İSTANBUL KÜLTÜR UNIVERSITY

DEPARTMENT OF ELECTRONIC ENGINEERING

COURSE INFORMATION

2007-2008

<table>
<thead>
<tr>
<th>Course Code</th>
<th>EE 420</th>
<th>Course Title</th>
<th>Electronic Circuits II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Instructor</td>
<td>Prof. Dr. Aydin AKAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:akan@istanbul.edu.tr">akan@istanbul.edu.tr</a></td>
<td>Tel: 0212 473 70 70 / 17914</td>
<td>Room No: 511</td>
</tr>
<tr>
<td>Level/Year</td>
<td>2</td>
<td>Credits</td>
<td>(3+0) 3</td>
</tr>
<tr>
<td>Semester</td>
<td></td>
<td></td>
<td>Spring</td>
</tr>
<tr>
<td>Course Lab Assistant</td>
<td>Res. Assist. Güray GÜRKAN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:g.gurkan@iku.edu.tr">g.gurkan@iku.edu.tr</a></td>
<td>Tel: 0212 498 4230</td>
<td>Room No: 504</td>
</tr>
</tbody>
</table>

Course Homepage

http://web.iku.edu.tr/courses/ee/ee420/

Course Description

This is the second course on electronic circuits and systems. Topics include direct coupled amplifiers, Operational amplifiers and their applications.

Feedback on electronic circuits: types of feedback, stability issues in feedback circuits. Positive and negative feedback circuits.

Oscillators: different types of oscillator circuits, Hartley, Colpitts, etc.

Resonance circuits: frequency and impedance characteristics, tuning.

Power amplifiers: A, B, AB, C class power amplifiers circuits.
**Course Aims and Objectives**

To give students a deep understanding and practice on, The analysis and design of multi-stage electronic amplifiers, Frequency characteristics of RC coupled amplifier circuits, Lower and upper cut-off frequency calculations, OP-AMP circuits and their applications, Feedback on electronic circuits: positive and negative feedback, Oscillator circuits and different implementations, Resonance circuits, Power amplifier types

**Learning Outcomes**

A detailed background on

- Semiconductor electronic circuit analysis
- Analysis and design of electronic amplifier circuits, Op-Amps, oscillators.

**Methods of Teaching/Learning**

The course will be implemented by means of

- Lectures in the class,
- Analytical and computer homework assignments,
- Design projects.

**Prerequisites**

EE 320
### Methods of Assessment and Weighting

<table>
<thead>
<tr>
<th>Components of Assessment</th>
<th>Method(s)</th>
<th>Percentage weight</th>
<th>Date</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>Homework</td>
<td>10 %</td>
<td>Every other week</td>
<td>2 hours</td>
</tr>
<tr>
<td>Short quiz</td>
<td>In class</td>
<td>10 %</td>
<td>Twice</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Midterm I</td>
<td>Written exam</td>
<td>20 %</td>
<td>15.04.2008</td>
<td>120 minutes</td>
</tr>
<tr>
<td>Midterm II</td>
<td>Written exam</td>
<td>20 %</td>
<td>13.05.2008</td>
<td>120 minutes</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Written exam</td>
<td>40 %</td>
<td>03.06.2008</td>
<td>120 minutes</td>
</tr>
<tr>
<td>Attendance</td>
<td></td>
<td>70 % attendance to class is required to be able to enter the final exam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outline Teaching Schedule

The course will be delivered according to the following schedule:

Week 1: Explanation on course content, reference books, homework, quizzes, exams. Direct Coupled Amplifier circuits, stages of operational amplifiers.

Week 2: OPAMP applications: properties and applications

Week 3: Introduction to Feedback on electronic circuits, different types and issues.

Week 4: Analysis of circuits with feedback from voltage/current to voltage/current.

Week 5: Examples on feedback circuits and problem session.

Week 6: Effect of feedback on electronic circuits: gain, stability, bandwith, etc.

Week 7: Examples on negative feedback amplifier circuits and problem session.

Week 8: Midterm I

Week 9: Oscillator types, different electronic oscillator circuits. Bridge type oscillators

Week 10: RC Phase Shift Oscillators, Hartley and Collpitts oscillator circuits.

Week 11: Resonance circuits, impedance of serial and parallel impedance circuits.

Week 12: Midterm II

Week 13: Power amplifiers, different classes and examples.

Week 14: Review of the course and problem session.

Textbook/Reference Material/Other Support material