



### Company Information

<b>Company Name</b>	<i>J&amp;L Machine and Fabrication</i>	<b>Date Submitted</b>	<i>04/26/2023</i>
<b>Project Title</b>	<i>Design of a Machine Shop Factory Expansion (J&amp;L_EXPANSION)</i>	<b>Planned Starting Semester</b>	<i>Fall 2023</i>

### Senior Design Project Description

#### Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills.

<b>Discipline</b>	<b>Number</b>	<b>Discipline</b>	<b>Number</b>
Mechanical	2	Electrical	
<u>Civil</u>	1	Systems	3

#### Company and Project Overview:

- J&L is a precision Fabrication and Machining provider focusing on Fabrication, Precision machining and Powder coat applications.
- Services include: CNC forming, turning, milling, laser cutting, part bending, welding, and painting
- Customers like Daimler Mercedes Truck Division purchase parts from J&L for their assembly like brackets, frames, cross members, chassis plates, shafts, etc.
- J&L is executing a 5-years business plan looking at tripling revenue. With such a growth coming ahead, J&L is looking to expand its current facility by constructing an additional building to bring in new equipment and in parallel re-engineer its entire flow across existing and future buildings to cope with the growth.
- Website: <http://jlmf.com/>



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This project is partially supported by a grant from the NC Manufacturing Extension partnership, an organization that helps to support business and job growth for NC companies. To learn more about the NC MEP, click on this link: <https://www.ncmep.org/>.

### **Project Requirements:**

- This multi-engineering team of civil/mechanical/system & design will be tasked in developing both:
  - New Building Design:
    - Civil: soil testing, city permit, building specifications, cost, etc.
    - Mechanical: Power, Lighting, Air circulation, machinery needed, solar energy, etc.
    - System & Design: machines layout, material storage layout, material flow, etc.
  - Existing Building Re-design:
    - Mechanical: Power, Lighting, etc.
    - System & Design: machines layout, material flow, etc.

### **Expected Deliverables/Results:**

- A masterplan design that outlines the future destination with associated cost and time table. As there will be no physical build, the design phase will extend into the second semester. The Electrical and Mechanical scopes for an entire building is likely beyond the scope of a senior design team, so as part of the project will be to define an achievable scope that can be done in two semesters. That will be documented in the Statement of Work/Specifications.

### **Disposition of Deliverables at the End of the Project:**

- A masterplan design that outlines the future destination with associated cost and time table

### **List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):**

- Structural Design
- Power Design



- Industrial Design
- Operations Design
- Statistical Analysis
- AutoCAD
- Problem Solving
- Project Management
- Project will require travel to J&L's Stanley, NC site.