Electrical Engineering 3401: Continuous Linear Systems Laboratory
Prior Number - Electrical Engineering 218

Credit and Contact Hours
1 credit hour laboratory (One 90-minute sessions per week). This laboratory is taken simultaneously with Electrical Engineering 3400 (217).

Instructor
Graduate Teaching Assistants coordinated by a faculty member
K. Kosbar, Ph.D. (faculty coordinator)

Text(s)
Continuous Linear Systems Laboratory Manual
Available at: http://ece.mst.edu/currentcourses/classnotesinfo/

Course Information
Course Description
Laboratory and software tools for the analysis of linear and non-linear systems. Topics include spectral analysis, transforms, and applications.

Prerequisites
Electrical Engineering 2120 (153) and Math 3304 (204) with a grade of “C” of better; Passing the Electrical Engineering Advancement Exam II. Preceded or accompanied by Electrical Engineering 3400 (217).

Required or Elective
Required (pre-2014 Catalog Years) for electrical and computer engineering majors

Course Goals
General Outcomes
1. Understand fundamental signal and linear system structure and characteristics
2. Understand the concepts of signal spectrum and system frequency response
3. Learn to analyze signals and linear systems in time and frequency domains
4. Learn how to implement signal processing algorithms.
### Relationship of Course to Program Outcomes

<table>
<thead>
<tr>
<th>ECE Outcome</th>
<th>Course Outcomes</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>W S S S M</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>W S S</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>M M M</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j</td>
<td></td>
<td></td>
</tr>
<tr>
<td>k</td>
<td>S S M S W</td>
<td></td>
</tr>
<tr>
<td>l</td>
<td>W W W</td>
<td></td>
</tr>
</tbody>
</table>

S – strong connection; M – medium connection; W – weak connection

### Topics Covered
- Signal, Spectrum, and Auditory Perception (2 weeks)
- Harmonic Distortion (1 week)
- Spectrum of Noisy Signals (1 week)
- Spectrum of Voice and Data Signals (1 week)
- Spectrum of Random Data Signals (1 week)
- High-Pass Filter Frequency Response (2 weeks)
- AM Modulation (2 weeks)
- Project (3 weeks)