

Schedule Phys 402 F17 Student

| TENTATIVE SCHEDULE FOR PHYSICS 402, FALL 2017 | | | | | | |
|-----------------------------------------------|-------|----------------------------------------|--------------------------------------------------------------------------------|--------|-------------------|--|
| Date | Mtg.# | Reading Assignment | Topic | HW Due | Exams | |
| Week 1 | | | | | | |
| 8/28 | 1 | 1.1-1.6, 4.1 / 1.1-1.4, 5.1, 5.3 / 1-8 | Review of QM, QM in 3D | | | |
| 8/30 | 2 | 4.1,4.2,4.3 / 7.1,7.2 / 9,10 | Hydrogen Atom Review, Angular Momentum Review | #0 | | |
| Week 2 | | | | | | |
| 9/4 | | LABOR DAY | | | | |
| 9/6 | 3 | 4.4 / 6.4, 7.6 / 11.6-11.8 | Spin of the Electron, Pauli Spin Matrices, Stern-Gehrlach | #1 | | |
| Week 3 | | | | | | |
| 9/11 | 4 | 6.1 / * / 13.1 | Time-Independent Perturbation Theory | | | |
| 9/13 | 5 | 6.1, 6.3 / * / 13.1 | 2nd-Order Perturbation Theory and Fine Structure | #2 | | |
| Week 4 | | | | | | |
| 9/18 | 6 | 6.3 / 7.8 / 12.2 | Spin-Orbit Interaction, J=L+S Addition of Angular Momenta | | | |
| 9/20 | 7 | 6.4, 6.5 / 7.7 / * | Spins and Entangled States, Hyperfine Splitting and the 21-cm line | #3 | | |
| Week 5 | | | | | | |
| 9/25 | 8 | 6.2 / * / 13.3 | Degenerate Perturbation Theory, Stark effect | | | |
| 9/27 | 9 | 7.2, 5.1 / 8.7, 8.1 / 12.6, 12.3 | He Atom, Pauli Exclusion Principle | #4 | | |
| Week 6 | | | | | | |
| 10/2 | 10 | 5.1, 5.2 / 8.2 / 12.3 | Exchange | | | |
| 10/4 | 11 | 5.2, 10.1 / 8.3, 8.4 / 12.4, 12.7 | Excited States of He, Periodic Table, H ₂ Molecule, Bonding | #5 | | |
| Week 7 | | | | | | |
| 10/9 | 12 | 9.1 / * / 13.5 | Time Dependent Perturbation Theory, Review | | | |
| 10/11 | 13 | | Chapters 4, 6 (roughly) | | EXAM #1 | |
| Week 8 | | | | | | |
| 10/16 | 14 | 9.1 / * / 16 | Two Level Systems, Quantum Computing, Entanglement | | | |
| 10/18 | 15 | 9.1 / * / 13.6 | Sinusoidal Perturbation, Atomic Transitions, Rabi oscillations | #6 | | |
| Week 9 | | | | | | |
| 10/23 | 16 | 9.2 / * / 13.9 | Absorption of Radiation, Selection Rules | | | |
| 10/25 | 17 | 9.3 / 8.8 / 13.7 | Absorption, Spontaneous Emission, LASERs | #7 | | |
| Week 10 | | | | | | |
| 10/30 | 18 | 8.1 / * / 7.10 | WKB Approximation | | | |
| 11/1 | 19 | 8.2 / 12.7 / 7.10 | Fowler-Nordheim Tunneling, STM | #8 | | |
| Week 11 | | | | | | |
| 11/6 | 20 | 7.1, 7.2 / * | Variational Principle | | | |
| 11/8 | 21 | 10.2 / * / * | Aharonov-Bohm Effect, Quantum Chaos | #9 | | |
| Week 12 | | | | | | |
| 11/13 | 22 | * / * / * | Quantum Scattering, Review | | | |
| 11/15 | 23 | | Chapters 5, 9 (roughly) | | EXAM #2 | |
| Week 13 | | | | | | |
| 11/20 | 24 | 5.4 / 10.2, 10.5 / 11.11, 12.3, 12.8 | Quantum Statistical Mechanics, Distinguishable And Indistinguishable Particles | | | |
| 11/22 | | THANKSGIVING BREAK | | | | |
| Week 14 | | | | | | |
| 11/27 | 25 | 5.4 / 10.5, 10.6 / * | Occupation Distribution Functions, Photons in a Box | | | |
| 11/29 | 26 | 5.4 / 10.6 / 12.8 | Superfluid He-4, Bose-Einstein Condensation | #10 | | |
| Week 15 | | | | | | |
| 12/4 | 27 | 5.3 / 11.1-11.4 / 13.4 | Electrons in a Crystal, Band structure | | | |
| 12/6 | 28 | 5.3 / 11.1-11.4 / 13.4 | Free-electron metal, Fermi energy | #11 | | |
| Week 16 | | | | | | |
| 12/11 | 29 | * / 11.7 / 12.8 | Cooper Pairing of Electrons, Review | | | |
| 12/19 | 30 | | FINAL EXAM [8 AM to 10 AM] | | FINAL EXAM | |

* means no reading assignment from this text. Look elsewhere!