JCC OFFICIAL COURSE OUTLINE

Document 5

Course number, title and credits; total time allocation

Course Letter/Number	**MAT 254**	Credits	**4**	Title	**Differential Equations**

Lecture/Discussion	4	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	___ a limited amount of material x an average amount of material ___ an above average amount of material	Able to compute	___ basic, pre-algebraic problems ___ simple algebraic problems x higher order mathematical problems
Able to read	___ relatively easy material ___ moderately difficult material x technical or sophisticated material	Able to write	x short compositions ___ medium length compositions ___ lengthy compositions
Able to use technology	x keyboard skills/familiar with computer x computer application x web navigation	Other necessary abilities	___ ___ ___

The course is usually scheduled

Day:	[ ] Fall	[x] 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