

**Course number, title and credits; total time allocation**

Course Letter/Number	<b>MAT 254</b>	Credits	<b>4</b>	Title	<b>Differential Equations</b>		
Lecture/Discussion	<b>4</b>	hrs/semester	Lab	hrs/semester	Clinical	hrs/semester	

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

Explore solutions of first order differential equations, linear differential equations with constant coefficients, variation of parameters, series solutions, Laplace transforms, eigenvectors and eigenvalues and application to solution of systems of linear first order equations. Graphing calculator required. The mathematics department recommends that the prerequisite not be more than two years old, then the recommendation is that the course placement exam be taken of the prerequisite be retaken to ensure the success of the student .Prerequisite: MAT 154

*Prerequisite: MAT 154 with 2.0 minimum, within 2 years*

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

1. Solve first- order differential equations that are separable, homogeneous, exact or linear.
2. Solve second-order differential equations with constant coefficient.
3. Find a series solution to a differential equation.
4. Use numerical methods to solve a differential equation.
5. Solve systems of differential equations.
6. Use appropriate technology, including a graphing calculator and computer algebra system.
7. Solve applications problems including harmonic motion, damped motion, electrical circuits, growth and decay.

**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

**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 and a computer algebra system (CAS )is used extensively in this course*

**Instructional Materials and Costs to Students**

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

**Skills and abilities students should bring to the course**

Able to read	<input 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"/> <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