mathematics Department on Blackboard. For username and password, please use *mvideos*.

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

Critical Dates:

Jan 20	MLK, Jr.	*April 20*	**WEB Pre-registration for Summer, Spring Interim, & Fall 2020**
March 16 – 20	SPRING Break		
April 13	Easter		**Final Exams**
April 17	**UIL** – No office hours	*May 4*	*(8 – 10 a, Monday)*
April 24	Last day to drop		

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.
- Form study groups.
- Get help from tutors, tapes, and/or the instructor.
- ****Please, *turn off cell phones and pagers during class!* ****
  - o **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.**
  - o **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 addition to the No Food or Drink classroom policy and in accordance to campus policy, no tobacco products are to be permitted and consumed in class.**
- **You will obtain your final grade for the class through Texan Connect &/or Colleague.**

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 <u>will</u> 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.

Sanctions for Cheating or Plagiarizing: A grade of "F" in the course will be assigned to any student caught cheating or plagiarizing; additional sanctions may also be considered. Students are responsible for understanding the meanings of the words <u>cheating</u> and <u>plagiarizing</u>.

Special Requests: If you happen to become *ill* during the semester, please <u>respect</u> 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.)

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;

b.) Calculate anti-derivatives of parametric and polar functions;

c.) Calculate dot and cross product;

d.) Write equations of lines and planes in space using vector analysis;

e.) Find maximum, minimum, and level curves of 3 D graphs;

f.) Work with multivariable functions and calculate partial derivatives;

g.) Perform double and triple integration;

h.) Green's Theorem;

i.) Find area, volume, arc length, and surface area by use of double and triple integration.

Diversity: 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, preferably, 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.

Confidentiality: As a faculty member, I am deeply invested in the well-being of each student I teach. I am here to assist you with your work in this course. If you come to me with other non-course-related concerns, I will do my best to help.
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 <u>lcleavinger@southplainscollege.edu</u> or go by the Health and Wellness Center. You can schedule an appointment with a counselor by calling 716-2529.

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.

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)
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.

		Course Outline This schedule is tentative and subjective to change. Changes will be announced in class.
Week		**Topics and Sections Covered**
1	1/13, Mon	Introduction Review: Conic Sections and Quadratic Equations – Parabolas, Ellipses, & Hyperbolas
	1/15, Wed	Review: Parametric Equations – Graphing, Derivatives and Tangents, Relative Extrema, Area, Volume, Arc Length, Surface Area, & Centroids
2	*1/20, Mon*	*MLK, Jr.*
	1/22, Wed	11.1 Vectors Trigonometric (Polar) Form of Complex Numbers 11.2 Vectors in Space
3	1/27, Mon	11.3 Dot Product 11.4 Cross Product
	1/29, Wed	Resultant Vectors 11.5 Lines and Planes in Space
4	2/3, Mon	11.5 Lines and Planes in Space contd. 12.1 *Vector-Valued Functions* 12.2 *Vector-Valued Functions – Calculus* 12.3 *Velocity & Acceleration*
	2/5, Wed	**TEST 1 (Vectors, Ch 11)**
5	2/10, Mon	12.3 Velocity & Acceleration contd. 12.4 Tangent & Normal Vectors (AcceleraTioN)
	2/12, Wed	12.4 Tangent & Normal Vectors (AcceleraTioN) contd. 12.5 Arc Length & **Curvature**
6	2/17, Mon	12.5 Curvature Contd. (Torsion & TNB frame) 11.6 Surfaces in Space (Cylinders and Quadric Surfaces) Space Coordinates & Surface of Revolution
	2/19, Wed	Review: Polar Equations – Coordinates, Equations, and Graphing 11.7 Cylindrical and Spherical Coordinates
7	2/24, Mon	13.1 Functions of Several Variables 13.3 Partial Derivatives 13.5 The Chain Rule: Implicit Differentiation (only) 13.6 Directional Derivatives & Gradients
		TEST 2 (Vector-Valued Functions, Ch 12 – Notebook Grade)
	2/26, Wed	13.6 Directional Derivatives & Gradients contd. 13.7 Tangent Planes & Normal Lines
8	3/2, Mon	13.8 Extrema of Functions of Several Variables 13.9 Applications of Extrema of Multivariable Functions
	3//4, Wed	13.9 Applications of Extrema of Multivariable Functions contd. 13.10 Lagrange Multipliers
9	3/9, Mon	14.1 *Area in the Plane (Double Integrals)* 14.2 *Double Integrals & Volume* 14.3 *Polar Coordinates – Double Integrals*
	3/11, Wed	**TEST 3 (Multi-Variable Functions, Ch 13)**
	3/16 – 3/20	*Spring Break*
10	3/23, Mon	14.3 Polar Coordinates – Double Integrals contd. 14.4 Centers of Mass & Moments of Inertia
	3/25, Wed	14.6 Triple Integrals in Rectangular Coordinates 14.7 Triple Integrals in Cylindrical and Spherical Coordinates

		Course Outline
		This schedule is tentative and subjective to change. Changes will be announced in class.
Week		**Topics and Sections Covered**

Week		Topics and Sections Covered
11	3/30, Mon	14.8 Jacobian 14.5 Surface Area
	4/1, Wed	15.1 *Vector Fields* 15.2 *Line Integrals*
12	4/6, Mon	**TEST 4 (Multiple Integration, Ch 14)**
	4/8, Wed	15.2 Line Integrals contd. 15.3 Conservative Vector Fields & Independence of Path
13	*4/13, Mon*	*EASTER*
	4/15, Wed	15.4 Green's Theorem
14	4/20, Mon	15.5 Parametric Surfaces 15.6 Surface Integrals
	4/22, Wed	15.6 Surface Integrals contd.
15	4/27, Mon	15.7 Divergence Theorem
	4/29, Wed	15.8 Stoke's Theorem
16	**5/4**	*FINAL EXAM:* **Monday** **8 – 10 a**

MATH 2415 (4:4:1)

CALCULUS III

MATHEMATICS DEPARTMENT

Division of Arts & Sciences

South Plains College

SPRING 2020

Shirley Davis