

## **Electronic Access and Inventory Management System for CECS Machine Shop**

### **Client:**

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### **Background:**

CECS operates a machine shop on the first floor of the Brown Building at CSM. This shop has a number of hand tools and machine tools as well as welding systems that can be used by students in CECS programs in support of projects, including senior design, field session, and research projects. In principle a student is required to sign-in to use the machine shop. To use any particular tool or machine, students must also be “checked-off” by the shop supervisor to ensure that they have an adequate understanding of operation and safety protocols. Related, the shop will at times allow users to check out tools for use in other labs or workshops around campus. Finally, the shop maintains varying quantities of expendable goods and supplies. All of the processes described above (sign-in, use certification, tool checkout and inventory, and material and supply inventory) are managed today in a manual, and arguably *ad hoc*, manner.

### **Project Goal**

The goal of this project is to specify, design, code and implement an electronic machine shop access and inventory management system that provides the following functional capability:

1. Allow shop supervisor to maintain a list of authorized users, including a record of certifications for machine and tool usage.
2. Allow for electronic access via Blaster Cards. Such access control might include:
  - a. Touch screen entry upon Blaster Card recognition
  - b. Machine use/tool check-out selection by user
  - c. Confirmation of appropriate certifications for requested usage
  - d. Time-in/time-out record keeping.
  - e. Allow supervisor to monitor access and tool check-out status through interactive database access.
3. Allow shop supervisor to build and maintain a tool inventory and material and supplies inventory.

### **Resources Provided and Requirements**

Hardware and software needed to implement the project will be provided after specified by the project team. Project requirements include:

1. Demonstration of a fully-functional prototype, including hardware and software. Project team is not expected to populate the database.
2. Preferred technology would be a Windows-based platform with a stand-alone database accessed through a web-browser-type interface, but other viable options will be considered during the design process.

3. Project team should have an ability to develop user interfaces and program database systems.  
Attention to detail and professionalism in personal interactions essential.