POWE 214 – Electric and Electronic Measurements

Curricular Area	**Electrical and Computer Engineering/ Communication and Electronics Program & Electrical Power and Machines Engineering**
Type of Course	Compulsory
Catalogue Description	Introduction to instrumentation and measurements (Errors, precision, accuracy, measurement statistics, etc.), Analog instrumentation (Permanent magnet moving coil PMMC, Moving Iron MI, Electrodynamometer), bridges (AC, DC), Oscilloscopes (functions and controls, voltage, time, and frequency measurements), Conversion (D/A, A/D, etc.), Electrical transducers, signal conditioning, data acquisition.
Prerequisites by Courses	POWE 112
Prerequisites by Topics	Electric Circuits
Instructor(s)	Dr. Ziad Osman Electrical and Computer Engineering Department, A2 Building, Office Room G118, Phone Ext 3414 zosman@bau.edu.lb
Office Hours	Monday& Wednesday 12 PM –2 PM Tuesday & Thursday 10 AM – 11 AM, 11 Room G118
Load	2 credits; 2 Lecture-sessions/week – 50 min per session & a 2 hours weekly lab
Textbook	A Course in Electrical and Electronic Measurements and Instrumentation, A.K. & Puneet Sawhney, Published by Dhanpat Rai & Co, 2008.
Reference Books	

Subjects covered	*50 min. lectures*
Introduction to instrumentation and measurements	2
Errors in measurements.	5
Direct and alternating current meters.	5
Power and Watt-hour meters.	5

Topics	Potentiometers.	1
	Direct and alternating current bridges	4
	Oscilloscopes	2
	A/D & D/A	2
	Data acquisition systems and digital measurements.	2
	Transducers.	2
	Total	30

Learning Outcomes Correlation with	**Program Outcomes**	**Program Objectives**
Understand the source of measurement errors.	A	1
Understand the construction of direct and alternating current meters and their applications.	B	1
Understand the construction of the power and Watt-hour meters and their applications.	B	1
Understand the construction of potentiometers and their applications.	B	1
Understand the theory of operation of the direct and alternating current bridges and their applications.	B	1
Understand the data acquisition system and its application to the digital measurements.	C	1
To express the ideas and concepts of measurements in writing and in oral presentations.	I	5
To work effectively in group situations.	I	5

Learning Outcomes Assessment Tools	**Exams**	**HWs**	**Lab Reports**	**Project**	**Course Survey**
Understand the source of measurement errors.	☒				☒
Understand the construction of direct and alternating current meters and their applications.	☒		☒		☒
Understand the construction of the power and Watt-hour meters and their applications.	☒		☒		☒
Understand the construction of potentiometers and their applications.			☒		☒

Understand the theory of operation of the direct and alternating current bridges and their applications.	☒		☒		☒
Understand the data acquisition system and its application to the digital measurements.	☒				☒
To express the ideas and concepts of measurements in writing and in oral presentations.				☒	☒
To work effectively in group situations.				☒	☒

Assessment:

Assessment:	Dates	Weighing
Assessment 1	5th week	15%
Assessment 2	10th week	15%
Lab	Weekly	15%
Project	Last week	15%
Final Exam	To be set later by BAU	40%

Course Coordinator	Dr. Ziad Osman
Date	June, 2015