Washtenaw Community College Comprehensive Report

MTH 192 Calculus II
Effective Term: Spring/Summer 2020

Course Cover

Division: Math, Science and Engineering Tech
Department: Math & Engineering Studies
Discipline: Mathematics
Course Number: 192
Org Number: 12200
Full Course Title: Calculus II
Transcript Title: Calculus II
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
Rationale: Assessment report completed.
Proposed Start Semester: Winter 2020
Course Description: This is the standard second semester single variable calculus course. Students explore topics including applications of integration, integration techniques, L'Hôpital's Rule, numerical integration, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates. A graphing calculator is required. See the time schedule for current brand and model.

Course Credit Hours

Variable hours: No
Credits: 4
Lecture Hours: Instructor: 60 **Student:** 60
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 60 **Student:** 60
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
MTH 191 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:
Central Michigan University
College for Creative Studies
Eastern Michigan University
Ferris State University
Grand Valley State University
Jackson Community College
Kendall School of Design (Ferris)
Lawrence Tech
Michigan State University
Oakland University
University of Detroit - Mercy
University of Michigan
Wayne State University
Western Michigan University

Student Learning Outcomes

1. Solve a variety of applied integration problems.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2022
   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: 70% of students who take the final assessment will score at least 70% on the common exam questions
   Who will score and analyze the data: A subcommittee of the Math 192 instructors

2. Evaluate limits of functions and sequences.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2022
   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: 70% of students who take the final assessment will score at least 70% on the common exam questions
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3. Determine the convergence or divergence of an infinite series using an appropriate test for convergence.
   Assessment 1

Assessment Tool: Common departmental exam
Assessment Date: Winter 2022
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: 70% of students who take the final assessment will score at least 70% on the common exam questions
Who will score and analyze the data: A subcommittee of the Math 192 instructors

4. Derive the Taylor Series for a given function, including the interval of convergence.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2022
   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: 70% of students who take the final assessment will score at least 70% on the common exam questions
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5. Solve a variety of differentiation and integration problems in parametric and polar form.
   Assessment 1
   Assessment Tool: Common departmental exam
   Assessment Date: Winter 2022
   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
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Course Objectives

1. Calculate the volume of a solid of revolution using the washer and shell methods.
2. Calculate arc lengths and surface areas in rectangular coordinates.
3. Evaluate integrals using integration by parts.
4. Evaluate integrals using trigonometric identities and u-substitutions like u=sinx, du=cosx dx.
5. Evaluate integrals using trigonometric substitution involving right triangles.
6. Evaluate integrals using partial fractions.
7. Evaluate limits of indeterminate forms using L'Hôpital's rule.
8. Identify and evaluate improper integrals.
9. Determine the convergence or divergence of geometric and p-series.
10. Determine the convergence or divergence of series using the integral, limit comparison and direct comparison tests.
11. Determine the convergence or divergence of alternating series.
12. Determine the convergence or divergence of series using the ratio and root tests.
13. Graph parametric and polar equations.
14. Calculate the equation of the tangent line, and the concavity of a plane curve at a given point.
15. Calculate the area bounded by the graph of a polar equation.
16. Calculate arc lengths and surface areas in parametric form.
17. Calculate arc lengths and surface areas in polar coordinates.

New Resources for Course

Course Textbooks/Resources

Textbooks

Larson & Edwards. *Calculus Early Transcendental Functions*, 7th ed. Brooks/Cole, 2019

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Testing Center

Computer workstations/lab

Data projector/computer

Reviewer	Action	Date
Faculty Preparer:		
Clifford Taylor	*Faculty Preparer*	*Aug 01, 2019*
Department Chair/Area Director:		
Lisa Manoukian	*Recommend Approval*	*Aug 12, 2019*
Dean:		
Victor Vega	*Recommend Approval*	*Sep 17, 2019*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Oct 10, 2019*
Assessment Committee Chair:		
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Oct 14, 2019*

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Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Three Year Review / Assessment Report
Change Information:
Course description
Outcomes/Assessment
Objectives/Evaluation
Rationale: Update student learning outcomes and course objectives.
Proposed Start Semester: Winter 2019
Course Description: This is the standard second semester single variable calculus course. Topics include applications of integration, integration techniques, L'Hôpital's Rule, improper integrals, infinite series, Taylor series, parametric equations and polar coordinates. A graphing calculator is required. See the time schedule for current brand and model.

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Reviewer	Action	Date
Faculty Preparer:		
Lawrence David	*Faculty Preparer*	*Aug 22, 2018*
Department Chair/Area Director:		
Default Washtenaw	*Default*	*Oct 05, 2018*
Dean:		
Kristin Good	*Recommend Approval*	*Oct 05, 2018*
Curriculum Committee Chair:		
Lisa Veasey	*Recommend Approval*	*Oct 29, 2018*
Assessment Committee Chair:		
Shawn Deron	*Recommend Approval*	*Oct 30, 2018*
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Nov 02, 2018*