COURSE SYLLABUS

1. **Program of Study**: Bachelor of Science (Physics)
   Faculty/Institute/College: International College, Mahidol University

2. **Course Code**: ICPY 323
   Course Title: Electrodynamics

3. **Number of Credits**: 4 (4-0-8) (Lecture/lab/Self-study)

4. **Prerequisites**: None

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

6. **Session / Academic Year**: 3rd Trimester/every academic year.

7. **Course Conditions**: None

8. **Course Description :**
   Maxwell's equation, wave equations, radiation fields, special theory of relativity.

9. **Course Objectives**:
   The course is designed to introduce the concepts of non-classical wave equations and special theory of relativity.

10. **Course Outline**

Week	Topics	Hours			Instructor
		Lecture	Lab	Self study	
1	The Faraday induction law. Inductance and induced electromotive energy stored in a magnetic field. Magnetic force between two circuits	4	-	8	Dr. Santi Watanayon
2	Maxwell's equations	4	-	8	Dr. Santi Watanayon
3	Wave equations for V, $\underline{A}$	4	-	8	Dr. Santi Watanayon
4	Green's function. Retarded and advanced potentials. Wave equations for $\underline{E}$, $\underline{B}$	4	-	8	Dr. Santi Watanayon
5	Propagation of electromagnetic waves in conducting media	4	-	8	Dr. Santi Watanayon
6	Midterm Examination	4	-	8	Dr. Santi Watanayon
7	Propagation of electromagnetic waves in nonconductors	4	-	8	Dr. Santi Watanayon

8	Propagation of electromagnetic waves in good conductors	4	-	8	Dr. Santi Watanayon
9	Guided waves	4	-	8	Dr. Santi Watanayon
10	Cavity resonators	4	-	8	Dr. Santi Watanayon
11	Radiation from an oscillating dipole and a group of moving charges	4	-	8	Dr. Santi Watanayon
Final Examination					
Total		48	-	80	

11. Teaching Method *(s)*

11.1 Lecture
11.2 Suggested readings
11.3 Discussion in class

12. Teaching Media

12.1 PowerPoint Presentations
12.2 Texts and teaching materials

13. Measurement and Evaluation of Student Achievement

Student achievement is measured and evaluated by

13.1 the ability to describe the concepts of non-classical wave equations and special theory of relativity.

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.

Students must attend at least 80% of the total class hours of this course.

Ratio of mark	
Mid-term examination	40%
Final examination	40%
Attendance and assignment	20%
Total	100%

14. Course Evaluation

14.1 Evaluate as indicated in number 13 above.

14.2 Evaluate student's satisfaction towards teaching and learning of the course using a questionnaire.

15. References:

Jackson JD. Classical electrodynamics. 3rd Ed. U.S.A.: Willey and Company; 1998.

16. Instructors:

Assistant Professor Dr. Santi Watanayon

17. Course Coordinator:

Assistant Professor Dr. Santi Watanayon