1. All project teams must follow the School of Engineering General Safety Rules and Operational Policies for Manufacturing and Prototyping Areas. Questions and concerns related to safety should be brought to the immediate attention of your instructor.
2. Ideally, major functional elements of the system should be presented in self contained modules or subsystems. The overall system design should seek to minimize the number of interfaces and dependency between major functional subsystems elements. Design of complex special purpose connections and interfaces should generally be avoided and done only with the prior consultation of your instructor. Connections between modules should be through standard “off the shelf” electrical, mechanical, and/or software interfaces.
3. Project features should be testable as a sub-system or module prior to system integration. Testing should demonstrate key features of the design or be used to collect data that forms the basis of key design rules or operating logic. Each team should consult with their instructor regarding experimental test plans. It is anticipated that several different experiments may be required during the design process.
4. The final system configuration should be easily transported and operable on a table top. A system weight of less than 20 pounds is recommended. The final system should nominally fit within a 24”D x 36”H x 36”W rectangular envelope (excluding the external computer) unless approved by your instructor.
5. Use of liquids requires the prior approval of your instructor. If used, the amount of liquid in the final system design should be less than 1 gallon and be non-toxic and non-staining. Disposal of liquids must follow School of Engineering shop operations safety guidelines.
6. The use of welded connections is discouraged and requires the approval of your instructor.
7. Teams should select from the following list of recommended structural materials for their projects:
   * PVC or plastic pipe nominal 2 inch or smaller
   * Square aluminum tube no larger than 1.0 inch by 1.0 inch outside dimensions
   * Round aluminum tube no larger than 1.0 inch outside diameter
   * Steel tube known as EMT (sold in electrical sections of stores) no larger than nominal 1 inch
   * Flat aluminum bar stock no wider than 1 inch
   * Aluminum angle stock no larger than nominal 1 inch.
   * Plastic sheet less than ¼ inch thick
   * 80/20 series 10 modular aluminum extrusion or equivalent
8. You are restricted from altering radio wave emitters such as those used in microwave ovens. If your design uses radio waves, the transmitter and protection provided to shield the user from such waves cannot be altered in any way.
9. Computer based control (including micro processors) can be accomplished using hobby level microcontrollers such as the Arduino, Mobile Studio board, Basic Stamp or OOPIC or by using PC based software such as Visual Basic, C, or LabVIEW as a data collection and control platform. Laptop data acquisition cards or devices that interface with LabVIEW are available for loan through IED. USB devices that link to other languages are planned for acquisition. Mobile Studio and USB devices can also be purchased by a team member for low cost and can be later used by that team member for other project work.
10. Teams should select from circuit designs that are documented and presented in the Radio Shack Electronics Laboratory and the Radio Shack Sensors Laboratory. Several of these circuit kits are available for preliminary testing of circuit performance. After preliminary testing, the team will be required to purchase the raw electronic parts for assembly on proto-boards for full subsystem testing.
11. Teams should select from a standard list of motors that will be provided for use on projects whenever possible.
12. The cost of project materials is the responsibility of the team. Teams should establish a budget and procedures for monitoring costs.
13. The MDL Fabrication and Prototyping Area will be open and available for IED students to use during regularly scheduled lab hours. IED TA’s will be assigned to this area for assistance with shop related services. Please see your IED TA’s for help with shop related services.
14. Water jet cutting and rapid prototyping services are available for students to use on projects. Teams should plan for a 7 to 10 day turnaround time for these services.
15. Lithium ion batteries are not permitted in the circuits designed and built by your team. As you are, by definition, building a proof of concept prototype, you must select an alternate battery technology for your device. Lithium ion batteries that are part of personal electronics or other purchased devices may be incorporated in your design. In the case of a purchased device that has a lithium ion battery inside, your project may not draw power from that battery unless it is from a USB port already built into the purchased device. For example, the following IS permitted – powering an Arduino from the USB port in a Lithium Ion powered commercially available laptop/tablet/phone. The following is NOT permitted – opening the packaging on a commercially available device and adding a power connection to the Lithium Ion battery inside it.