

NATIONALLY HARMONISED B.Sc. CHEMICAL ENGINEERING PROGRAM				
Course Code	ChEg4182			
Course Name	Process Measurement and Instrumentation			
Degree Program	B.Sc. in Chemical Engineering			
Module Name	Process Control and Instrumentation			
Module Coordinator	N.N.			
Lecturer	N.N.			
Instructor's contact information	Office Phone E-mail Office hour			
ECTS Credits	3			
Students work load (per week)	Lecture	Tutorial	Laboratory or Practice	Home study
	3	0	0	2
Student work load (per semester)	48	0	0	32
Mode of delivery	Parallel(per semester)			
Course Objectives & Competences to be Acquired	The course aims to introduce the students the function and role of process measurement and instrumentation in a industrial processes and manufacturing environment. Up on completion of the courses, • The students will be able to explain how process control systems works in practices. • The student will be able to design control systems for control different parameters.			
Course Description/Course Contents	Introduction to Control Systems • Open-loop and closed-loop control systems • Typical processes that measure pressure temperature, flow, and level. System Components			

	• Sensing devices to their uses in measuring pressure, level, flow and temperature. • Transmitters, receiving devices, controllers, valves and other process instruments • ISA symbols on a process and instrumentation diagram Principles of Pressure Measurement • The basics of pressure measurement devices. • Manometers, bourdon tubes, diaphragms, capsules, bellows, and strain gauges. Principles of Level Measurement • level measurement differentiate between low-pressure and high-pressure level measuring methods • Uses of capacitance, displacer, and reluctance probes in measurement and instrumentation; • Methods of level measurement such as infrared, radioactive, and ultrasonic systems will be discussed. Principles of Temperature Measurement • Thermocouples, RTDs, thermistors, • Filled thermal systems, bimetallic devices, and infrared sensors. Principles of Flow Measurement • basics of flow measurement • Differentiate between methods of flow measurements • Flow measuring devices & applications. Process Systems • The standards for pneumatic and electrical transmissions and relate these to applications. • The function of instrument loops in a typical industrial application.
Pre-requisites	ChEg4151(Internship)
Semester	Year IV, Semester II
Status of Course	Compulsory
Teaching & Learning Methods	Lectures, , home study
Assessment/Evaluation	Continuous Assessment.....50% • Quizzes.....10% • Tests.....15% • Assignment.....15% • Presentation.....10% Final Examination.....50%
Course Policy	

	Attendance: As per harmonized academic policy Assessments: students are supposed to handle all assessments on time. Cheating/plagiarism: it is strictly forbidden and any misconduct is accountable per the students' code of conduct. Also, please do not chew gum, eat, listen to recorders or CD players, wear sunglasses, or talk about personal problems. Please be sure to turn off pagers and cell phones before class and exam sessions
Literature	1. George Stephanopoulos, Chemical Process Control, An Introduction to Theory and Practice, 2002, Prentice-Hall of India 2. Luyben, W.L., Process Modeling, Simulation, and Control for Chemical Engineers, 1974, Mc- Graw-Hill 3. Norman A. Anderson, Instrumentation for Process Measurement and Control, Publisher: CRC Press. 4. Alan S Morris, Measurement and Instrumentation Principles, 3rd edition. Butterworth-Heinemann
Approval Section	Module team