King Saud University
College of Science
Physics and Astronomy
Department

جامعة الملك سعود
كلية العلوم
قسم الفيزياء والفلك

وصف مقرر دراسي

Course Code	**Phys 453**	453 فيز	رقم المقرر ورمزه
Course Name	**Mathematical Physics III**	فيزياء رياضية (3)	إسم المقرر
Credit hours	**4**	4	الوحدات الدراسية المعتمدة
Level	**7th**	السابع	المستوى
Pre-requisites	**Phys 352**	352 فيز	متطلب سابق
Co-requisites			متطلب مرافق
Credit distribution	**(3+1+0)**	(0+1+3)4	توزيع ساعات المقرر

وصف المقرر:

Course Description:

1. Probabilistic Nature of Quantum Mechanics. The Schroedinger Equation. Basic Concepts.
2. The Mathematical Tools of Quantum Mechanics
3. Momentum in Quantum Mechanics
4. The interpretation of Quantum Mechanics
5. .Solution of Schroedinger Equation
6. Square Well The Infinite
7. The Finite Square Well
8. Scattering on a square barrier
9. The Tunneling Effect
10. The Quantum Simple Harmonic Oscillator.
11. The algebraic method for the quantum SHO.
12. The free particle.
13. The hydrogen atom

Course objectives: The course aims to give students more advanced topics in mathematical physics.

Distribution of grades: Presence 10% (after 8 absences 1 mark will be deduced for each absence), Homework 10%, Midterm I 20%, Midterm II 20%, Final Exam 40%

Textbooks and References: **الكتب والمراجع المقررة:**

Introduction to Quantum Mechanics by D.J. Griffiths, 2nd Edition, Pearson-Prentice Hall, 2005

Other books:
a) Quantum Mechanics by B. H. Brandsen and C. J. Joachain, 2nd edition, Pearson Prentice Hall 2000.
b) Quantum Mechanics: Concepts and Applications by N. Zettili, Wiley 2001.
c) Schaum's Outline of Quantum Mechanics (Schaum's Outline Series) by Eliahu Zaarur and Phinik Reuven, McGraw Hill, 2006.

أعتمد بموافقة مجلس القسم بجلسته الخامسة عشرة للعام الدراسي 1431/1430 هـ بتاريخ: 1431/6/9هـ

رئيس القسم:	عميد الكلية: .....
التوقيـــــع:	التوقيـــــع: .....