**COURSE PROFILE**

<table>
<thead>
<tr>
<th>Course Number : EE 242</th>
<th>Course Title : Logic Circuit Design Laboratory</th>
</tr>
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<tbody>
<tr>
<td><strong>Required / Elective :</strong> Required</td>
<td><strong>Pre-requisite :</strong> -</td>
</tr>
<tr>
<td><strong>Corequisite :</strong> EE 240</td>
<td><strong>Textbook / Required Material :</strong></td>
</tr>
<tr>
<td><strong>Catalog Description:</strong> Experiments with logic gates and combinational circuits, digital arithmetic circuits, multiplexers, flip-flops, counters, shift registers.</td>
<td>Logic Design Lab. Manual</td>
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<tr>
<td><strong>Course Structure / Schedule :</strong> (0+0+2) 1 / 2 ECTS</td>
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**Extended Description :**
This is a required laboratory course for the Computer and Electronics Engineering students. The goal of the course is to give students a hands-on experience in design, implementation, and debugging of digital circuits and prepare students for the design of practical digital hardware systems using Verilog.

**Design content :-**

**Computer usage:**
VHDL (Verilog Hardware Description Language)

**Course Outcomes:**
A student who successfully completes the course will be able to

- Construct and analyze small multi-level combinational logic circuits containing AND, OR, NOT, NAND, NOR, and XOR gates.[5],[6],[7]
- Analyze and design modular combinational logic circuits containing decoders, multiplexers, demultiplexers, 7-segments display decoders and adders. [5],[6],[7]
- Analyze and design of sequential circuits using the concepts of state and state transition. [5],[6],[7]
- Develop basic laboratory skills, recording of data, and write well-organized technical reports. [5],[6],[9]
- Present their application projects via oral and visual media. [9],[11]
- Have an ability of professional and ethical responsibility.[4]
- Learn to work in team, responsibilities of circuit construction.[8]

**Level of contribution of course to program outcomes:**
- Strong: [5],[6],[8]
- Average: [4],[7],[9],[11]
- Some: -

**Recommended reading:**
### Teaching Methods:
Pre-readings, preliminary works, lecture and group work.

### Assessment Methods:
Laboratory reports, class survey in lab., term project, preliminary works

### Student Workload:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Preparatory reading and pre-works</td>
<td>7 hrs</td>
</tr>
<tr>
<td>Homeworks, laboratory reports</td>
<td>10 hrs</td>
</tr>
<tr>
<td>Projects</td>
<td>2 hrs</td>
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<tr>
<td>Laboratory work</td>
<td>28 hrs</td>
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<tr>
<td>Final Exam</td>
<td>3 hrs</td>
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</table>
| **TOTAL**                                      | **50 hrs** |  to match 25 x 2 ECTS

Prepared by: Dr. Ebru Gürsu ÇİMEN  
Revision Date: 05.02.2010