Basic quantum-mechanics for semiconductor devices

Course Title	**Basic quantum-mechanics for semiconductor devices**
Course Category	Pedagogy
Relevant Discipline(s)	**Electrical engineering, Physics, Material Scince**
Duration of course in equivalent integer no. of days (min 3 days, 1 day = 6 hrs of lectures/hands on sessions)	**6 days**
Proposed dates	**4-5 Dec** **11-12 Dec** **18-19 Dec** **2-5 PM on the mentioned dates**

Brief Course Description and Course Contents

1. **Mathematical pre-requisites**
2. **Basic Ideas of Quantum Mechanics**
3. **Generic single particle systems and mapping to semiconductor devices**
   a. **Potential well**
   b. **Harmonic Oscillator**
   c. **Hydrogen atom**
4. **Time evolution of systems**
5. **Various 3D, 2D, and 1D system**
6. **Example semiconductor Devices from quantum mechanics perspective:**
   a. **Transistor**
   b. **LED**
   c. **Lasers**
   d. **Single electron devices**
   e. **Single photon source for quantum communication**
7. **Tutorial program codes and demonstrations**
8. **General discussion for future directions**

Instructor Details

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