

## EE 312 Electrical Measurements and Instrumentation (2)

### COURSE INFORMATION

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Lab.	
EE 211	3	5	2	2	2	3

### COURSE AIM

- To cover the basics of digital measurements and instrumentation.
- To review the sensors and transducers used for measuring non-electrical quantities.
- To present detailed study of different data acquisition approaches.
- To study different digital meters construction and applications.

### COURSE WEEKLY CONTENTS

- 1 Introduction to digital meters
- 2 Fundamentals of digital measurements and signal conditioning circuits.
- 3 Transducers and electrical transducers. Displacement transducer.
- 4 Pressure transducer & strain gauge transducer
- 5 Hydraulic and Pneumatic Actuators
- 6 Electric Actuators
- 7 Other types of Actuators + Midterm Exam
- 8 Electrical passive filters. Single cut-off frequency filters.
- 9 Double cut-off frequencies passive filters.
- 10 Active filters.
- 11 Data acquisition and A/D conversion.
- 12 D/A conversion.
- 13 Digital DC voltmeter construction & digital multimeter.
- 14 Digital frequency meter.
- 15 Industrial Application and case study.

### STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	20 Midterm	←	1 0	M A R K S		→	30
To be freely distributed among possible assessments							
8 to 12	←		2 0	M A R K S		→	20
13 to 15	←		1 0	M A R K S		→	10
16 or 17	40 Final						40
Total	Exams	Assign.	Quizzes	Reports	Present.	Lab.	100

### REFERENCES

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|----------|---|
| Textbook | J.B. Gupta, "A Course in Electronic and Electrical Measurements and Instrumentation", Prentice- Hall  |
| Other    | Gregory " An introduction to Electrical Instrumentation and Measurement Systems "<br>Janarder Prasad, M.N.Jayaswal, "Instrumentation and process control" McGRAW-hill |