University Modern Physics
with simulations used
(See activities by Sam McKagan in PhET database)

1. Review of EM Waves
   Radio Waves and Electromagnetic Fields
2. Photoelectric Effect:
   Photoelectric Effect
3. Probability and Randomness and Wave particle duality
   Quantum Wave Interference
4. Rutherford Scattering
   Rutherford Scattering
5. Atomic Spectra and Discharge Lamps
   Discharge Lamps
6. Lasers
   Lasers
7. Balmer Series
8. Bohr and deBroglie Models of the atom
   The Hydrogen Atom
9. Double slit and Davisson Germer experiment
   Quantum Wave Interference, **Davisson Germer: Electron Diffraction**
10. Wave functions and probability
11. Wave packets and uncertainty principle
    Quantum Wave Interference, **Quantum Tunneling**, **Fourier: Making Waves**
12. Wave equations and Differential equations
13. Schrodinger equation for free particle
    Quantum Tunneling
14. Potential Energy
15. Infinite and Finite Square Wells
    Quantum Bound States
16. Quantum Tunneling, Alpha decay and other applications of Tunneling
    Quantum Tunneling
17. Reflection and Transmission
    Quantum Tunneling
18. Superposition, measurement, and expectation values
    Quantum Bound States
19. Hydrogen atom
    The Hydrogen Atom, Rutherford Scattering
20. Multielectron atoms
21. Molecular bonding and solids
    Quantum Bound States/Double Wells and Covalent Bonds/Band Structure
22. Conductivity
    Conductivity
23. Diodes and LEDs
    Semiconductors
24. CCDs
25. Lasers Cooling and BEC
    Physics 2000 (http://www.colorado.edu/physics/2000/)
26. Spin and MRI
    Stern Gerlach Experiment, Simplified MRI
27. EPR paradox