Introduction to Discrete Time Signals & Systems Laboratory

ECE 2057

Description / Conditions

Transcript Abbreviation:
Intr Disc Sig&Sys

Course Description:
Introduction to sampled time signals and linear time invariant sampled time systems. Lab only.

Course Levels:
Undegraduate (1000-5000 level)

Designation:
Required

General Education Course:
(N/A)

Cross-Listings:
(N/A)

Course Detail

Credit Hours (Minimum if “Range” selected):
0.50

Max Credit Hours:
(N/A)
Select if Repeatable:
Off

Maximum Repeatable Credits:
(N/A)

Total Completions Allowed:
(N/A)

Allow Multiple Enrollments in Term:
No

Course Length:
14 weeks (autumn or spring)

Off Campus:
Never

Campus Location:
Columbus

Instruction Modes:
In Person (75-100% campus; 0-24% online)

Prerequisites and Co-requisites:
Prereq or concur: 2051.

Electronically Enforced:
No

Exclusions:
Not open to students with credit for 2100, 2100.01, 2100.04, 2104, 2110, or 2050.

Course Goals and Learning Objectives

Course Goals / Objectives:
Be competent with the fundamentals of discrete time linear time invariant (LTI) systems
Be competent in working in teams for laboratory experiments
Be competent in analyzing, designing and sythesizing discrete time LTI systems, including finite impulse response (FIR) and infinite impulse response (IIR) filters
Be familiar with how to implement designs in hardware using modern techniques such as FPGAs and microcontrollers
Be exposed to troubleshooting and debugging practices
Check if concurrence sought:
No

Contact Hours

Contact Hours:

<table>
<thead>
<tr>
<th>Topic</th>
<th>LEC</th>
<th>REC out-of-class</th>
<th>REC in-class</th>
<th>Weekly LAB out-of-class</th>
<th>Weekly LAB in-class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instrumentation and CAD tool review: oscilloscope, Matlab, microcontroller and FPGA programming</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>9.0</td>
<td>0</td>
</tr>
<tr>
<td>FPGA implementation of discrete time filters (FIR, IIR)</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>6.0</td>
<td>0</td>
</tr>
<tr>
<td>Microcontroller implementation of discrete time filters (FIR, IIR)</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
<td>6.0</td>
<td>0</td>
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<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
<td>0</td>
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</table>

Grading and Texts

Grading Plan:
Letter Grade

Course Components:
Lab

Grade Roster Component:
Lab

Credit by Exam (EM):
No
Grades Breakdown:

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Reports</td>
<td>100%</td>
</tr>
</tbody>
</table>

Representative Textbooks and Other Course Materials:

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>(recommended)</td>
<td></td>
<td></td>
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</tbody>
</table>

ABET Student Learning Outcomes

ABET-CAC Criterion 3 Outcomes:
(N/A)

ABET-ETAC Criterion 3 Outcomes:
(N/A)
ABET-EAC Criterion 3 Outcomes:

<table>
<thead>
<tr>
<th>Substantial contribution (3-6 hours)</th>
<th>1</th>
<th>an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some contribution (1-2 hours)</td>
<td>2</td>
<td>an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors</td>
</tr>
<tr>
<td>Substantial contribution (3-6 hours)</td>
<td>3</td>
<td>an ability to communicate effectively with a range of audiences - pre-2019 EAC SLO (g)</td>
</tr>
<tr>
<td>Substantial contribution (3-6 hours)</td>
<td>5</td>
<td>an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives</td>
</tr>
<tr>
<td>Substantial contribution (3-6 hours)</td>
<td>6</td>
<td>an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions</td>
</tr>
<tr>
<td>Substantial contribution (3-6 hours)</td>
<td>7</td>
<td>an ability to acquire and apply new knowledge as needed, using appropriate learning strategies</td>
</tr>
</tbody>
</table>

Embedded Literacies (UG courses only)

Embedded Literacies Info:

Attachments / Additional Notes or Comments

Attachments: 
(N/A)

Additional Notes or Comments: 
(N/A)