



North Central State College
MASTER SYLLABUS
2019-2020

- A. Academic Division: Liberal Arts
- B. Discipline: Mathematics
- C. Course Number and Title: MATH1150 Calculus I
- D. Course Coordinator: Sara Rollo
Assistant Dean: Dr. Steve Haynes

Instructor Information:

- Name: [Click here to enter text.](#)
- Office Location: [Click here to enter text.](#)
- Office Hours: [Click here to enter text.](#)
- Phone Number: [Click here to enter text.](#)
- E-Mail Address [Click here to enter text.](#)

- E. Credit Hours: 5
- F. Prerequisites: MATH 1130 (Minimum grade of C- required) or qualifying placement test score
- G. Syllabus Effective Date: Fall, 2019
- H. Textbook(s) Title:

On Campus Classes:

Calculus (packaged w/Web Assign)

- Author: Ron Larson/Bruce Edwards
- Copyright Year: 2018
- Edition: 11TH
- ISBN # 9781337604741

Off Campus Classes (at High Schools):

Calculus (packaged w/Web Assign)

- Author: Ron Larson/Bruce Edwards
- Copyright Year: 2014
- Edition: 10TH
- ISBN # 9781305718661

- I. Workbook(s) and/or Lab Manual: Supplies: TI-83 or TI-84 required.
- J. Course Description: A study of analytic geometry, limits, continuity, the derivative, basic differentiation rules, rates of change, the product and quotient rules, higher-order derivatives, the chain rule, implicit differentiation, related rates, extrema on an interval, Rolle's Theorem and the Mean Value Theorem. Function analysis includes increasing and decreasing functions and the first derivative test, concavity and the second derivative test, limits at infinity and curve sketching. Concluding topics include anti-derivatives, indefinite and definite integrals, the Fundamental Theorem of Calculus, and integration by substitution. Applications include optimization problems, Newton's method, differentials, and areas of planar regions.

This course meets the requirements for OTM Calculus I TMM005. If combined with MATH1151, it will meet the requirements for OTM Calculus I & II sequence TMM017.

K. College Wide Learning Outcomes:

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	Quantitative Literacy VALUE Rubric, week 12, test 3

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Determine the existence of, estimate numerically and graphically and find algebraically, the limits of functions.	Homework, Tests, Final Exam Weeks 1,2, 4, and 16
2. Determine the continuity of functions at a point or on intervals.	Homework, Tests, Final Exam Weeks 2,4 and 16
3. Determine and interpret the derivative of a function using the limit definition and derivative theorems.	Homework, Tests, Final Exam Weeks 3,4,5,8 and 16
4. Use the derivative to solve related rates and optimization problems.	Homework, Tests, Final Exam Weeks 5,8,9,12 and 16
5. Assess a function's graph to determine which intervals are increasing, decreasing, concave up or concave down and to determine its extrema.	Homework, Tests, Final Exam Weeks 7,8,9,12 and 16
6. Determine when Rolle's Theorem and the Mean Value Theorem can be applied and use those theorems to solve problems.	Homework, Tests, Final Exam Weeks 6, 8, and 16
7. Use differentials and linear approximations to analyze applied problems.	Homework, Tests, Final Exam Weeks 10, 12 and 16
8. Determine antiderivatives and use definite integrals to find areas of planar regions.	Homework, Tests, Final Exam Weeks 11-16

M. Topical Timeline (Subject to Change):

Weeks 1-2	The limit of a function. The limit of a function by use of the properties of limits. The continuity of a function (including both removable and non-removable discontinuities) Infinite limits.
Weeks 3-5	The derivative of a function by the definition. The derivative of a function by the basic rules of differentiation. Using the derivative to find the equation of a tangent line. Use the derivative to calculate the instantaneous rate of change. Derivatives of a function by using the product and quotient rules. Higher-order derivatives. Derivatives by using the chain rule. Derivatives by implicit differentiation. Related rates by differentiation

Weeks 6-10	<p>The extrema on an interval. Rolle's Theorem and the Mean Value Theorem. Problems involving increasing and decreasing functions and the first derivative test. The concavity of a function. Maximums and minimums of a function using the second derivative test. The limit of a function at infinity. Curves using the maximum and minimum rules. Optimization problems. Problems using Newton's Method. Differentials.</p>
Weeks 10-16	<p>Anti-derivatives and Indefinite Integration. Area. Riemann sums and definite integrals. The Fundamental Theorem of Calculus.</p>

N. Course Assignments:

1. Chapter 1 [M. 1-4]
2. Test 1
3. Chapter 2 [M. 5-13]
4. Test 2 (VALUE rubric, critical thinking)
5. Chapter 3 [M. 14-23]
6. Test 3 (VALUE rubric, quantitative literacy)
7. Chapter 4 [M. 24-27]
8. Comprehensive Final Exam

O. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93-100	A	4.00	Superior
90-92	A-	3.67	Superior
87-89	B+	3.33	Above Average
83-86	B	3.00	Above Average
80-82	B-	2.67	Above Average
77-79	C+	2.33	Average
73-76	C	2.00	Average
70-72	C-	1.67	Below Average
67-69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

P. Grading and Testing Guidelines: Hmwk/Quiz 15%, EWA 10%, Tests 50%, Final 25%

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Q. Examination Policy:

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R. Class Attendance and Homework Make-Up Policy:

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S. Classroom Expectations:

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T. College Procedures/Policies:

Important information regarding College Procedures and Policies can be found on the [syllabus supplement](#) located at <https://sharept.ncstatecollege.edu/committees/1/curriculum/SiteAssets/SitePages/Home/SYLLABUS%20SUPPLEMENT.pdf>

The information can also be found