

## SCUPI – Math0230 Calculus 2 Spring Semester, 2023, Section 1

**INSTRUCTOR:** Dr. Tsun-Zee Mai; **OFFICE:** 4-224; **EMAIL:** tmai@scu.edu.cn

**OFFICE HOURS:** Mon, Tue, Thr, & Fri: 10:30am – 11:55am, Mon, Tue: 2:00pm – 4:30pm at Rm 4-224, or by appointment.

**LECTURES:** 8:15am – 9:55am, Mon & Thur at Zong C-504.

**RECITATION:** TA: 朱柯语 Group 1: Mon 12:30 – 13:15 and Group 6: Thur. 12:30 – 13:15

TA: 董元焯 Group 4: Wed 11:10 – 11:55 and Group 5: Thur 11:10 – 11:55

TA: 聂嘉翼 Group 2: Mon 16:45 – 17:30 and Group 3: Mon 17:40 – 18:25

TA: 张光灿 Group 7: Thur 16:45 – 17:30 and Group 8: Fri 11:10 – 11:55

**TEXTBOOK:** Stewart: *Essential Calculus*, Metric Version, 2<sup>nd</sup> International Edition.

**DESCRIPTION:** This is the second part of three-part calculus sequence for students in SCUPI. Topics are mainly focus on single variable calculus which include vectors and the geometry of space, Integral calculus, applications of integration, integration techniques, improper integrals, infinite series, and parametric equations and polar curves.

**COURSE OBJECTIVES:** Students will develop a good understanding of three-dimensional vectors, the geometry of space, parametric and polar coordinates and be able to apply these concepts when working applied problems.

Students will acquire basic skills needed to apply integration techniques to solve a wide range of integration problems. Students will develop a basic understanding of infinite series and their applications as well as concepts of parametric and polar equations.

### LEARNING OUTCOMES FOR THIS COURSE:

- 1) Students will be able to use of vectors.
- 2) Students will learn various techniques of integration.
- 3) Students will be able to apply integration techniques to solve a range of applied problems, including volume problems and applications from physics and other disciplines.
- 4) Students will develop a basic understanding of infinite series and their applications.
- 5) Students will understand the concepts of parametric and polar equations.

**GRADE:** The final grade will be based on the **score**. The score is a number determined by

**Quizzes: 20% Homework: 5% Major Exams: 50% Final: 25%**

The final letter grade is determined from the following table.

A: 90 – 100	A-: 85 – 90	B+: 80 – 84	B: 76 – 80	B-: 73 – 76
C+: 70 – 73	C: 66 – 70	C-: 63 – 66	D: 60 – 63	F: < 60

**Note that if you want to apply for 2+2 or 3+1 transferring abroad, you must have a grade of C or above to be eligible.**

**EXAMS:** There are three 90 minutes major tests and a final exam. Tentative Dates are given in the table below. Each major test will be cumulative with more emphasis on the material since the previous test. The lowest test score may be replaced by the final exam score if the final is higher. Here is an example: if a student's grades are: quiz average (82), homework (90), tests (70, 80, 85), and final (85). Thus the student grade determination is  $82 \times 20\% + 90 \times 5\% + (85+80+85)/3 \times 50\% + 85 \times 25\% = 83.82$ , which is a B+. The final exam will be comprehensive. There is **NO** Make up for all the quizzes and tests.

Tentative exam dates are the following:

<b>TEST 1: 3/25</b>	<b>TEST 2: 4/22</b>	<b>TEST 3: 5/27</b>	<b>FINAL: TBA</b>
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**QUIZZES:** In-class 10 or 15-minutes quiz will be given on some lecture days and recitation classes.

**RECITATION:** TBA. You must attend recitation every week. This recitation is an opportunity for answering your questions. It may have some new material been covered in this time. Moreover, **many quizzes** will be held during recitation.

**GRADE REBUTTAL:** You **must receive your own test or quiz paper**. For any test or quiz, you have only one week to request correction if you feel your answer is mis-graded. No correction will be made after a week when the test paper is returned. **IMPORTANT: If you don't get your quiz and test paper back within a week, your score will be deducted by 2 points per day until it becomes 0.**

**HOMEWORK:** Homework will be assigned for each section but will not be collected nor graded. It is your responsibility to find out if your work is correct. Solutions for homework problems will be provided.

**CLASSROOM RULES:** Electronic devices including but not limited to **iphone, smartphone, ipod, ipad, pc** can be used **ONLY** for course work.

**ATTENDANCE:** You are expected to attend all the classes; I may check the attendance occasionally. A student who misses a class is responsible for finding out what was covered in the class. Remember there are no make ups all grades related activities.

**MAKE-UP POLICY:** **No makeup work will be allowed.** The dropped grade(s) in quizzes is to account for any missed quiz due to illness or any other circumstances.

**CODE OF ACADEMIC CONDUCT:** All students in attendance at the SiChuan University are expected to be honored and to observe standards of conduct appropriate to a community of scholars. The University expects from its students a higher standard of conduct than the minimum required to avoid discipline. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing or intentional help or attempt to help, or conspiracy to help, another student. The Academic Misconduct Disciplinary Policy will be followed in the event of academic misconduct.

**NON-ACADEMIC MISCONDUCT:** All cell phones and other electronic devices are to be turned off and out of sight while you are in the classroom. All newspapers and other materials not related to the class are to be put away once class begins. Operating these devices and reading unrelated materials while in class is disrespectful of your instructor and fellow classmates. If you fail to abide by this rule, the instructor has the right to confiscate the device or materials. If you have an emergency and need to have your phone turned on during class, ask your instructor for permission

**MATERIAL COVERED:** Tentative Progress:

Week of	Contents	Descriptions
1 (2/20)	introduction	3-D coordinate system, Vectors
2 (2/27)	10.2 – 10.5	Dot product, cross product, equation of lines and planes
3 (3/6)	6.1 – 6.2	Integration by Parts, Trig. Integrals and Substitutions
4 (3/13)	6.2, 6.3	Tri. Sub. And Partial fractions
5 (3/20)	6.3, 6.5	Partial fractions and Approximate Integration
<b>3/25</b>	<b>tentative</b>	<b>Test 1 – Covers: topics from 10.2 – 10.5, 6.1 – 6.3</b>
6 (3/27)	6.5, 6.6, 7.1	Approximate Integration and Improper Integrals
7 (4/3)	7.1, 7.2, 7.3	Area between Curves, Volumes
8 (4/10)	7.3, 7.4, 7.5	Disk, Washer, and shell Methods
9 (4/17)	7.4, 7.5	Arc Length, Area of a Surface of Revolution
<b>4/22</b>	<b>tentative</b>	<b>Test 2 – Covers: topics 6.5, 6.6, 7.1 – 7.5</b>
10 (4/24)	7.6, 7.7	Area of a Surface of Revolution, Applications to Physics and Engineering, Differential Equations
11 (5/1)	8.1, 8.2, 8.3	Sequences, Series, The Integral and Comparison Test
12 (5/8)	8.3, 8.4	The Integral and Comparison Tests, Other Convergence Tests
13 (5/15)	8.4, 8.5, 8.6	Power Series, Representing Functions as Power Series
14 (5/22)	8.6, 8.7	Taylor and Maclaurin Series
<b>5/27</b>	<b>tentative</b>	<b>Test 3 – Covers: 7.6 – 7.7, 8.1 – 8.7</b>
15 (5/29)	9.1, 9.2	Parametric Curves, Calculus with Parametric Curves
16 (6/5)	9.2, 9.3	Polar Coordinates, Areas and Lengths in Polar
17 (6/12)	9.4 & Review	Areas and Lengths in Polar, Review
18 (6/19)		SCU Final Exam Week
<b>TBA</b>	<b>tentative</b>	<b>Final exam – Covers All topics learned in this semester</b>