

Washtenaw Community College Comprehensive Report

MTH 191 Calculus I Effective Term: Spring/Summer 2024

Course Cover

College: Math, Science and Engineering Tech

Division: Math, Science and Engineering Tech

Department: Math & Engineering Studies

Discipline: Mathematics

Course Number: 191

Org Number: 12200

Full Course Title: Calculus I

Transcript Title: Calculus I

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission:

Change Information:

Consultation with all departments affected by this course is required.

Rationale: This is the regular syllabus review

Proposed Start Semester: Fall 2023

Course Description: In this course, students will learn topics including limits, L'Hôpital's Rule, continuity, trigonometric functions, transcendental functions, derivatives, antiderivatives, applications of derivatives, including optimization, linearization, maximum and minimum applications, business, economics, sports, engineering, physics applications, Newton's method, and applications of integration. A graphing calculator is required for this course. See the time schedule for the current brand and model. This is a first-semester single variable college calculus course.

Course Credit Hours

Variable hours: No

Credits: 5

Lecture Hours: Instructor: 75 Student: 75

Lab: Instructor: 0 Student: 0

Clinical: Instructor: 0 Student: 0

Total Contact Hours: Instructor: 75 Student: 75

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 7

Requisites

Prerequisite

Math Level 7

or

Prerequisite

MTH 180 minimum grade "C"

General Education

Degree Attributes

Assoc in Applied Sci - Area 3

Assoc in Science - Area 3

Assoc in Arts - Area 3

MACRAO Science & Math

Michigan Transfer Agreement - MTA

MTA Mathematics

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Solve and compute limit problems.

Assessment 1

Assessment Tool: Outcome-related common departmental exam questions

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of the students will score 75% or higher.

Who will score and analyze the data: Departmental faculty

2. Solve differentiation problems and related application problems.

Assessment 1

Assessment Tool: Outcome-related common departmental exam questions

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of the students will score 75% or higher.

Who will score and analyze the data: Departmental faculty

3. Solve integration problems.

Assessment 1

Assessment Tool: Outcome-related common departmental exam questions

Assessment Date: Winter 2026

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of the students will score 75% or higher.

Who will score and analyze the data: Departmental faculty

Course Objectives

1. Compute limits through the use of the limit computation theorems.
2. Determine the continuity of a function.
3. Compute derivatives as limits, and through the use of the derivative computation theorems.
Differentiate trigonometric and transcendental functions. Perform implicit differentiation, and inverse functions differentiation.
4. Apply differentiation techniques to solve optimization problems.
5. Apply derivatives to solve related rates modeling applications.
6. Solve real life applications of differentiation.
7. Compute Riemann sums.
8. Compute definite and indefinite integrals using the integration computation theorems.
9. Learn Curve sketching techniques, with focus on Maxima/Minima, Variations, Points of Inflection, and Concavity.
10. Apply the Fundamental Theorem of Calculus and the Second Fundamental Theorem of Calculus.
11. Differentiate and integrate logarithmic and exponential functions.
12. Differentiate and integrate inverse trigonometric and hyperbolic functions.
13. Solve simple growth and decay differential equations using the method of integration.

New Resources for Course

Course Textbooks/Resources

Textbooks

Larson, R and Edwards, B. *Calculus of A Single Variable*, Seventh ed. Brooks/Cole, 2015

Manuals

Periodicals

Software

Equipment/Facilities

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Mohammed Abella</i>	<i>Faculty Preparer</i>	<i>May 21, 2023</i>
Department Chair/Area Director: <i>Nichole Klemmer</i>	<i>Recommend Approval</i>	<i>Jun 07, 2023</i>
Dean: <i>Tracy Schwab</i>	<i>Recommend Approval</i>	<i>Jun 08, 2023</i>
Curriculum Committee Chair: <i>Randy Van Wagnen</i>	<i>Recommend Approval</i>	<i>Oct 20, 2023</i>
Assessment Committee Chair: <i>Jessica Hale</i>	<i>Recommend Approval</i>	<i>Oct 23, 2023</i>
Vice President for Instruction: <i>Brandon Tucker</i>	<i>Approve</i>	<i>Oct 27, 2023</i>

Washtenaw Community College Comprehensive Report

MTH 191 Calculus I Effective Term: Winter 2020

Course Cover

College: Math, Science and Engineering Tech

Division: Math, Science and Engineering Tech

Department: Math & Engineering Studies

Discipline: Mathematics

Course Number: 191

Org Number: 12200

Full Course Title: Calculus I

Transcript Title: Calculus I

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: Three Year Review / Assessment Report

Change Information:

Consultation with all departments affected by this course is required.

Course description

Objectives/Evaluation

Other:

Rationale: This is the three-year review. The topic of L'Hopital's rule was added.

Proposed Start Semester: Fall 2019

Course Description: This is a first-semester single variable college calculus course. Students learn topics including limits, L'Hôpital's Rule, continuity, transcendental functions, derivatives, antiderivatives, applications of derivatives, including optimization, maximum and minimum problems, business, economics, sports, engineering, physics, Newton's method, and applications of integration. A graphing calculator is required for this course. See the time schedule for the current brand and model.

Course Credit Hours

Variable hours: No

Credits: 5

Lecture Hours: Instructor: 75 Student: 75

Lab: Instructor: 0 Student: 0

Clinical: Instructor: 0 Student: 0

Total Contact Hours: Instructor: 75 Student: 75

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 7

Requisites

General Education

Degree Attributes

Assoc in Applied Sci - Area 3

Assoc in Science - Area 3

Assoc in Arts - Area 3

MACRAO Science & Math

Michigan Transfer Agreement - MTA

MTA Mathematics

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Solve and compute limit problems.

Assessment 1

Assessment Tool: Common departmental exam questions

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

Number students to be assessed: All

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 75% of the students will score 75% or higher

Who will score and analyze the data: Departmental faculty

2. Solve differentiation problems and related application problems.

Assessment 1

Assessment Tool: Common departmental exam questions

Assessment Date: Winter 2020

Assessment Cycle: Every Three Years

Course section(s)/other population: All

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Assessment Tool: Common departmental exam questions

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1. Compute limits through the use of the limit computation theorems.
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New Resources for Course

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Manuals

Periodicals

Software

Equipment/Facilities

<u>Reviewer</u>	<u>Action</u>	<u>Date</u>
Faculty Preparer: <i>Mohammed Abella</i>	<i>Faculty Preparer</i>	<i>May 17, 2019</i>
Department Chair/Area Director: <i>Lisa Manoukian</i>	<i>Recommend Approval</i>	<i>Jun 09, 2019</i>
Dean: <i>Kimberly Jones</i>	<i>Recommend Approval</i>	<i>Jul 02, 2019</i>
Curriculum Committee Chair: <i>Lisa Veasey</i>	<i>Recommend Approval</i>	<i>Aug 23, 2019</i>
Assessment Committee Chair: <i>Shawn Deron</i>	<i>Recommend Approval</i>	<i>Sep 10, 2019</i>
Vice President for Instruction: <i>Kimberly Hurns</i>	<i>Approve</i>	<i>Sep 11, 2019</i>