



TEL AVIV אוניברסיטת תל אביב
UNIVERSITY תל אביב

Full Syllabus



Course Title

Quantum Electronics

Lecturer

Alon Bahabad

Semester

A

Course requirements

Undergrad course in quantum mechanics

Final grade components

Exam

Course schedule

Class no. / Date	Subject and Requirements (assignments, reading materials, tasks, etc.)
1	The TDSE and its solution for a time-independent Hamiltonian
2	Mathematical foundation of QM
3	Observable, measurements, uncertainty principle, commuting observables
4	Schrodinger and Heisenberg representations, the simple harmonic oscillator (SHO)
5	Semiclassical quantum optics including Fermi's golden rule and Rabi oscillations
6	Recitation I
7	Quantization of the electromagnetic field
8	Fully quantum description of light-matter interaction
9	Intensity operator, classical sources of light
10	Simple manipulation of quantized light, The HOM experiment
11	Entanglement and the EPR paradox, Bell's inequalities
12	Quantum description of the complex envelope of the EM field
13	Recitation II

Required course reading

C. Gerry and P. Knight, Introductory quantum optics, Cambridge University Press, 2005.

Optional course reading

1. C. Cohen-Tannoudji, B. Diu and F. Laloe Quantum Mechanics, vol. 1, Wiley, NY, 1977.
2. R. Loudon, The quantum theory of light, 3rd edition, Oxford Science Publications, 2000.

Comments

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