FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	MAP 2302
COURSE TITLE:	Differential Equations
PREREQUISITE(S):	MAC 2312 with a grade of "C" or better
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	3
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	25

CATALOG COURSE DESCRIPTION:

This course consists of a study of the methods of solving ordinary differential equations. The major topics include an introduction to differential equations, first-order differential equations, higher-order differential equations, systems of linear differential equations, the Laplace transform, and applications.

SUGGESTED TEXT(S):

Rainville and Bedient, Elementary Differential Equations, 7th. ed., Prentice-Hall, ISBN 0-02-397860-0

Williamson, Introduction to Differential Equations, 2nd ed., McGraw-Hill, ISBN 0-07-232573-9

Zill, A First Course in Differential Equations with Modeling Applications, 7th edition, Brooks/Cole, ISBN 0-534-37999-0

Ross, Introduction to Ordinary Differential Equations, 4th edition, John Wiley and Sons, ISBN 0-471-09881-7

IMPLEMENTATION DATE: November 16, 1987

REVIEW OR MODIFICATION DATE: Winter Term, 1994 (942)
Fall Term, 2002 (20031)
Spring Term, 2005 (20052)
Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS	CONTACT HOURS PER TOPIC
I. Introduction to Differential Equations	2
A. Definitions and Examples	
B. Families of Curves	
C. Slopes Fields	
D. Initial and Boundary Value Problems	
II. First-Order Differential Equations	7
A. Separable Equations	
B. Homogeneous Equations	
C. Exact Equations	
D. Linear Equations	
E. Bernoulli Equations	
F. Numerical Techniques	
III. Higher Order Linear Differential Equations	11
A. Basic Theory	
B. Homogeneous with Constant Coefficients	
C. Undetermined Coefficients	
D. Variation of Parameters	
E. Differential Operators and Inverse Differential Operators	
F. Series Solution	
IV. Systems of Linear Differential Equations	8
A. Differential Operator Method	
B. Homogeneous Linear Systems with Constant Coefficients	
C. Solving Linear Systems Using Matrices	
V. The Laplace Transform	11
A. Definition and Basic Properties	
B. Transform of Elementary Functions	
C. Inverse Transforms & Convolution	
D. Solution of Linear Differential Equations With Constant Coefficients	
E. Solution of Linear Systems (optional)	
VI. Applications	6
A. Elementary Applications	
B. Initial Value Problems	
C. Initial Boundary Problems	

Florida State College
At Jacksonville

General Education Requirements
Categories & Courses Review Checksheet

Course Prefix and Number: MAP 2302	Semester Credit Hours: 3
Course Title: Differential Equations	

Discipline Area for the Course: Differential Equations

□ **Communication**	X **Mathematics**	□ **Social & Behavioral Sciences**
□ **Humanities & Visual/Performing Arts**	□ **Natural Sciences**	□ **Other-Designated Option**

INTELLECTUAL COMPETENCIES:

X **Reading**	□ **Speaking**	X **Critical Analysis**	X **Quantitative Skills**	□ **Scientific Method of Inquiry**
□ **Writing**	X **Listening**	□ **Information Literacy**	□ **Ethical Judgment**	□ **Working Collaboratively**

KNOWLEDGE	Primary	Secondary	N/A	VALUE	Primary	Secondary	N/A
A. Global and Historical Knowledge & Understanding				Intellectual honesty	X		
• Comprehends a general knowledge of the nature, origins and contributions of major civilizations				Curiosity and openness to new ideas	X		
• Comprehends the workings and interrelations of personal, business and government economies				Recognition of one's own creative potential			
• Comprehends political, social and economic systems and their effects upon society				Acceptance of and respect for differences among people and cultures		X	
B. Cultural and Aesthetic Knowledge and Understanding							
• Comprehends the contributions of the arts and humanities to the human experience on a personal, national or global level				Civic Engagement			
• Comprehends the historical development of the arts and sciences				Lifelong Learning		X	
• Comprehends religious and cultural systems and their effects upon society							
C. Human Awareness and Understanding							
• Comprehends the dynamics of human behavior and the process of increasing self-awareness, growth and development							
• Comprehends the stages of human development and the dynamics of human relationships in diverse cultures							
• Comprehends the factors that promote physical, mental and social well-being							
D. Mathematics, Science and Technology							
• Comprehends the basic concepts and investigative processes of the natural sciences		X					
• Comprehends the breadth, significance and development of the mathematical sciences	X						
• Comprehends the ways science and technology have shaped and continue to reshape human cultures and the environment		X					

Name of Person Completing This Form: J. Batson

Signature: _____ Date: 02/06/2004

Florida State College
At Jacksonville

General Education Review Checksheet
and Learning Outcomes

Course Prefix and Number: **MAP2302**	Semester Credit Hours: **3**
Course Title: **Differential Equations**	

Discipline Area for the Course:

☐ **Communication**	☒ **Mathematics**	☐ **Social & Behavioral Sciences**
☐ **Humanities & Visual/Performing Arts**	☐ **Natural Sciences**	☐ **Other-Designated Option**

INTELLECTUAL COMPETENCIES:

☒ **Reading**	☐ **Speaking**	☒ **Critical Analysis**	☒ **Quantitative Skills**	☐ **Scientific Method of Inquiry**
☐ **Writing**	☒ **Listening**	☐ **Information Literacy**	☐ **Ethical Judgment**	☐ **Working Collaboratively**

	Learning Outcomes	**Method Of Assessment**
	The students will be able to:	
1.	Use Analytic, Numeric and Graphical procedures to solve Differential Equations.	Students are successful on class tests, class assignments, and projects
2.	Use Techniques of Differential Equations to Model and solve real world problems.	Students are successful in subsequent courses that utilize mathematical methods.
3.	Demonstrate an understanding of the application of mathematical principles to other disciplines.	Students are successful in their chosen field relating to Differential Equations.
		Students demonstrate competency in the proper use of technology in solving Differential Equations.

Name of Person Completing This Form: Matthew Mitchell, Pierre Satkowiak

Signature: _____ Date: 02/06/2004