Statistical Quality Control (MSM4224)

Course Code	MSM4224								
Course Name	STATISTICAL QUALITY CONTROL								
Credit Hour	4								
Prerequisite Course	Industrial Statistics								
Contact Hours	Lecture:			3	units	(3 hour(s) per week)			
	Tutorial:			0	unit	(0 hour(s) per week)			
	Laboratory:			2	units	(2 hour(s) per week)			
Course Rationale	To introduce a variety of techniques that are widely used in many industries to understand variation, improve product quality and reduce costs. Also, to equip students in the use of statistical software such as R language.								
Course Objective	To become fluent in the language and techniques of modern Quality Control and its applications. While area of application typically thought of as being in the area of manufacturing, they can also be applied to ordering, accounting, record keeping and customer satisfaction, among others.								
Course Synopsis	This course introduces the DMAIC process (Define, measure, analyse, improve and control) in conducting quality improvement effort which associated with Six-Sigma. This course gives the student an in-depth understanding of the principles of statistical techniques in solving various real life problems which includes manufacturing and non-manufacturing process using R Language. Student will be exposed to the statistically designed experiments which can be used for process design, development and improvement. Discussion of acceptance-sampling techniques such as single, double, multiple, sequential and Dodge-Romig sampling plans are also covered in this course.								
Program Outcomes	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**
	/	/	/		/				
Soft Skills	**Code**		**CTPS**	**CS**	**TS**	**LL**	**ES**	**EM**	**LS**
	KIM		5		4				
Course Outcomes	By the end of semester, students should be able to:								
	CO1	Integrate statistical process control methods and DMAIC process in conducting quality improvement (C6)							
	CO2	Adapt appropriate statistical software and statistical process control methods in conducting quality improvement based on DMAIC process (P5)							
	CO3	Decide appropriate statistical process control methods based on DMAIC process in solving various quality improvement problem (C6)							
	CO4	Perform works collaboratively as a part of a team to solve given problems (A5)							
Assessment Methods	**Methods**		**Weighting**	**CO1**	**CO2**	**CO3**	**C04**		
	Test		20%	/		/			
	Project		40%	/	/	/	/		

	Final Exam	40%	/	/	/		
	Total	**100%**					

Learning References	1	Montgomery, D.C. 2013. Statistical Quality Control: A Modern Introduction. 7th ed. Singapore: John Wiley & Sons. (Main Reference)
	2	Mitra, A. 2012. Fundamentals of Quality Control and improvement. 3rd ed. Chichester: John Wiley & Sons.
	3	Santos-Fernández, E. 2012. Multivariate Statistical Quality Control Using R. New York: Springer.
	4	Kenett, R.S., Zacks, S., Amberti, D. 2014. Modern Industrial Statistics: with Applications in R, MINITAB and JMR. 2nd ed. Chichester: John Wiley & Sons.
	5	Antony, J. 2014. Design of Experiments For Engineers and Scientists. 2nd ed. Waltham: Elsevier.