

Course number, title and credits; total time allocation

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|----------------------|----------------|--------------|----------|--------------|-------------------|
| Course Letter/Number | MAT 151 | Credits | 4 | Title | Calculus I |
| Lecture/Discussion | 4 | hrs/semester | Lab | hrs/semester | Clinical |
| | | | | er | hrs/semester |

Catalog Description and Pre- and Co-requisites (Same as taxonomy and catalog)

First calculus course for business, mathematics, engineering and science students explores introductory plane analytic geometry, the derivative, the integral and their applications for algebraic, trigonometric, exponential and logarithmic functions. The mathematics department recommends that the prerequisite not be more than two years old. If the prerequisite is more than two years old, then the recommendation is that the course placement exam should be taken or the prerequisite be retaken to ensure the success of the student.

Prerequisite: MAT 141, with 2.0 minimum, within 2 years

Knowledge, Skills and Abilities Students Acquire from this Course (Educational Objectives)

1. *Demonstrate understanding of the fundamental concepts of calculus (the limit, derivative and integral) from a graphical, numerical and symbolic perspective.*
2. *Find and simplify derivatives of algebraic, exponential, logarithmic and trigonometric functions using appropriate techniques of integration.*
3. *Find integrals using the anti-derivative and u-substitution techniques.*
4. *Analyze and solve problems requiring application of the derivative and integral including optimization, related rates and area under a curve.*
5. *Use analytic geometry to understand the relationship between limits, derivatives and the graphs of functions.*
6. *Demonstrate knowledge of current technology as related to topics in the course..*

Associate Degree Outcomes Addressed in this Course (These must appear in course syllabus.)

- ADO 3: Demonstrate computational skills and mathematical reasoning
- ADO 7: Critical Thinking and Problem Solving

Units/topics of Instruction

See course description and educational objectives.

Instructional Techniques and Procedures

Although techniques vary from instructor to instructor, this course usually consists of mostly lecture and group work.

Instructional Use of Computer or Other Technology

A graphing calculator is used extensively in this course. The instructor may choose to incorporate the use of an online homework system.

Instructional Materials and Costs to Students

The instructional material for this course consists of the textbook and a graphing calculator.

Skills and abilities students should bring to the course

| | | | |
|------------------------|---|---------------------------|--|
| Able to read | <input checked="" type="checkbox"/> a limited amount of material <input checked="" type="checkbox"/> an average amount of material <input type="checkbox"/> an above average amount of material | Able to compute | <input type="checkbox"/> basic, pre-algebraic problems <input type="checkbox"/> simple algebraic problems <input checked="" type="checkbox"/> higher order mathematical problems |
| Able to read | <input type="checkbox"/> relatively easy material <input type="checkbox"/> moderately difficult material <input checked="" type="checkbox"/> technical or sophisticated material | Able to write | <input checked="" type="checkbox"/> short compositions <input type="checkbox"/> medium length compositions <input type="checkbox"/> lengthy compositions |
| Able to use technology | <input checked="" type="checkbox"/> keyboard skills/familiar with computer <input checked="" type="checkbox"/> computer application <input checked="" type="checkbox"/> web navigation | Other necessary abilities | <input type="checkbox"/> <input type="checkbox"/> |

The course is usually scheduled

Day: ☒ Fall ☒ Winter ☒ Spring

Evening: ☒ Fall ☐ Winter ☐ Spring

Prepared by _____

Date _____

Approved by Dept. _____

Date _____

Approved by Dean _____

Date _____

Approved by Curr. Comm. _____

Date _____

(Last names, please)

Form Revised 12/4/00