

# Lamp Project:

**Design and fabricate a lamp using the given electrical component.**

Complete the following:

- Preliminary sketches
  - Bill of Materials Document
  - Hardware List Document
  - Labor Time Estimate Document
  - What is the price for this design and what is included in that price?
  - Describe two ways to enhance the value of your design and its effect on the price?
- 
- Presentation Board: Upload a 24" x 36" PDF must include the following elements (see more below):
    - Project Title
    - Project Price Range
    - Renderings or Digital Images and Photographs of final product
    - Plan View (generated in CAD)
    - Front Elevation (generated in CAD)
    - Side Elevation(s) (1 or 2 elevations generated in CAD)
    - Section Drawing(s) (1 or 2 sections generated in CAD)
    - Detail Drawing(s) (1 or 2 detail drawings generated in CAD)
    - Description of project (up to 250 words)

## 1. Bill of Materials: Use McMaster.com, Home Depot, etc.

*Create a list\* of the raw materials needed to produce your design. Include the quantity, material with dimensions, and the price per unit using the format shown below. If you are unsure of the price of a particular material, look the price up online or ask at a local store. If an object is a reused or upcycled item, price the item at a fair market value, even if the item would hypothetically be free. (ie. two antique table legs @ \$20 each). Include a Material Total price at the bottom.*

### Sample Bill of Materials:

- (3) sheets of ¾" x 4 x 8 Plywood @ \$40.00 each
  - (25) bd ft of 4/4 Walnut @ \$10.00 per bd ft
  - (2) sheets of 4 x 8 walnut veneer @ \$120.00 each
  - (2) 25' rolls of 1" walnut edge banding @ \$10.00 each
  - (4) 16" x 16" pieces of glass from an old door @ \$5.00 each
  - (4) 24" x 18" x 6" premade drawer boxes @ \$48.00 each
  - (1) piece of ½" x 72" x 24" upholstery foam @ \$15.00 each
  - (3) yards of upholstery fabric @ \$25.00 per yd.
  - (1) 8oz bottle of glue @ \$4.00 each
  - (5) packages of sand paper 80-320 grit @ \$5.00 each
  - (1) pint of polyurethane finish @ \$15.00 each
- Material Total: \$976.00

*Material pricing is for sample calculations only, not for reference purposes*

## 2. Hardware List:

*Create a list of the hardware used in your design. Follow the same format as the Bill of Materials for the hardware list. If you are unsure if an item goes on either the Bill of Materials or the Hardware List, default to the Hardware List. Include a Hardware Total price at the bottom.*

### Sample Hardware List:

- (4) 3" castors from an antique cart @ \$15.00 each
  - (4) sets of 18" drawer slides @ \$10.00 Each
  - (4) 3" drawer pulls @ \$12.00 Each
  - (2) pieces of 2" x 2" x 96" stainless steel @ \$150.00 each
  - (3) boxes of 1-1/4" wood screws @ \$7.00 each
  - (2) 12 packs of ¼-20 carriage bolts with nuts @ 4.00 each
- Hardware total: \$477.00

### 3. Labor Time Estimates:

*You have access to CNC machines, laser engravers, 3D printers, and basic wood working equipment.*

*Break down your labor estimates based on how long it would take an industry professional to perform each task. Round your times to the nearest  $\frac{1}{4}$  hour. Account for all the steps that it would take to produce your design. Include your Labor Total in hours at the bottom.*

#### Sample Labor Time Estimate:

Design time: 12.5 hours

Material Planning: 2 hours

Metal work: 3.5 hours

Upholstery work: 1.5 hours

Veneer work: 1.75 hours

Edge Banding: .5 hours

Planing and Joining: 2 hours

Table Saw: 1.25 hours

CNC time: 4 hours

Assembly: 20 hours

Sanding: 6.5 hours

Finishing: 8 hours

Installation: 4 hours

Labor Total: 67.5 Hours

*Labor estimates are for sample calculations only, not for reference purposes*

#### 4. What is the price for this design and what is included in that price?

*Using your Material Total, Hardware Total, and Labor Total figure out the final price of your design. Use \$45.00 per hour for labor and 40% gross profit (multiply total costs by 1.4). Count only labor, material costs, and any other production costs. Do not include things like work space rental, or utilities.*

#### Known Values:

Material Total: \$976.00  
Hardware Total: \$477.00  
Labor Total: 67.5 Hours

#### Labor Cost:

67.50	Hours
X \$45.00	Dollars per Hour
\$3,037.50	Labor Costs

#### Total Cost:

\$976.00	Material Total
\$477.00	Hardware Total
+ \$3,037.50	Labor Costs
\$4,490.50	Total Cost

#### Price with 40% Gross Profit:

\$4,490.50	Total Cost
X 1.4	40% Gross Profit
\$6,286.70	Total Price

#### Sample Answer:

The price for this design is \$6,286.70. This is the price for this design in a natural walnut finish with stainless steel trim. There are 4 reused glass panels, with custom upholstered cushions. There are 4 large drawers with solid walnut drawer fronts. This design is set on antique castors to make it easier to move, etc.

# Presentation Board Layout:

Use Indesign, AutoCAD or Inventor for layout

<b>Project Title</b>		Price Range- (\$ to \$)
Renderings or Digital Images		
Plan View	Elevation, Section, or Detail	Elevation, Section, or Detail
Front Elevation	Side Elevation	Elevation, Section, or Detail
Project Description (up to 250 words)		

The **Presentation Board** will be a 24” x 36” PDF

- The presentation board is your way to communicate your design
- You may use any legible font, color, and other graphic elements to embellish your Presentation Board
- Your PDF needs to be “Print Ready”. Please set the document to 24” x 36”, CMYK Color, and 300DPI.
- Dimensions are required on the Plan View, Elevation, Section, and Detail drawings. These drawings should be generated using use available 2D or 3D drafting software, AutoCAD, Inventor, etc.
- Project Description: Provide a brief description of your design, write about your inspiration, your material choices, or any other relevant information about your project.