South Plains College

MATH 2315 –Calculus III

$\begin{cases} \textit{Section 001, T R 8:30} - \textit{10:35 am} \\ \textit{Section 200, T R 5:20} - \textit{7:25 pm} \end{cases}$ $\begin{cases} \textbf{Math Bldg., Rm. 105} \\ \textbf{Reese, Rm. 209} \end{cases}$, respectively

Instructor: Miss S. Davis
Office: 103 MATH Bldg.
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Text: Calculus, 10th edition by Larson & Edwards (ISBN: 9780547167022)
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Supplies: Scientific calculator (preferably a TI-85 or higher), *3-Dimensional Graph paper*

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
9:30 – 11 a		9:30 – 11 a	4:20 – 5:20 p	1 – 4 p
1:30 – 2:30p		4:15 – 5:15 p	(Reese)	
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 courteous 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)

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. There will be three (possibly 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:

Sept 5	Labor Day	Nov 10	**WEB Pre-registration for Spring 2017**
Oct 14	FALL Break	Nov 11	**Advising Day for MECS**
Nov 17	Last day to drop		**Final Exams**
Nov 23 – 25	Thanksgiving	Dec 13	001	(8 – 10 a, Tuesday)
		Dec 13	002	(5 – 7 p, Tuesday)

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.

Updated on 8/29/2016 4:57:28 PM
Created on 1/13/2016 4:50:00 PM

Video Tapes: Videotapes for many topics in this course are available in the Math Department Video Lab, room M116. Students are encouraged to view these tapes, and/or check them out.

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

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.**

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.

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.)

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 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.

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)

		Course Outline
		This schedule is tentative and subjective to change. Changes will be announced in class.
Week		**Topics and Sections Covered**
1	8/30, Tues	**Introduction** **Parametric Equations – Graphing** **Relative Extrema (Review) (Student responsibility)** **Area & Volume (Review) (Student responsibility)**
	9/1, Thurs	**Parametric Equations – Derivatives and Tangents** **Parametric Equations – Relative Extrema** **Parametric Equations – Area, Arc Length, Volume, & Surface Area**
2	9/5, Mon	*Labor Day*
	9/6, Tues	**Polar Equations – Coordinates & Equations** **Polar Equations – Graphing**
	9/8, Thurs	**Polar Equations – Graphing Intersections** **Polar Equations – Area & Arc Length**
3	9/13, Tues	**Polar Equations – Volume & Surface Area**
	9/15, Thurs	*Parabolas & Ellipses* **10.1 Conic Sections and Quadratic Equations*
4	9/20, Tues	TEST 1
	9/22, Thurs	**Ellipses contd. & Hyperbolas**
5	9/27, Tues	**11.1 Vectors** **Operations on Vectors** **Trigonometric (Polar) Form of Complex Numbers** **Vectors in Space**
	9/29, Thurs	**11.3 Dot Products** **11.4 Cross Products**
6	10/4, Tues	**11.4 Cross Products contd.** **Resultant Vectors**
	10/6, Thurs	**11.5 Lines and Planes in Space**
7	10/11, Tues	**12.1** *Vector-Valued Functions* **12.2** *Vector-Valued Functions – Calculus* **12.3** *Velocity & Acceleration* **12.4** *Tangent & Normal Vectors*
	10/13, Thurs	TEST 2
8	10/18, Tues	**12.5 Arc Length & Curvature**
	10/20, Thurs	**12.5 Curvature contd.** **(Torsion & TNB frame)**
9	10/25, Tues	**11.6 Surfaces in Space (Cylinders and Quadric Surfaces)** **Space Coordinates & Surface of Revolution**
		TEST 3
	10/27, Thurs	**11.6 Surfaces in Space (Cylinders and Quadric Surfaces) contd.** **Quadric Surfaces**
10	11/1, Tues	**11.7 Cylindrical and Spherical Coordinates**
	11/3, Thurs	**13.1 Functions of Several Variables** **13.3 Partial Derivatives** **13.5 The Chain Rule: Implicit Differentiation (only)** **13.6 Directional Derivatives & Gradients**
11	11/8, Tues	**13.7 Tangent Planes & Normal Lines** **13.8 Extrema of Functions of Several Variables** **13.9 Applications of Extrema of Multivariable Functions**
	11/10, Thurs	**13.10 Lagrange Multipliers**
	11/11, Fri	SPC Math, CS, & Engineering Advising Day
12	11/15, Tues	**14.1** *Area in the Plane (Double Integrals)* **14.2** *Double Integrals & Volume* **14.4** *Polar Coordinates – Double Integrals*
	11/17, Thurs	TEST 4

		Intro to Engineering Projects			
13	11/22, Tues	14.4 Polar Coordinates – Double Integrals contd. 14.5 Centers of Mass & Moments of Inertia 14.7 Triple Integrals in Rectangular Coordinates			
	11/24, Thurs	**Thanksgiving**			
14	11/29, Tues	14.6 Surface Area 14.7 Triple Integrals in Rectangular Coordinates contd. 14.8 Triple Integrals in Cylindrical and Spherical Coordinates			
	12/1, Thurs	14.9 Jacobian 15.4 Green's Theorem			
15	12/6, Tues	15.5 ???????????			
	12/8, Thurs	15.6 ?????????????			
16	**12/13, Tues**	*FINAL EXAM:*	*001*	**8 – 10 a**	
			200	**5 – 7 p**	

MATH 2315 (3:4:1)

CALCULUS III

MATHEMATICS DEPARTMENT

Division of Arts & Sciences

South Plains College

FALL 2016

Shirley Davis