Engineering Program

Specialization	**Technology of remote industrial sensing and controlling**
Course Number	
Course Title	**Sensing elements and devices Lab**
Credit Hours	
Theoretical Hours	**0**
Practical Hours	**1**

Brief Course Description:

Experimental study and investigation of sensing elements and their characteristic, in addition the course illustrates the applications of sensing elements and devices in industry and control.

Course Objectives:

Upon the completion of this course, the student will be able to:

1. Investigate the characteristics of sensing elements and devices
2. Learn the operation principle of various types of sensing elements and devices
3. Distinguish between sensor and transducer
4. Use computer software to simulate sensing elements design

Detailed Course Description:

Chapter No.	Content title	Unit content	Time Needed
1.	**Experiment 3:** Experimental Data Analyses	Refer to Transducer Laboratory sheet	
2.	**Experiment 4:** Investigation of characteristics of thermistors	Refer to Transducer Laboratory sheet	
3.	**Experiment 5:** Investigation RTD characteristics	Refer to Transducer Laboratory sheet	
4.	**Experiment 6:** Static characteristics of Potentiometeric Transducer	Refer to Transducer Laboratory sheet	
5.	**Experiment 7**: Static characteristics of wire type and semiconductor strain gauges	Refer to Transducer Laboratory sheet	
6.	**Experiment 8: Investigation of LVDT Characteristics**	Refer to Transducer Laboratory sheet	
7.	**Experiment 9**: Investigation of DC Tachogenerator transducer characteristics	Refer to Transducer Laboratory sheet	
8.	**Experiment 10**: Inductive proximity sensor	Refer to Transducer Laboratory sheet	
9.	**Experiment 11:** Photo Transmissive Speed Transducer	Refer to Transducer Laboratory sheet	
10.	**Experiment 12:** Light proximity sensor	Refer to Transducer Laboratory sheet	
11.	**Experiment 13:** Capacitive proximity sensor	Refer to Transducer Laboratory sheet	
12.	**Experiment 14:** Thermocouple	Refer to Transducer Laboratory sheet	

Evaluation Strategies:

		Percentage	Date
1. Exams	**First Exam**	20%	**/ /20__**
	Second Exam	20%	**/ /20__**
	Final Exam	50%	**/ /20__**
2. Homework and Projects		10%	**/ /20__**
Total		100%	

Teaching Methodology:

- Working with datasheet
- Practical experimental work in small groups
- PowerPoint slides
- Term projects

Text Books & References:

Textbooks

1. Transducer Laboratory sheet, Dr. Tariq Younes

References