MATH 161: Single Variable Calculus I
Winter 2022 Syllabus
December 22, 2022 – January 16, 2023

Place/Time: Online	**Instructor: Wanchunzi Yu**
E-mail: wyu@bridgew.edu	**Office Hours: TBA (Or by appointment)**
Credits：**4**	

Course Catalog Description
This course will provide an introduction to the topics and techniques of single-variable calculus. Differential calculus topics will include limits and derivatives of algebraic and transcendental functions as well as applications of the derivative. Integral calculus topics will include antiderivatives, area and the Fundamental Theorem of Calculus. (CMAR)

Textbook
Calculus – Early Transcendentals (With **WebAssign**), 8th edition, by James Stewart.
Students must purchase access to WebAssign, but a hard copy of the text is **optional**. Access to WebAssign includes access to an electronic version of the textbook.

Topic Calendar

No.	Sections Covered (Tentative)	Week
1	1.1 Four Ways to Represent a Function	Week 1
2	1.2 Mathematical Models: A Catalog of Essential Functions	Week 1
3	1.3 New Functions from Old Functions	Week 1
4	1.4 The Tangent and Velocity Problems	Week 1
5	1.5 The Limit of a Function	Week 1
6	1.6 Calculating Limits Using the Limit Laws	Week 1

7	1.7 The Precise Definition of a Limit	Week 1
8	1.8 Continuity	Week 1
9	2.1 Derivatives and Rates of Change	Week 1
10	2.2 The Derivative as a Function	Week 1
11	2.3 Differentiation Formulas	Week 2
12	2.4 Derivatives of Trigonometric Functions	Week 2
13	2.5 The Chain Rule	Week 2
14	2.6 Implicit Differentiation	Week 2
15	2.7 Rates of Change in the Natural and Social Sciences	Week 2
16	2.8 Related Rates	Week 2
17	2.9 Linear Approximations and Differentials	Week 2
18	3.1 Maximum and Minimum Values	Week 2
19	3.2 The Mean Value Theorem	Week 2
20	3.3 How Derivatives Affect the Shape of a Graph	Week 3
21	3.4 Limits at Infinity; Horizontal Asymptotes	Week 3
22	3.5 Summary of Curve Sketching	Week 3
23	3.6 Graphing with Calculus and Calculators	Week 3
24	3.7 Optimization Problems	Week 3
25	3.8 Newton's Method	Week 3
26	3.9 Antiderivatives	Week 3
27	4.1 Areas and Distances	Week 3
28	4.2 The Definite Integral	Week 3
29	4.3 The Fundamental Theorem of Calculus	Week 3
30	4.4 Indefinite Integrals and the Net Change Theorem	Week 4

31	4.5 The Substitution Rule	Week 4
32	6.1 Inverse Functions	Week 4
33	6.2 Exponential Functions and Their Derivatives	Week 4
34	6.3 Logarithmic Functions	Week 4
35	6.4 Derivatives of Logarithmic Functions	Week 4
36	6.5 Exponential Growth and Decay	Week 4
37	6.6 Inverse Trigonometric Functions	Week 4
38	6.7 Hyperbolic Functions	Week 4
39	6.8 Indeterminate Form and l'Hospital's Rule	Week 4

Course Outcomes

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

• Calculate limits, derivatives, and indefinite integrals of a single variable
• Apply the definition of the derivative to differentiate functions of a single variable
• Understand derivatives of power, hyperbolic, exponential, logarithmic, trigonometric and inverse trigonometric functions
• Utilize the chain rule to find derivatives of composite functions
• Find maxima and minima, critical points and inflection points of functions
• Be able to sketch graphs, find asymptotes, and find tangents
• Understand the Fundamental Theorem of Calculus and the techniques of integration

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. 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 Exam

You will take 1 midterm exam during the winter 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 cannot 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

Academic Achievement Center
[THE ACADEMIC ACHIEVEMENT C   ENTER (AAC)](#) provides students with academic services and resources that propel them toward successful and timely degree completion.   With all services available online for the fall, the AAC is the largest hub of student academic services on campus. The AAC is comprised of four major support areas: [Academic Advising](#) (first-semester freshmen), [Disability Resources and Student Accessibility Services](#), [Learning Assistance](#) (Academic Coaching and Tutoring), and [Testing Services](#).

[Learning Assistance (LA)](#) consists of both [Academic Coaching](#) and Tutoring. Tutoring areas include: [Math Services](#), [the Accounting & Finance Lab](#), [Writing Studio](#), [Tutoring Central](#) (100/200 introductory and Core Curriculum courses), and [Second Language Services](#). All LA services for the fall 2020 semester are being offered online. To use the virtual drop-in tutoring or to make an appointment for Tutoring or Academic Coaching, please sign into our platform, [Accudemia](#), using your BSU credentials, or bookmark the link: https://bridgew.accudemia.net.

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 online.

* This syllabus may be amended during the semester.