



Math and Sciences | Fall 2023

Chair: Derek Vander Molen, 701-774-4237

## MATH 165-9870 & 13931: CALCULUS I

### COURSE SYLLABUS

#### COURSE INFORMATION

MATH 165: Calculus, 4 credits, 2:00p MTWR

Course Description: *Prerequisite: MATH 105 or MATH 107, placement, or department approval.* Limits, continuity, differentiation, Mean Value Theorem, integration, Fundamental Theorem of Calculus, and applications. This course should be taken with MATH 107 unless the student has completed MATH 107. *Offered: Fall & Spring.*

#### INSTRUCTOR

Amanda K.F. Davis, Stevens Hall 212C, 701-774-4504, [Amanda.k.davis@willistonstate.edu](mailto:Amanda.k.davis@willistonstate.edu)  
Cell: **850-902-1427**

Office Hours: M 12p-1p   T 12:30p-1p   W 12p-1p   R 12:30p-1p   F 12p-3p

#### TEXTBOOK & MATERIALS

- [University of North Dakota FREE ONLINE Textbook](#) (**FALL 2023 TEXTS**)
- Graphing Calculator (recommended TI-83, TI-84 PLUS, etc.)
  - \*NOTE\*: These are available for checkout in the Learning Commons
- Notebook for calculus only; write with PENCIL ONLY. Erasable ink is okay.

## STUDENT LEARNING OUTCOMES

### INSTITUTIONAL OUTCOMES

- I. Institutional Outcome: #2. Students will use reasoning skills to analyze and solve problems.

### PROGRAM OUTCOMES

- I. Institutional Outcome: #2. Students will use reasoning skills to analyze and solve problems.

### COURSE OUTCOMES

1. Use correct mathematical terminology and notation.
2. Analyze real world applications and recognize methods to model them.
3. Apply appropriate calculus methods to solve functions and applications.
4. See the following webpage for further discussion: [Student Learning Outcomes](#)

### ASSESSMENT TASKS (FOR COURSE OUTCOMES)

The general education outcomes and course objectives will be assessed by using: 5 Bookworks, 5 Test Reviews, 5 Tests, an ePortfolio Project, and a Final.

- Participate in classroom activities demonstrating knowledge of key calculus concepts.
- Practice key calculus concepts and techniques by completing assigned bookwork problems.
- Complete objective tests demonstrating mastery of concepts and process skills.
- Summarize understanding by completing essay questions about mastery of concepts.
- Bookwork will be assigned over every section covered in lecture and **MUST BE ATTEMPTED PRIOR TO THE NEXT CLASS MEETING**. The students may ask for clarification of any bookwork problems, or test review problems during MATH LAB HOURS, by text message or by appointment.
- We will have 5 BOOKWORKS, 5 TEST REVIEWS, 5 TESTS, an ePORTFOLIO PROJECT and a FINAL. Test problems will be similar to those assigned for bookwork/review, and therefore, it will be difficult to achieve a passing grade without completing the bookwork and reviews.
- \*\*In grading, I am as interested in your work as in your answers, so show as much work as reasonable, and do not just give the answers.\*\*

## PROCESS SKILLS

- Evaluate limits graphically, numerically, and analytically
- Discuss continuity of a function on given intervals
- Compute the equation of the tangent line to a function
- Use the first and second derivative tests to sketch function curves
- Evaluate limits at infinity
- Use calculus to solve optimization problems
- Use integration to find the area under a given curve
- Apply specialized integration and differentiation rules to natural logarithmic functions, trigonometric, and hyperbolic functions
- Construct and solve differential equations to solve real-life situations
- Newton's Method

## CONCEPTS & ISSUES

- Limits
- Continuity
- Derivatives
- Implicit and explicit differentiation
- Extrema
- Rolle's Theorem
- Mean Value Theorem
- First derivative test (increasing/decreasing functions)
- Second derivative test (concavity)
- Curve sketching
- Optimization problems
- Antiderivatives
- Area under a curve
- Riemann Sums
- The Fundamental Theorem of Calculus
- Integration
- Area Between Two Curves
- Washer/Disk Method
- Shell Method
- Work
- Fluid Forces

## ASSESSMENT PORTFOLIO

Each degree seeking student is required to maintain an assessment portfolio on Blackboard for his/her time at Williston State College. For this class you should include evidence of completing learning outcomes (ePortfolio Project for 80 points) of what you learned in this class.

## GRADING POLICY

<b>Assignments</b>	<b>Points</b>	<b>Grade Scale</b>
5 Bookworks (20 points each)	100	
5 Reviews (20 points each)	100	895+ A
5 Tests (100 points each)	500	795-894 B
Class Participation	20	695-794 C
ePortfolio (project)	80	595-694 D
Final Exam	200	0-594 F
<b>Total Points Available</b>	<b>1000</b>	

## ACCESSIBILITY STATEMENT

Williston State College is committed to providing equal access to students. If you have a disability which may impact your performance, attendance, or grades in this course that requires accommodations, you must first register with Accessibility Support Services. Please note that classroom accommodations cannot be provided until your instructors receive an Accommodations Form, signed by you and the Accessibility Support Services Coordinator.

## IMPORTANT DATES

- Last day to drop: August 30, 2023
- Last day to withdraw: November 9, 2023
- For important dates concerning holidays, last date to withdraw from class, etc., please visit the WSC catalog available on the website: [www.willistonstate.edu](http://www.willistonstate.edu)

## ACADEMIC RESOURCES

Take advantage of academic resources available to you at Williston State College:

- Communication Lab: Supplemental instruction is provided to assist students who are either having difficulty or desiring extra help with specific subjects. The Communication Lab assists with composition, writing, communication, and public speaking. The Communication Lab is located in Stevens Hall 120. Students should make appointments at [wsc.writinglab@willistonstate.edu](mailto:wsc.writinglab@willistonstate.edu). You can also call the Comm. Lab 701-774-4511.
- Math Lab: Supplemental instruction is provided to assist students who are either having difficulty or desiring extra help with specific subjects. The Math Lab assists with all math needs. The Math Lab is located in Stevens Hall Science Lounge.
- Learning Commons: It's not just the Library anymore. In addition to the normal library functions (book checkout, research assistance, etc.), the Learning Commons serves a number of other functions. Get help with Blackboard and other Distance Ed questions. The "technology counter" provides an opportunity to play with some of the latest technology. Computers and printers available. If you have questions, call (701-774-4226). To contact the Office of Extended Learning please email [wsc.extendedlearning@willistonstate.edu](mailto:wsc.extendedlearning@willistonstate.edu).
- NetTutor: Web based service that provides on demand tutoring across a wide variety of subject areas. With NetTutor you can access live tutors, ask a question, and come back later for a response and/or submit written work for review. This program can be accessed through the NetTutor link in any WSC Blackboard course. If you have questions or need assistance, please contact Extended Learning at [wsc.extendedlearning@willistonstate.edu](mailto:wsc.extendedlearning@willistonstate.edu).

## **STUDENT ACADEMIC INTEGRITY**

Work submitted for this course must follow Student Academic Integrity as cited in the WSC Student Code of Conduct, p. 14:

Acts of cheating and plagiarism are prohibited. Cases of academic dishonesty may be treated as an academic matter or as a disciplinary matter at the discretion of the instructor.

Cheating is defined as fraud, deceit, or dishonesty in an academic assignment. It includes using or attempting to use materials or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

Plagiarism is presenting someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgement. All published and unpublished material, whether in manuscript, printed or electronic form, is covered under this definition.

Self-plagiarism is the use of one's own previous work in another context without citing that it was used previously.

The instructor may reflect the incident of academic dishonesty through the assignment of the student's grade in the course. If the student has a grievance related to this action, that grievance would be directed to the Chair of the department in which the course is housed.

Alternatively, the instructor may refer the case as a disciplinary matter to the Vice President for Academic Affairs. The Vice President for Academic Affairs may refer the case to the Student Review Committee for action.

Breach of academic integrity may result in failure of the assignment, exam, and/or class.

### **STUDENT RESPONSIBILITIES:**

- You are expected to read the relevant materials and participate in class discussions in a timely manner.
- You are expected to respect your fellow students and the Instructor in online and on campus discussions.
- It is your responsibility to ask questions when you are uncertain about assignments or course materials.
- If you have questions concerning grades, you should contact the Instructor immediately. You are responsible for checking Blackboard in a timely fashion to ensure that the grade recorded is your correct grade.
- It is your responsibility to contact the Instructor as soon as possible if you are encountering any issues that would hinder your performance in this class.
- You are responsible for earning your grade (with the Instructor making every effort to help you learn the material).
- If you are concerned about your grade, you should speak to the Instructor **NO LATER** than mid-term. No consideration will be given to request to adjust your grade at the end of the semester unless there is an error in calculations.

## GRIEVANCE POLICY

Occasionally, students are dissatisfied with some dimension of the course. In such cases, students should first schedule a meeting with the instructor. If the student and instructor cannot reach a satisfactory resolution, the student should schedule a meeting with the Chair of the Department. (See page 10 of the Student Code of Conduct.)

## TITLE IX

Survivors of sexual assault, domestic violence, and sexual harassment: please be aware that as an instructor, I am legally obligated to report all instances of sexual assault, domestic violence, and sexual harassment involving students. If you would like to speak to someone confidentially, please contact the WSC Counselor at (701)774-4212 (they are NOT mandated to report such instances).

## FINAL EXAMS/ACTIVITIES

Students are required to take the final examination or engage in the final activity on the date and at the time presented as part of the course syllabus. Exceptions may be made only in emergency situations and in the case of scheduling conflicts with college sponsored events by promptly submitting a written request detailing the circumstances to the instructor of the course. Your meeting time for your final is:

December 11, 2023, 2pm – 4pm

## SCOPE AND SEQUENCE OF THE COURSE (SUBJECT TO CHANGE)

Day/Week	Course Calendar/Instruction
Week 1	SYLLABUS & TWO MAJOR AREAS OF STUDY IN CALCULUS
	REVIEW OF ALGEBRA
	1.1 # 1-5,6,9,12,15,18,19,20,21
Week 2	1.2 # 1-5,6,8,10*squeeze theorem,11 work
	1.3 # 1-8,12,14,15,18,20-24,27,28,32,33,37,38,40*special
	1.4 # 1-7,10,11,13,15,16,21-24
Week 3	1.5 # 1-13,19,22,23,33
	1.6 # 1-10,13,15,17,21,25,27
	REVIEW
Week 4	<b>TEST 1 (1.1-1.6)</b> <b>GRADE (T1):_____</b>
	2.1 # 1-12,15,17,19,24,26-30

Day/Week	Course Calendar/Instruction
Week 5	2.2 # 1-4,7,11,12,15-18
	2.3 # 1-22,26-28,33-35
	2.4 #1-7,10-12,15-18,21,22,25,28,31,32
Week 6	2.5 # 1-10,13,15-17,27,29
	2.6 # 1-8,13-16,20,22,26,27,30
	REVIEW
Week 7	3.1 #1-6,8-11,15,17,18,22-24
	<b>TEST 2 (2.1-2.6)</b> <b>GRADE (T2):</b> _____
	3.2 #1,2,4,5,7,10,11,13,15,17
	3.3 #1-7,9,11,12,13,15,17,19,21,22
Week 8	3.4 #1-7,9,11,12,13,15,17,19,21,23,27
	3.5 #1-7,10,13,15,17,19,21,25
	REVIEW
Week 9	<b>TEST 3 (3.1-3.5)</b> <b>GRADE (T3):</b> _____
	4.1 # 1-16 <b>**You do not need to write all the problems out.**</b>
	4.2 #1-4,7,9,11,13,15
	4.3 # 1-10,15
Week 10	4.4 # 1-10,17,19,21,23
	REVIEW
Week 11	<b>TEST 4 (4.1-14.4)</b> <b>GRADE (T4):</b> _____
	5.1 # 1-8,11,13,16,17,19,22,23,27,28,30,33,35,37
	5.2 # 1-5,7,9,11,13,15,18,19,23,26
Week 12	5.3 # 1-7,10,13,14,15,16,17,21,22,27,29,31-35
	5.4 # 1-9,13,15,17,19,23,28,35,37,41,43,45,49
	5.5 # 1-8,11,13,14,17,21

Day/Week	Course Calendar/Instruction
Week 13	REVIEW
	6.1 # 1-10,11-29ODDS
	<b>TEST 5 (5.1-5.5)</b> <span style="float: right;"><b>GRADE (T5):</b> _____</span>
Week 14	6.2 # 1-14,16,19
	6.3 # 1-14,16,19
Week 15	6.4 # 1-14,16,21-23
	6.5 # 1-7,11,13,14,19
	ePortfolio Project
Week 16	REVIEW
	<b>December 11, 2023, 2PM – 4PM</b>