COURSE SYLLABUS

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

2. **Course Code**: ICPY 461
   Course Title: Quantum Mechanics II

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

4. **Prerequisites**: None

5. **Type of Course**: Elective Major course

6. **Session / Academic Year**: 1st, 2nd or 3rd Trimester/every academic year

7. **Course Conditions**: None

8. **Course Description**:
   Time independent perturbation theory, Zeeman effect, variational method, time dependent perturbation theory, interaction of atom with radiation, second quantization, scattering theory, S matrix theory, Feynman's path integration.

9. **Course Objectives**:
   After successful completion of this course, students will be able to
   9.1 develop key concepts on the topics of time independent perturbation theory, Zeeman effect, variational method, time dependent perturbation theory, interaction of atom with radiation, second quantization, scattering theory, S matrix theory, Feynman's path integration.

10. **Course Outline**

Week	Topics	Hours			Instructor
		Lecture	Lab	Self study	
1-2	Time independent perturbation theory	8	-	16	Withoon Chunwachirasiri
3-4	Zeeman effect, variational method, time dependent perturbation theory	8	-	16	Withoon Chunwachirasiri
5-6	Interaction of atom with radiation, second quantization	8	-	16	Withoon Chunwachirasiri
7	Midterm Examination	4	-	-	Withoon Chunwachirasiri
8-9	Scattering theory, S matrix theory,	8	-	16	Withoon Chunwachirasiri
10-11	Feynman's path integration.	8	-	16	Withoon Chunwachirasiri
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 key concepts on the topics of time independent perturbation theory, Zeeman effect, variational method, time dependent perturbation theory, interaction of atom with radiation, second quantization, scattering theory, S matrix theory, Feynman's path integration.

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:

Schwabl F. Advanced quantum mechanics. 3rd Ed. (translated by R. Hilton and A. Lahee) U.S.A.: Springer Pub; 2005.

16. Instructors:

Dr. Withoon Chunwachirasiri

17. Course Coordinator:

Assistant Professor Dr. Santi Watanayon