Course Goals:
To introduce digital electronics: Interfacing of CMOS and TTL devices, principals of programmable logic devices, Digital to analog and analog to digital conversions. To provide a good grounding in the principles of operation of semiconductor devices and circuits. To make the student aware of the practical issues involved in using electronic circuits and systems. For example, propagation delay, switching speed limitations, pulse propagation along transmission lines, characteristic impedance, noise, power supply regulation, the relative merits of the different logic families, power dissipation etc.

Time Schedule:
Duration: 16 weeks
Lectures: 3 hours /week
Tutorial: None
Laboratories: None

Objectives:
At Completing this module the student should be able to:
1- Understand the fundamentals of widely used electronic digital devices and circuits.
2- Design simple digital electronic systems.
3- Utilize the EWB tool and/or VHDL tools in system design and simulation.
4- Understand the various interfacing and signal-conditioning circuits used in Digital/Analog systems.

Course Contents

<table>
<thead>
<tr>
<th>Week</th>
<th>Flip-flop and related devices, multivibrators and 555 time</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sequential circuits and FSM</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Programmable logic devices (PAL, PLA, GAL)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>BJT and CMOS digital circuits</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Logic families (RTL, TTL, CMOS, ECL)</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Interfacing circuits</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>A/D and D/A Convertors</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Memory and Storage</td>
<td>1</td>
</tr>
</tbody>
</table>

Mode of Assessment

1- First Exam 20%
2- Second Exam 20%
3- Reports\Homeworks\ and or Projects 10%
4- Final Exam 50%

References

Dr. Abdel-Rahman Al-Qwasmi