ME List of Undergraduate Laboratory Needs (Based on ME Engineering Fees of $150,000)

The following table contains the requested items for ME in the format requested by the Dean’s office. The total amount requested for the top prioritized items, given in Pages 1-2, is $150,000. The prioritized list of our total current needs (i.e., $150,000) is shown on Pages 1-2 of this document and more detailed descriptions of each request are given on Pages 3-6. Note that some of the items in the prioritized list had to be broken down in the table below to fit the requested format.

- Lab. Equipment > $5,000 (itemize each piece of equipment, lab and function)
  
  Dynamics System Lab (Holmes Hall 308) for ME 402 as well as ME 213, 481, 482, and 473 – Electrodynamic Shaker System (Item 1, Page 4)
  ...........................................................................................................................................................................$6,500
  
  Thermal Design Lab (Holmes Hall 308) for ME 480 as well as ME 322, 422, 481 & 482 – MicroPIV Flow and Temperature Visualization (Item 2, Page 4)
  ...........................................................................................................................................................................$25,000
  
  Design, Manufacturing, and Dynamics Labs (Holmes Hall 308 & 309) for ME 213, 342, 402, 480, 481 & 482 – Computers (22 @ $2,500 each) (Item 3, Page 4)
  ...........................................................................................................................................................................$55,000
  
  Design Lab (Holmes Hall 309) for ME 481 & 482 as well as ME 480 - ANSYS Package (Structures-Static Linear/Nonlinear, Fluent-CFD, LSDYNA-Dynamic Crash/Impact) Software Annual Licensing Fees– (Item 4, Page 5)
  ...........................................................................................................................................................................$6,000
  
  Design and Manufacturing Lab (Holmes Hall 140) for ME 213, 342, 481, & 482 - Adjustable Height Table Lift (Item 5, Page 5)
  ...........................................................................................................................................................................$5,000
  
  Design and Manufacturing Lab (Holmes Hall 140) for ME 213, 342, 481, & 482 - End Mill Tube Notcher and Tooling (Item 6, Page 5)
  ...........................................................................................................................................................................$6,000
  
  FE Exam Fees for 50 ME graduating students @ $100/student (Item 7, Page 5)
  ...........................................................................................................................................................................$5,000
### List of Undergraduate Laboratory Needs

#### Fall 2012

- **Regular Personal Services (specify who)**

  None .................................................................................................................................................. $ 0

  **Total Lab Equipment > $5,000 and Regular Personnel Services ......................... $108,500.00**

- **Casual Hires (specify function)**

  **Total Casual Hires (Not from these funds)................................................................. $ 0**

- **Student Assistants (specify the labs)**

  **Total Student Assistants (Not from these funds)..................................................... $ 0**

- **Lab. materials and supplies and lab operations (specify the labs)**

  Introduction to Engineering Design – Materials and supplies for ME 213; Holmes Hall 140, 309, & 348 ($1,500/semester), (Item 8, Page 6)......................................................................................... $ 3,000

  Materials Manufacturing Lab – Materials and supplies for ME 342; Holmes Hall 140, 308, & 348 ($1,500/semester) (Item 9, Page 6) ........................................................................................................ $ 3,000

  Dynamic System Lab - Sensors and Expendable Materials & Supplies for ME 402; Holmes Hall 308 (Item 10, Page 6). .................................................................................................................. $ 2,500

  Design, Manufacturing, and Dynamics Labs – Plotter Papers 2 Rolls ($5,00) and Plotter Ink & Toner ($1,000), 6 Laser Toners ($1,500), 12 Cases of Papers ($5,00) for ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309 (Item 11, Page 6)................................. $ 3,500

  Senior Design Students’ Projects for ME 481 & ME 482; Holmes Hall 140, 309, & 348—(Item 12, Page 6)......................................................................................................................... $ 15,000

  **Total Lab materials and supplies and lab operations .............................................. $27,000.00**

- **Equipment and Furniture Repairs & Maintenance**

  **Total Equipment and Furniture Repairs and Maintenance ......................... $ 0**

- **Computer Repairs & Maintenance**

  **Total Computer Repairs & Maintenance ............................................................... $ 0**

- **Computer Software**
<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Computer Software License Fees</td>
<td>$5,000</td>
</tr>
<tr>
<td>• Computer Software License Fees</td>
<td></td>
</tr>
<tr>
<td>Engineering Software Licensing Fees (Holmes Hall 309) for ME 213, 342, 402, 480, 481 &amp; 482 – SolidWorks Annual Licensing Fees ($2,000) (Item 13, Page 7)</td>
<td>$2,000</td>
</tr>
<tr>
<td>Engineering Software Upgrade Licensing Fees (Holmes Hall 308 &amp; 309) for ME 213, 342, 402, 480, 481 &amp; 482 – Windows 7/8, and OS ($3,000) (Item 14, Page 7)</td>
<td>$3,000</td>
</tr>
<tr>
<td>• Lab. Equipment for controlled Property (computers etc each with price tag of &lt; $5,000)</td>
<td></td>
</tr>
<tr>
<td>Design, Manufacturing, and Dynamics Labs (Holmes Hall 308 &amp; 309) for ME 213, 342, 402, 480, 481, &amp; 482 – 1 Server ($3,500) and 2 Wireless Routers ($5,00) (Item 15, Page 7)</td>
<td>$4,000</td>
</tr>
<tr>
<td>Design and Manufacturing Labs (Holmes Hall 140) for ME 213, 342, 481, &amp; 482 – Non-Portable Tool Box (Item 16, Page 7)</td>
<td>$1,500</td>
</tr>
<tr>
<td>Design and Manufacturing Labs (Holmes Hall 140) for ME 213, 342, 481, &amp; 482 – Steel Top Table 6’x2.5’ (Item 17, Page 7)</td>
<td>$4,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lab. Equipment for controlled Property (each &lt;$5,000)</td>
<td>$9,500</td>
</tr>
</tbody>
</table>

**- ME Total Top Prioritized List Price:** $108,500 + $27,000 + $5,000 + $9,500 = $150,000

**- ME Available Eng Fees:** $150,000
M.E. Engineering Fee

Priority List

1. Dynamics System Laboratory (ME 402; Holmes Hall 308)

Dynamics System Lab (Holmes Hall 308) for ME 402 as well as ME 213, 481, 482, and 473 – **Electrodynamc Shaker System**

$6,500

A new Vibration Test is added to the ME 402 Lab and this Shaker System is needed to run this new experiment. This equipment can also be used in the following courses: ME 213, 481, 482, and 473.

2. Thermal Design Laboratory (ME 480; Holmes Hall 308)

Thermal Design Lab (Holmes Hall 308) for ME 480 as well as ME 322, 422, 481 & 482 – **MicroPIV Flow and Temperature Visualization**

$25,000

This system measures and gives accurate flow visualization and temperature profile for various fluidic systems. A new experiment is added to the ME 480 Lab and this equipment is needed to run this new experiment. This equipment can also be used in ME 322, 422, 481 & 482.

3. Design, Manufacturing, and Dynamics Laboratories (ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309)

Design, Manufacturing, and Dynamics Labs (Holmes Hall 308 & 309) for ME 213, 342, 402, 480, 481 & 482 – **Computers** (22 @ $2,500 each)

$55,000

The computers in the Design, Manufacturing, and Dynamics Labs (Holmes Hall 308 & 309) are about 5 years old and need to be replaced to ensure compatibilities with updated software as well as avoid break-downs during the semesters.
4. Design Laboratory (ME 480, 481, & 482; Holmes Hall 309)

Design Lab (Holmes Hall 309) for ME 481 & 482 as well as ME 480 - **ANSYS Package (Structures-Static Linear/Nonlinear, Fluent-CFD, LSDYNA-Dynamic Crash/Impact) Software Package**

Annual Licensing Fees

$6,000

ANSYS Software is an important CAD (Computer Aided Design) tool with Solid Modeling and Finite Element Analysis (FEA) software important for our Mechanical Design Students. This software is needed since for complex structures and problems Solid Work Cosmos will be inadequate. In addition, due to the needs for aerodynamics and impact/crash analyses for projects such as Aero Design, Supermileage, Formula, etc. the additional modules of the ANSYS software such as Fluent and LSDYNA are necessary. The Fluent CFD module of the ANSYS software are also useful for the thermofluids design projects in ME 480.

5. Design and Manufacturing Laboratories (ME 213, 342, 481, & 482; Holmes Hall 140)

Design and Manufacturing Lab (Holmes Hall 140) for ME 213, 342, 481, & 482 - **Adjustable Height Table Lift**

$5,000

This table is needed for lifting heavy components for Design and Manufacturing projects.

6. Design and Manufacturing Laboratories (ME 213, 342, 481, & 482; Holmes Hall 140)

Design and Manufacturing Lab (Holmes Hall 140) for ME 213, 342, 481, & 482 - **End Mill Tube Notcher and Tooling**

$6,000

This equipment is needed for Design and Manufacturing projects.

7. FE Exam Fees for 50 ME graduating students

**FE Exam Fees** for 50 ME graduating students @ $100/student.........................................................$5,000

This fee is set aside to encourage more ME graduating students to take the FE exam.
8. Introduction to Engineering Design Lab (ME 213; Holmes Hall 140, 309, & 348)

Introduction to Engineering Design – **Materials and supplies** for ME 213; Holmes Hall 140 & 348 ($1,500/semester)

$1,500 \times 2 = \$3,000$

9. Materials Manufacturing Lab (ME 342; Holmes Hall 140, 308, 348)

Materials Manufacturing Lab – **Materials and supplies** for ME 342; Holmes Hall 140, 308, & 348 ($1,500/semester)

$1,500 \times 2 = \$3,000$

10. Dynamic System Lab (ME 402; Holmes Hall 308)

Dynamic System Lab - **Sensors and Materials & Supplies** for ME 402; Holmes Hall 308

$2,500$

11. Design, Manufacturing, and Dynamics Laboratories (ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309)

Design, Manufacturing, and Dynamics Labs – **Plotter Papers** 2 Rolls ($5,00) and **Plotter Ink & Toner** ($1,000), 6 **Laser Toners** ($1,500), 12 Cases of **Print Papers** ($5,00) for ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309

$3,500$

12. Senior Design Student Projects (ME 481 & 482; Holmes Hall 140, 309, & 348)

**Senior Design Students’ Projects Funding (about 10% for each project)** for ME 481 & ME 482; Holmes Hall 140, 309, & 348

$15,000$

Financial support for student projects in ME 481 & ME 482 (includes Needed Design Hardware & Software). This includes Design funding for ME 481 & ME 482 for both Sections I & II and for both Fall 2012 and Spring 2013 Semesters.
13. **Solid Works Software (ME 213, 342, 402, 480, 481, & 482; Holmes Hall 309)**

*Solid Works* Engineering Software Annual Licensing Fees (Holmes Hall 309) for ME 213, 342, 402, 480, 481 & 482 – SolidWorks $2,000

Solid Works Software is an important CAD (Computer Aided Design) tool with Solid Modeling, 3-views drawings with dimensioning, and COSMOS Finite Element Analysis (FEA) software important for our Mechanical Design Students.

14. **Engineering Software (ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309)**

Engineering Software Upgrade Licensing Fees (Holmes Hall 308 & 309) for ME 213, 342, 402, 480, 481, & 482 – *Windows 7/8*, and *OS* $3,000

15. **Design, Manufacturing, and Dynamics Laboratories (ME 213, 342, 402, 480, 481, & 482; Holmes Hall 308 & 309)**

Design, Manufacturing, and Dynamics Labs (Holmes Hall 308 & 309) for ME 213, 342, 402, 480, 481, & 482 – 1 *Server* ($3,500) and 2 *Wireless Routers* ($5,00) $4,000

16. **Design and Manufacturing Laboratories (ME 213, 342, 481, & 482; Holmes Hall 140)**

Design and Manufacturing Labs (Holmes Hall 140) for ME 213, 342, 481, & 482 – *Non-Portable Tool Box (for storing tools in Holmes 140)* $1,500

17. **Design and Manufacturing Laboratories (ME 213, 342, 481, & 482; Holmes Hall 140)**

Design and Manufacturing Labs (Holmes Hall 140) for ME 213, 342, 481, & 482 – *Steel Top Table 6’x2.5’ (as a workbench for Design & Manufacturing projects in Holmes 140)* $4,000