Course Syllabus

1. **Program of Study** Bachelor of Science (Applied Mathematics)
   College Mahidol University International College

2. **Course Code** ICMA 214
   Course Title Ordinary Differential Equations

3. **Number of Credits** 4(4-0-8) (Lecture-Lab-Self study)

4. **Prerequisites** ICMA 212 or consent of instructor

5. **Type of Course** Required Major Course

6. **Session / Academic Year** Trimester 3 every year.

7. **Course Conditions** Maximum number of students is 30 per class.

8. **Course Description**

   Introduction to ordinary differential equations, linear first order equations, nonlinear first order equations, applications of first order equations, second order linear equations, applications of second order linear equation, higher order linear equations.

9. **Course Objectives**

   After successful completion of this course, students will able to:

   9.1 understand fundamental concepts of ordinary differential equations.
   9.2 solve ordinary differential equations of first, second and higher order,
   9.3 apply ordinary differential equations to their field of interest.

10. **Course Outline**

Week	Topics	Hours			Instructor
		Lecture	Lab	Self study	
1	Basic definitions and terminology, preliminary theory	4	-	8	
2	First order differential equations: Separable differential equations, homogeneous equations	4	-	8	
3-4	First order differential equations: Exact and non exact equations	8	-	16	
5	Linear equations Applications of first order equations	4	-	8	
6	Test 1 Introduction to second order equations	4	-	8	
7-8	Linear homogeneous equations of second order Method of reduction of order Homogeneous equations with constant coefficients	5	-	10	
8	Linear non-homogeneous equations	3	-	6	

	of second order: The method of undetermined coefficients				
9-10	Test 2 The method of variation of parameters	6	-	12	
10-11	Applications of second order equations Higher order equations Review	6	-	12	
Final Examination					
Total		**44**		**88**	

11. Teaching Methods

Lecturing and problem solving

12. Teaching Media

Texts and handouts

13. Measurement and Evaluation of Student Achievement

Student achievement is measured and evaluated by

13.1 The ability to fundamental concepts of ordinary differential equations.

13.2 The ability to solve ordinary differential equations of first, second and higher order,

13.3 The ability to apply ordinary differential equations to their field of interest.

Student's achievement will be graded according to the college and university standard using the symbols: A, B+, B, C+, C, D+, D and F.

Ration of mark	
Homework and quizzes	15%
Test 1	25%
Test 2	25%
Final exam	35%

14. Course evaluation

14.1 Students' achievement as indicated in number 13 above.

14.2 Students' satisfaction towards teaching and learning of the course using questionnaires.

15. References

15.1 Zill DG. A first course in differential equations with applications: WS Publishers.

15.2 Boyce, DiPrima. Elementary differential equations: John Willey & Sons, Inc.

16. Instructors

Assoc. Prof. Dr. Chinda Achariyakul

17. Course Coordinator

Assoc. Prof. Dr. Chinda Achariyakul