

Electrical Engineering Courses (EE)

Electrical Engineering Courses Group

EE 218 – Measurements & Instrumentation

COURSE INFORMATION

Course Title: Measurements & Instrumentation

Code: EE 218

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: EE 238

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Introduction to feedback control loop, instrument. Major specifications related to choice of measuring Instruments. Measurement of pressure. Measurement of temperature. Level measurement. Flow measurement. Viscosity, PH measurement, oxygen analyzer. Displacement and velocity measurement. Force and torque measurement. Data analysis, measures of centrality, dispersion. Strain gauges and related bridges. Study of comparators, and error detectors. Transducers (Electric / pneumatic / Electro mech). Amplifiers (electric / pneumatic). Actuators (electric / pneumatic)

TEXT BOOK & REFERENCES

Basic control system technology by C.J. Chesmond .

Instrumentation and control by Austin and Pickersgill.

Process control Instrumentation technology by C.D. Johnson .

COURSE AIM

To give the non- electrical students the basic concepts of control Engineering and to teach them the different control concepts, sensors, comparators, transducers, amplifiers.

APPENDIX A-37

SPECIFIC OUTCOMES OF INSTRUCTION

- The students will be able to investigate different methods for remote measuring.
- The students will be able to know how transducers operate and their characteristics.
- The students will be able to know how to analyze data obtained from measurements

COURSE OUTLINE

- Week Number 1:* Introduction to feedback control
- Week Number 2:* Specifications of instruments
- Week Number 3:* Physical measurement
- Week Number 4-5:* Introduction to feedback system
- Week Number 6:* Level Instruments (liquids)
- Week Number 7-8:* Liquid flow instruments
- Week Number 9:* Physical measurement (PH- viscosity)
- Week Number 10:* Displacement and velocity
- Week Number 11:* Force and torque measurements
- Week Number 12:* Data analysis
- Week Number 13:* Electric/ Pneumatic transducers
- Week Number 14:* Actuation
- Week Number 15:* Continued (amplifiers- transducers)
- Week Number 16:* Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr.Yasser Galal.

Course Demand: *Required*