

Quantum-plators tribe schedule

| Week | Date | Theme | Topics |
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| Week 1 | 20/10/21 to 26/10/21 | The transition from classical mechanics to quantum mechanics | <ul style="list-style-type: none"> • Black body radiation • Photoelectric effect • Compton effect • Matter-wave • Davisson - Germer's experiment • GP Thomson's Experiment |
| Week 2 and 3 | 27/10/21 to 13/11/21 | Mathematical Basic for Quantum Mechanics - Part 1 | <ul style="list-style-type: none"> • Vector Spaces, Hilbert Spaces, Inner products, and its significance, Dirac Notation • Matrices and Operators, Linear Operators, and Commutator Brackets • Hermitian Conjugate of Operator and vectors • Types of Operators, mainly Hermitian Operators and Unitary operators. • Eigenvalue problem and Various Theorems. • Generalized uncertainty principle. |
| Week 4 and 5 | 15/11/21 to 27/11/21 | Mathematical Basic for Quantum Mechanics - Part 2 - Wave Mechanics | <ul style="list-style-type: none"> • Function Spaces and Analogous operations in Function Space • Wave function and its characteristics and Conditions, Born's Interpretation. • Normalization of the Wave function and its time invariance. • Hamiltonian Mechanics (classical) • Time Evolution of a system and Schrodinger Equation, Hamiltonian as the Generator of Time evolution • Translation of a system and Momentum as the generator of Translation • Rotation of a System and Angular momentum as the Generator or Rotation • The uncertainty principle, various uncertainties, Uncertainty as a result of the Fourier transform of the wave function, Physical interpretations of the uncertainty principle. • Postulates of Quantum Mechanics. |

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| Week 6 and 7 | 28/11/21 to 11/12/21 | Application of quantum mechanics in basic systems | <ul style="list-style-type: none"> • Stationary states and properties of a wave function arising through Time independent Schrodinger equation, and Theorems. • Infinite potential well • Quantum Harmonic oscillator, Ladder operators, and their algebra. • Understanding Hydrogen atoms. • Formulating spin and Angular momentum through operators and Lie Algebra, Stern-Gerlach experiment. |
| Week 8 | 12/11/21 to 18/11/21 | Quantum Tunnelling and Quantum Superposition | To be researched |
| Week 9 | 19/12/21 to 25/12/21 | Quantum Entanglement | To be researched |
| Week 10 | 26/12/21 to 31/12/21 | Future Research | To be researched |