

No Excuses

- Maxwell's Equations
 - Differential and integral form
 - Boundary conditions at interfaces
- Schroedinger's Equation
 - Solutions for known Hamiltonians
- Write down a Classical Lagrangian/Hamiltonian
- Write down a partition function
- Special relativity
 - Lorenz boosting between frames
 - What stays invariant, what does not?
 - Velocity addition
- Wave equation
 - Standing wave solutions for different boundary conditions
 - Group velocity vs. Phase velocity

No Excuses

- Circuit analysis
 - R, RC, LR, LC, RLC
- Optics
 - How to use Snell's law and thin lens formula
 - How to derive interference patterns
- Hydrogen-like atoms
 - Bohr atom
 - Energy spectrum
- Three light-electron interactions:
 - Compton Scattering
 - Photoelectric effect
 - Pair production
- Ideal gas processes