Bridgewater State University
MATH 261: Multivariate Calculus
Winter 2022 Syllabus

Place/Time: Online	**Instructor: Wanchunzi Yu**
Duration：22 December, 2022- 16 January, 2023	**Office Hours: TBA (Or by appointment)**
Course Credits: 4	**E-mail: wyu@bridgew.edu**

Course Catalog Description

This course is a continuation of the MATH 161/161E - MATH 162 Single Variable Calculus I-II sequence. Topics will include parametric and polar equations, derivatives and integrals of multivariable functions, and vector analysis.

Prerequisite

MATH 162 Single Variable Calculus II or consent of department.

Textbook

Calculus – Early Transcendentals (With **WebAssign**), 9th edition, by James Stewart.
The hardcopy of textbook is optional. Access to WebAssign includes access to an electronic version of the textbook.

Topic Calendar

No.	Sections Covered (Tentative)	Week
1	Review of Calculus I & II	Week 1
2	10.1 Curves Defined by Parametric Equations	Week 1
3	10.2 Calculus with Parametric Curves	Week 1
4	10.3 Polar Coordinates	Week 1
5	10.4 Calculus in Polar Coordinates	Week 1

6	10.5 Conic Sections	Week 1
7	12.1 Three-Dimensional Coordinate Systems	Week 1
8	12.2 Vectors	Week 1
9	12.3 The Dot Product	Week 1
10	12.4 The Cross Product	Week 1
11	12.5 Equations of Lines and Planes	Week 2
12	12.6 Cylinders and Quadratic Surfaces	Week 2
13	13.1 Vector Functions and Space Curves	Week 2
14	13.2 Derivatives and Integrals of Vector Functions	Week 2
15	13.3 Arc Length and Curvature & Midterm Exam Review	Week 2
16	14.1 Functions of Several Variables	Week 2
17	14.2 Limits and Continuity	Week 2
18	14.3 Partial Derivatives	Week 2
19	14.4 Tangent Planes and Linear Approximations	Week 3
20	14.5 The Chain Rule	Week 3
21	14.6 Directional Derivatives and the Gradient Vector	Week 3
22	14.7 Maximum and Minimum Values	Week 3
23	14.8 Lagrange Multipliers	Week 3
24	15.1 Double Integrals over Rectangles	Week 3
25	15.2 Double Integrals over General Regions	Week 3
26	15.3 Double Integrals in Polar Coordinates	Week 3
27	15.4 Applications of Double Integrals	Week 3
28	15.5 Surface Area	Week 4
29	15.6 Triple Integrals	Week 4

30	15.7 Triple Integrals in Cylindrical Coordinates	Week 4
31	15.8 Triple Integrals in Spherical Coordinates	Week 4
32	15.9 Change of Variables in Multiple Integrals	Week 4
33	16.1 Vector Fields	Week 4
34	16.2 Line Integrals	Week 4
35	16.3 The Fundamental Theorem for Line Integrals & Final Exam Review	Week 4

Course Outcomes

By the end of this course, you will be expected to:

• Correctly evaluate indefinite, definite and improper integrals using various integration formulas and techniques covered in class

• Understand the connection between integrals and area, and find the area of a region between curves

• Use integrals to find the volume of a solid of revolution

• Determine convergence or divergence of sequences

• Understand the relationship between sequences and infinite series

• Determine convergence or divergence of infinite series using various tests (Divergence Test, Geometric Series Test, p-Series Test, Integral Test, Comparison Test, Limit Comparison Test, Alternating Series Test, Ratio Test, and Root Test)

• Determine the interval of convergence of a power series,

• Find a Taylor or MacLaurin series for a function, and

• Communicate mathematics effectively by using the correct terminology and notation.

Homework

Homework problems are online, we will use the online resource WebAssign for weekly homework assignments and tutorial videos. Make sure to select the correct course, the url for this section link.
Please refer to WebAssign Instruction on the blackboard for more details. Some written homework may also be collected.
NO LATE HOMEWORK WILL BE ACCEPTED.

Blackboard

Grades and additional course content will be uploaded to Blackboard. Make sure to check it regularly for updates.

Attendance
Attendance for the course will be the **Watch It/Lecture** videos with questions on WebAssign. For each section, videos with questions are available on WebAssign. Please complete the **Watch It/Lecture** to receive the full attendance credits.

Midterm Exams
You will take 1 midterm exam during the summer semester. Exam is given online, time will be limited to class time. Each will involve a mix of mechanical skills and conceptual reasoning. The best possible preparation for them is regular attendance and completion of assigned homework. You may have 1 page 8x11 of hand written notes (1 side only) on each exam, including a final exam, specific problems solved can not be included. Make-up exams are only given in case of documented emergencies.

Final Exam
The final exam will take place on online on Blackboard. The official BSU Final Exam Schedule is here.

Grading
Your final course grade will be determined by
Homework: 30%
Attendance: 30%
Midterms: 20%
Final Exam: 20%

Grading Scale:
Letter grades will be assigned as follows:

A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	below 60

The Academic Achievement C   enter (AAC) provides students with academic services and resources that propel them toward successful and timely degree completion.   With all the services available in the center, the AAC is the largest hub of student academic services on campus. Ideally located on the ground floor of the Maxwell Library in the center of the BSU Campus, the AAC is comprised of four major support areas: Academic Advising (*first-semester freshmen*), the Disability Resources Office, Learning Assistance (*tutoring and academic coaching*), and Testing Services. Drop-in learning support areas (*Math Services, Accounting & Finance Lab, Writing Studio, Second Language Services*), open study space, study rooms available for reserve, and computers are all available for student use. Stop by or call 508-531-1214 for more information about any of the services offered by the Academic Achievement Center.

Disability Resources Office (DRO)
Bridgewater State University is committed to providing equal access to students with documented disabilities. To ensure your access to this course and the BSU community, students with disabilities are encouraged to collaborate with the **Disability Resources Office (DRO)**. Through the DRO, you may initiate the confidential process of requesting reasonable accommodations. The DRO can be reached at Disability_Resources@bridgew.edu or 508.531.2194. If you are granted accommodations, please meet with me confidentially to review how they will be applied in this course.
The DRO also provides alternatively worded syllabus statements, as well as other faculty-specific information, here.

Math Services
Math Services provides free tutoring on a walk-in basis. It is located in the basement of Maxwell Library.

* This syllabus may be amended during the semester.