

**MATH 23B**  
**VECTOR CALCULUS II**  
*Summer 2019 - Session II*

**Course Description:** Double integral, changing the order of integration. Triple integrals, maps of the plane, change of variables theorem, improper double integrals. Path integrals, line integrals, parametrized surfaces, area of a surface, surface integrals. Green's theorem, Stokes' theorem, conservative fields, Gauss' theorem. Applications to physics and differential equations, differential forms.

**Prerequisite:** Math 23A

**Course Objective:** At the end of this course, the learner will be able to calculate double and triple integrals and integrals over curves and surfaces, using several ways, and use them in applications to geometry and the physical sciences.

**Textbook:** Jerrold Marsden and Anthony Tromba. *Vector Calculus*, 6th Edition  
ISBN-13: 978-1429215084

**Lecture Time and Location:** MWF 9:00AM - 11:30AM, at Social Sciences 2, Room 071

**Section Time and Location:** F 3:00PM - 5:00PM, at Social Sciences 2,

**Instructor:** John Pelias

**Instructor's E-mail:** jppelias[at]ucsc[dot]edu

**Instructor's Office Hours and Location:** MW 3:00PM - 5:00PM, at McHenry 4112

**TA:** Glen McDermott

**TA's E-mail:** gamcderm[at]ucsc[dot]edu

**TA's Office Hours and Location:** Th 10:00AM - 12:00PM, at McHenry 1261

**Grading:**

10%	Homeworks
20%	Quizzes
30%	Midterms
40%	Final exam

**Homeworks:** There will be weekly problem sets due the following days:

HOMEWORK 1: 08/02/2019 (Fri)

HOMEWORK 2: 08/09/2019 (Fri)

HOMEWORK 3: 08/21/2019 (Wed)

HOMEWORK 4: 08/28/2019 (Wed)

**Quizzes:** There will be daily quizzes, each during the *first 10 minutes of the lecture*.

**Midterm:** There will be two Midterms on **August 12, 2019** and on **August 23, 2019**.

**Final Exam:** There will be a cumulative Final Exam on **August 30, 2019**.

**Late/Makeup Policy:** I will neither accept late homework nor give makeup quizzes/exams.

**Tentative Schedule:** (subject to change, based on actual progress of the class)

Date	Day	Content	Quiz
7/29	Mon	Syllabus/Announcements, Introduction to the Course 5.1: Introduction to Double Integrals 5.2: Double Integrals Over Rectangles	NONE
7/31	Wed	5.3: Double Integrals Over More General Regions 5.4: Changing the Order of Integration	5.1-5.2
8/02	Fri	5.5: Triple Integrals	5.3-5.4
8/05	Mon	6.1: Geometry of Maps from $\mathbb{R}^2$ to $\mathbb{R}^2$ 6.2: Change of Variables Theorem (General Jacobians)	5.5
8/07	Wed	6.2: Change of Variables Theorem (Polar, Cylindrical, Spherical Coordinates)	6.1-6.2
8/09	Fri	6.3: Applications 7.1: Path Integrals	6.2-6.3
8/12	Mon	<b>Midterm 1</b> (§5.1 - §6.3; 1.5 hrs)	NONE
8/14	Wed	7.2: Line Integrals 7.3: Parametrized Surfaces	7.1-7.2
8/16	Fri	7.4: Area of a Surface 7.5: Surface Integrals of Scalar Functions	7.3-7.4
8/19	Mon	7.6: Surface Integrals of Vector Fields	7.5
8/21	Wed	8.1: Green's Theorem 8.2: Stokes' Theorem	7.6 and 8.1
8/23	Fri	<b>Midterm 2</b> (§7.1 - §8.1; 1.5 hrs)	NONE
8/26	Mon	8.3: Conservative Vector Fields 8.4: Gauss' Theorem	7.5
8/28	Wed	Applications of the Theorems of Green, Stokes, and Gauss	8.3-8.4
8/30	Fri	<b>Final Exam</b> (Cumulative; 2.5 hrs)	NONE

**Important Deadlines:**

**Drop:** August 5, 2019 (Mon)

**Request for "W":** August 16, 2019 (Fri)

*Important Note:* Neither Summer Session nor instructors drop students for non-attendance or non-payment. Students must drop themselves. Dropping results in full tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).

For all dates and deadlines, including "change of grade option" (P/NP) and grades due, here is the summer academic calendar:

<https://summer.ucsc.edu/studentlife/index.html>

For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email [summer\[at\]ucsc\[dot\]edu](mailto:summer@ucsc.edu).

## **DRC Accommodations**

The Disability Resources Center reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. If you have questions or concerns about exam accommodations or any other disability-related matter, please contact the DRC office, located in Hahn 125 or at 831-459-2089 or [drc\[at\]ucsc\[dot\]edu](mailto:drc[at]ucsc[dot]edu).

## **Academic Dishonesty**

Academic integrity is the cornerstone of a university education. Academic dishonesty diminishes the university as an institution and all members of the university community. It tarnishes the value of a UCSC degree.

All members of the UCSC community have an explicit responsibility to foster an environment of trust, honesty, fairness, respect, and responsibility. All members of the university community are expected to present as their original work only that which is truly their own. All members of the community are expected to report observed instances of cheating, plagiarism, and other forms of academic dishonesty in order to ensure that the integrity of scholarship is valued and preserved at UCSC.

In the event a student is found in violation of the UCSC Academic Integrity policy, he or she may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case. Violations of the Academic Integrity policy can result in dismissal from the university and a permanent notation on a student's transcript. For the full policy and disciplinary procedures on academic dishonesty, students and instructors should refer to the [Academic Integrity](#) page at the Division of Undergraduate Education.

## **Title IX**

The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sex discrimination, sexual harassment, sexual violence, and other related prohibited conduct. [Information about the Title IX Office](#), the [online reporting link](#), applicable campus resources, reporting responsibilities, the [UC Policy on Sexual Violence and Sexual Harassment](#) and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at [titleix.ucsc.edu](http://titleix.ucsc.edu).

The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the [online reporting option](#), you can contact the Title IX Office by calling 831-459-2462.