

# Table of Contents

<b>General Equipment List</b>	5
<b>Laboratory 1</b> Introduction - Resistor Codes, Breadboard, and Basic Measurements	9
<b>Laboratory 2</b> Instrument Familiarization and Basic Electrical Relations	19
<b>Laboratory 3</b> The Oscilloscope	37
<b>Laboratory 4</b> Bandwidth, Filters, and Diodes	59
<b>Laboratory 5</b> Transistor and Photoelectric Circuits	73
<b>Laboratory 6</b> Operational Amplifier Circuits	83
<b>Laboratory 7</b> Digital Circuits - Logic and Latching	95
<b>Laboratory 8</b> Digital Circuits - Counter and LED Display	107
<b>Laboratory 9</b> Programming a PIC Microcontroller - Part I	121
<b>Laboratory 10</b> Programming a PIC Microcontroller - Part II	141
<b>Laboratory 11</b> Pulse-Width-Modulation Motor Speed Control with a PIC	155
<b>Laboratory 12</b> Data Acquisition	171
<b>Laboratory 13</b> Strain Gages	187
<b>Laboratory 14</b> Vibration Measurement With an Accelerometer	197
<b>Laboratory 15</b> Practical Advice for Microcontroller-based Design Projects	203