6.121/HST.575

Bioelectronics Projects Laboratory

Course: 2-8-2, Spring 2006
12 Engineering Design Points
Prerequisites: 6.002 or 6.071
Lecturer: Professor Rahul Sarpeshkar
Writing Instructors: Susan Ruff, Nicole Kelley
TAs: Mark Finlayson, Soumyajit Mandal
Lectures: WF3-4 in 36-156
Labs: 2 hr. sessions in 38-600 (Sign up)
Tentative Lecture Schedule

• Lecture 1: Feb 8    Introduction to Course and the NI bench
• Lecture 2: Feb 10  Electrical Safety, NI-ELVIS, OrCAD
• Lecture 3: Feb 15  RS-232 Serial Interface, DS5000 Processor, Expl. Reps
• Lecture 4: Feb 17  Switches, Analog to Logic, and Programming
• Holiday: Feb 20   President’s Day
• Lecture 5: Feb 22  Psychophysics, Reaction Time, Lit Review
• Lecture 6: Feb 24  Principles of Design and Testing, Lab 1 Overview
• Lecture 7: Mar 1   Writing Lecture
• Lecture 8: Mar 3   Analog-to-Digital Conversion
• Lecture 9: Mar 8   Calibration and Validation, References
• Lecture 10: Mar 10  Thermistors
• Lecture 11: Mar 15  Model-based Calibration
• Lecture 12: Mar 17  Virtual instruments, Lab 2 Overview
Tentative Lecture Schedule (cont.)

- Lecture 13: Mar 22  Introduction to the EKG, Final Project Proposal
- Lecture 14: Mar 24  Amplifiers and Noise
- Holiday: Mar 27-31  Spring Break
- Lecture 15: Apr 5  Advanced EKG
- Lecture 16: Apr 7  Feedback Systems, Active Ground
- Lecture 17: Apr 12  Filters
- Lecture 18: Apr 14  Final Projects
- Holiday: Apr 17,18  Patriot’s Day
- Lecture 19: Apr 19  Writing Lecture
- Lecture 20: Apr 21  Detection and Display, Lab 3 Overview
- Apr 26, 28:  Oral Progress Reports
- May 3, 5, 10, 12:  Oral Progress Reports
- Lecture 21: May 17  Course Summary, Survey
## Due Dates for Class Work

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Distributed</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exploratory Reports</td>
<td>Wed, Feb 8</td>
<td>Wed, Feb 22</td>
</tr>
<tr>
<td>2</td>
<td>Prelab 1</td>
<td>Wed, Feb 8</td>
<td>Mon/Tue, Feb 13/14 (in lab)</td>
</tr>
<tr>
<td>3</td>
<td>Prelab 2</td>
<td>Wed, Feb 15</td>
<td>Tue/Wed, Feb 21/22 (in lab)</td>
</tr>
<tr>
<td>4</td>
<td>Prelab 3</td>
<td>Wed, Feb 22</td>
<td>Mon/Tue, Feb 27/28 (in lab)</td>
</tr>
<tr>
<td>5</td>
<td>Peer Reviews of Exploratory Reports</td>
<td>Wed, Feb 22</td>
<td>Wed, Mar 15</td>
</tr>
<tr>
<td>6</td>
<td>Tipsy Tester Lab Report</td>
<td>Mon/Tue, Feb 27/28 (in lab)</td>
<td>Mon/Tue, Mar 6/7 (in lab)</td>
</tr>
<tr>
<td>7</td>
<td>Prelab 4</td>
<td>Wed, Mar 1</td>
<td>Mon/Tue, Mar 6/7 (in lab)</td>
</tr>
<tr>
<td>8</td>
<td>Prelab 5</td>
<td>Wed, Mar 3</td>
<td>Mon/Tue, Mar 13/14 (in lab)</td>
</tr>
<tr>
<td>9</td>
<td>Prelab 6</td>
<td>Wed, Mar 15</td>
<td>Mon/Tue, Mar 20/21 (in lab)</td>
</tr>
<tr>
<td>10</td>
<td>Remote Digital Thermometer Lab Report</td>
<td>Mon/Tue, Mar 20/21 (in lab)</td>
<td>Mon/Tue, Apr 3/4</td>
</tr>
<tr>
<td>11</td>
<td>Prelab 7</td>
<td>Wed, Mar 22</td>
<td>Mon/Tue, Apr 3/4 (in lab)</td>
</tr>
<tr>
<td>12</td>
<td>Literature Review</td>
<td>Wed, Feb 22</td>
<td>Wed, Mar 22</td>
</tr>
<tr>
<td>13</td>
<td>Peer Reviews of Literature Reviews</td>
<td>Wed, Mar 22</td>
<td>Wed, Apr 5</td>
</tr>
<tr>
<td>14</td>
<td>Final Project Proposal</td>
<td>Wed, Mar 22</td>
<td>Wed, Apr 5</td>
</tr>
<tr>
<td>15</td>
<td>Prelab 8</td>
<td>Wed, Apr 5</td>
<td>Mon/Tue, Apr 10/11 (in lab)</td>
</tr>
<tr>
<td>16</td>
<td>Prelab 9</td>
<td>Wed, Apr 12</td>
<td>Mon/Tue, Apr 24/15 (in lab)</td>
</tr>
<tr>
<td>17</td>
<td>Peer Reviews of Final Project Proposals</td>
<td>Wed, Apr 19</td>
<td>Wed, Apr 27</td>
</tr>
<tr>
<td>18</td>
<td>EKG Lab Report</td>
<td>Mon/Tue, Apr 24/25 (in lab)</td>
<td>Mon/Tue, May 1/2 (in lab)</td>
</tr>
<tr>
<td>19</td>
<td>Final Project Presentations</td>
<td>Wed, May 10</td>
<td>Wed/Thu, May 17/18</td>
</tr>
<tr>
<td>20</td>
<td>Final Project Lab Report</td>
<td>Wed, May 10</td>
<td>Thu, May 18</td>
</tr>
</tbody>
</table>
Course Administration

Course Staff
- Lecturer: Professor Rahul Sarapeshkar
  - Office: 38-294
  - Email: rahuls@mit.edu
- Writing Instructors: Nicole Kelley, Susan Ruff
  - Office: 32-083
  - Phone: 3-3039
  - Email: nkelley@mit.edu, ruff@mit.edu
- TAs: Mark Finlayson
  - Office: 32-258
  - Phone: 3-0287
  - Cell: (617) 515-0708
  - Email: markaf@mit.edu
  - Soumyajit Mandal
    - Office: 38-276
    - Phone: (617)452-2368
    - Email: soumya@mit.edu
- Course Assistant: Gretchen Jones
  - Office: 38-276
  - Phone: 3-4872
  - Email: gretch@mit.edu

Course Email Lists
- Students: 6.121-students@mit.edu
- Staff: 6.121-staff@mit.edu

Grades
- Prelabs (9) 20%
- Lab Reports (3) 20%
- Final Project (1) 25%
- Communications (4) 25%
- Instructor’s Evaluation 10%

Student Laboratory Hours
- Two-hour lab session to be assigned (fill out a preferences form)

Website
- http://web.mit.edu/6.121 (MIT certificates required)