Course Syllabus

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

2. **Course Code** ICMA 324
   Course Title Real Analysis

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

4. **Prerequisite** ICMA 322

5. **Type of Course** Elective course

6. **Session / Academic Year** 2nd or 3rd Trimester/ every academic year

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

8. **Course Description**
   Measurable functions, measures, the integrable functions, the Lebesgue space, modes of convergence.

9. **Course Objectives**
   The course is designed to introduce students to the concept of real analysis and is a sequel to the course in advanced calculus.
   After successful completion of this course, students will be equipped with sufficient tools to do advanced mathematics especially in the field of mathematical analysis.

10. Course Outline

Week	Topics	Hours			Instructor
		Lectures	Lab	Self study	
1	Measurable sets, measurable space, outer measure	4	-	8	
2	Borel sets, simple and step functions	4	-	8	
3	Measurable functions, Borel-measurable	4	-	8	
4	Lebesgue measure, signed measures	4	-	8	
5	Radon-Nikodym Theorem, Fubini's Theorem	4	-	8	
6	**Midterm Exam**	2	-	4	
6-7	Space of Lebesgue-integrable functions	4	-	8	
7-8	Bounded variation, convergence theorems	4	-	8	
8-9	Riemann integrals as Lebesgue integrals	4	-	8	
9-10	Normed spaces and Banach	4	-	8	

	spaces				
10-11	Linear functionals, L^p spaces	4	-	8	
11	Review for final	2	-	4	
Final Exam					
Total		**44**	**-**	**88**	

11. Teaching Methods

Lecturing and problem solving.

12. Teaching Media

Transparencies, handouts and lecturing from boards.

13. Measurement and Evaluation of Student's Achievement

Student achievement is measured and evaluated by

13.1 The ability to explain the concept of real analysis and is a sequel to the course in advanced calculus.

13.2 The ability to do advanced mathematics especially in the field of mathematical analysis.

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.

Ratio of mark

Assignments and quizzes (if any)	20%
Midterm examination	40%
Final examination	40%

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 Royden H. Real analysis: Macmillan Publishing Company; 1988.

15.2 Rudin W. Principles of mathematical analysis: McGraw-Hill; 1976.

16. Instructor

Assoc. Prof. Dr. Chinda Achariyakul

17. Course Coordinator

Assoc. Prof. Dr. Chinda Achariyakul