Course description: A continuation of the study of quantum mechanics including quantum statistical mechanics, time-independent and time-dependent perturbation theory, and scattering. Prerequisites: PHYS 447. Offered in the Spring semester of even numbered years. One semester; three credits


Instructor: Ted Clarke
tclarke2@cbu.edu

Office: Cooper-Wilson 115. Office hours will be announced in class.

Course objectives: This second course will build on the knowledge and problem solving techniques that were introduced in Quantum I. We will analyze more complicated quantum phenomena with advanced techniques and explore modern applications of quantum theory.

Course content:
- Time Independent Perturbation Theory
  - Perturbed Eigenstates
  - Stark Effect
- Hydrogen Atom
  - Relativistic Effects
  - Spin-Orbit Coupling
  - Hyperfine Structure
- Many Particle Systems
  - Two Particle System
  - Identical Particles
  - Exclusion
- Time Dependent Perturbation
  - Phase Space
- Charged Particles in an Electromagnetic Field
- Radiative Decays
Collision Theory
Scattering
Born Approximation

Grading:
- Mid-Term Exam: 20%
- Final Exam: 20%
- Homework: 50%
- Research Project: 10%

0-59 F  60-69 D  70-79 C  80-89 B  90-100 A

No make-up exams will be given without a verifiable medical excuse.

Late homework will be accepted at ½ credit until the last day of class.

Late exams will not be accepted.

As a responsible student, you are expected to attend class.

I reserve the right to modify this syllabus as the course develops.

Ted Clarke