Topic-Level learning goals for *Schrodinger Eq & Potential Energy Wells*
UBC PHYS 250, *Introduction to Modern Physics*, Summer 2009
(updated July 30, 2009)

5. Schrodinger equation and potential energy wells

- Explain why a very deep square well potential is a crude but useful model for a variety of physical systems, including electrons in atoms or wires. (somewhat implied under "bound states", 3rd LG)
- Calculate the possible energy levels and normalized wave functions and probability distributions for an electron in a very deep square well potential of arbitrary width in one dimension. Be able to use these distributions to predict the results of measurements of these quantities for an electron.
- Explain general method for how to find allowed energies for an electron or atom in any shape potential energy well, although not carry out the detailed calculations required for obtaining values for those energies.
- Calculate how the current in a scanning tunnelling microscope (STM) depends on the distance between the probe and the surface. Explain how an STM is able to obtain a measurement resolution of less than one atomic diameter.