Instructor(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Web</th>
<th>Office Hours</th>
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<tbody>
<tr>
<td>İnanç Adagideli</td>
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<td><a href="http://myweb.sabanciuniv.edu/adagideli/">http://myweb.sabanciuniv.edu/adagideli/</a></td>
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Course Content

The crucial experiments showing the failure of classical physics in explaining the properties of matter and radiation. The postulates of quantum mechanics. Wave-particle duality and the uncertainty relation. The time-dependent and time-independent Schrödinger equation. Symmetry and conservation laws. Basic features of the quantum mechanical world explored through one-dimensional problems: the harmonic oscillator, the square well and barrier, free and bound states. Energy quantization. Tunnelling. One-dimensional periodic potentials, energy bands, and band gaps. Also part of the "core course" pool for the MAT, EL degree program.

Objectives

To learn the development, basic concepts, and problem-solving approaches of physics.

Recommend or Required Reading

Textbook

Griffiths, Introduction to Quantum Mechanics
Assessment Methods and Criteria

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<tr>
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<th>Percentage (%)</th>
<th>Number of assessment methods</th>
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<tbody>
<tr>
<td>Final</td>
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<td></td>
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<tr>
<td>Midterm</td>
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<td>Participation</td>
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Learning Outcomes

Upon completion of this course, students will be able:
- Describe the concept of superposition,
- Use this concept to predict outcomes of measurements done on simple quantum systems
- Comprehend the concepts of the wave function and of operators
- Solve the Schrödinger equation for a range of one-dimensional problems and demonstrate energy quantisation and quantum tunnelling effects
- Calculate expectation values and probabilities for simple observables
- Solve Schrödinger equation for a range of selected three-dimensional problems such as the hydrogen atom, perform calculations on angular momentum wave functions
- Describe how a general initial state will evolve with time

Course Policies

Academic Integrity: Cheating is subject to disciplinary action and a zero grade.
Health reports must be endorsed by the SU Health Center.
Letter grades will be given on an individual basis: there will be no curve based on the class average.