ETec471 Project Description Outline

1) **Functional Description** (written)
   a. Introduction - A short overall description of the project (from proposal).
   b. Description and sketch of all project hardware and applications. Include maximum dimensions.
   c. Finalized prioritized list of features (list). Clearly identify features that will not be part of the course.
   d. Detailed functional description with a block diagram of the project hardware, including:
      • Microprocessor/Microcontroller type. Ideal and actual.
      • MCU resources used. (A/D, SCI, PA, Bus system, etc)
      • Memory types and sizes, bus frequency.
      • Description of other major components/peripherals required.
      • External interrupts used and required external hardware.
      • Important signal/bus labels and all signal directions.
      • Power Supply, with source type, input voltage(s), output voltage(s), Max. Output current(s).
      • A system block diagram if multiple PCBs are used or it is a part of a larger system.
   e. Description of the software requirements, including:
      • Programming language(s)
      • Module description.
      • Real-time kernel and tasks
      • Major algorithms.
      • OEM Software.
   f. Detailed written description of the user interface requirements, including:
      • Sketch of the user interface layout (displays, LEDs, switches, keypads etc.).
      • User interface description. Include state diagrams and description for all buttons, and displays.
   g. Detailed written description of any ad-hoc communication protocol used.
   h. Sustainability Design Issues
      • Power consumption, waste issues, hazardous materials, etc

2) **Standards** (Written)
   • Industry Standards – Standards search of IEEE and other relevant standards.

3) **Development Plan** (written)
   a. Written sequence and description of project development tasks
      • Weekly schedule showing tasks to be completed winter and spring quarters.
      • Any potential delivery problems for critical parts.
   b. A description of the required development hardware and software. Include the source.
      • MCU Software development tools, lab equipment, extra lab space.
   c. A description of the demonstration prototype and materials.
      • Construction methods (solder, wire-wrap, enclosures, etc.).
      • Standalone prototype or prototype using a development board.
      • Posters/Props.
      • Extraordinary items (Motorcycles, Environmental chambers, etc.).
4) **Electrical Specifications** (list)
   a. Project specifications (as required):
      • Accuracy, Resolution, Range.
      • Data rate, sampling rate, etc.
      • Communications protocol and standards – if not addressed above.
      • Applicable FCC, UL, FDA requirements.
   b. Power requirements.
      • Source description:
        • Batteries (type and estimated life).
        • AC power (Wall transformer or internal transformer, safety plan).
      • Total Worst-case Power dissipation (Itemized dissipation to be included with the parts list).
   c. Special environmental requirements
      • Operating temperature range (required).
      • Humidity, vibration, etc. only if required by the project.
   d. PCB size limits (Including height limits).

5) **Preliminary Parts List** (list)
   • Includes costs, lead times, power dissipation, and sources.