

COURSE SYLLABUS

1. **Program of Study:** Bachelor of Science (Physics)
Faculty/Institute/College: International College, Mahidol University
2. **Course Code:** ICPY 324
Course Title: Optics I
3. **Number of Credits:** 4 (4-0-8) (Lecture/lab/Self-study)
4. **Prerequisites:** None
5. **Type of Course:** Required Course
6. **Session / Academic Year:** 1st Trimester/every academic year
7. **Course Conditions:** None
8. **Course Description:**
 Reflection and refraction, lenses, pencil optics, physical optics.
9. **Course Objectives:**
 After successful completion of this course, students will be able to
 9.1 Know the differences between reflection and refraction.
 9.2 Know the various types and properties of lenses.
 9.3 Know the characteristics and properties of the pencil optics and physical optics.

10. Course Outline

Week	Topics	Hours			Instructor
		Lecture	Lab	Self study	
1	Properties of electromagnetic waves	4	0	8	Dr. Narin Nuttavut
2 – 3	Propagation of light in isotropic media, Fresnel's formulas	8	0	16	Dr. Narin Nuttavut
4	Two-beam interference by amplitude division and by wave front splitting	4	0	8	Dr. Narin Nuttavut
5	Multiple beam interference, interference in thin films	4	0	8	Dr. Narin Nuttavut
6	Midterm Examination	4	0	8	Dr. Narin Nuttavut
7	Fraunhofer diffraction	4	0	8	Dr. Narin Nuttavut
8	Fresnel diffraction	4	0	8	Dr. Narin Nuttavut
9 – 10	Propagation of light in anisotropic media,	8	0	16	Dr. Narin Nuttavut

	polarization in birefringence				
10	Basic concepts of Fourier optics	4	0	8	Dr. Narin Nuttavut
11	Introduction to laser and holography	4	0	8	Dr. Narin Nuttavut
Final Examination					
Total		40			

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 the ability to

- 13.1 the ability to describe the differences between reflection and refraction.
- 13.2 the ability to describe the various types and properties of lenses.
- 13.3 the ability to describe the characteristics and properties of the pencil optics and physical optics.

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

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:

- Guenther RD. Modern optics. U.S.A.: John Wiley & Sons; 1990.
- Milonni PW, Eberly JH. Lasers. U.S.A.: John Wiley & Sons; 1991.

16. Instructors:

Dr. Narin Nuttavut

17. Course Coordinator:

Assistant Professor Dr. Santi Watanayon

