

Advanced Lab homework set 1

You may use any reference materials you wish for this assignment (other than someone else's homework, of course) but give proper attribution!

1. To order of magnitude, what is the smallest current you could “feel”? To order of magnitude, at what current is there a significant risk of death?
2. Given the resistivities of dry and wet skin (which you are not given, so you'll have to find some reasonable estimate) estimate the lethal voltage for a dry and for a wet Advanced Lab student.
3. Explain the “one-hand rule” for working with electrical equipment.
4. List three safety precautions one should always take when using the drill press or lathe.
5. A 10 mW visible laser is orders of magnitude more hazardous than a 10 mW LED — why; and why is it specifically hazardous to the eyes?
6. Why is food and drink forbidden in room 107 and 108?
7. Of all the equipment in the Advanced Lab, which is statistically the most likely to cause an injury requiring medical treatment? Explain, and cite sources.
8. Taylor, problem numbers {3,6,7,11,14} from Chapter 2. Use a computer for number 14, preferably Python/Matplotlib, *not* Excel.



IT'S IMPORTANT TO KNOW THE INTERNATIONAL WARNING SYMBOL FOR RADIOACTIVE HIGH-VOLTAGE LASER-EMITTING BIOHAZARDS THAT COAT THE FLOOR AND MAKE IT SLIPPERY.