DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE SYLLABUS

COURSE TITLE	ENGLISH CODE/NO	ARABIC CODE/NO.	CREDITS			
			Th.	*Pr.*	*Tr.*	*Total*
Industrial Quality Control	**IE 431**	هـ ص431	3	2		3

Pre-requisites:	IE 332, IE 351

Course Role in Curriculum	*Required or Elective:*	Required Core Course

Catalogue Description:
Introduction to quality systems. Cost of quality. Total quality management. Quality systems and standards: six sigma and ISO. Reengineering. Statistical quality control: control charts for variables and attributes, process capability analysis, acceptance sampling plans. Quality function deployment. Quality circles. Quality loss functions.

*Textbooks***:**
Quality Improvement, 9th Edition, 2013, Prentice Hall.
Author: Dale H. Besterfield.

Supplemental Materials:
Statistical Quality Design and Control Contemporary Concepts and Methods, 2nd edition, 2007, Prentice Hall

Course Learning Outcomes:
By the completion of the course the student should be able to:

1. Be able to define quality, quality control, statistical quality control, and total quality management.
2. Describe the necessary management activities to implement a TQM program.
3. Be able to construct a Pareto diagram, a cause and effect diagram, and know the major sections of ISO 9000; know the techniques and procedures of internal audits.
4. Be able to understand the fundamentals of statistics.
5. Know the purposes and construction of variable control charts.
6. Know the basic theorems of probability.
7. Know the purposes and construction of control charts for attributes.
8. Know the types of sampling plans and selection factors; criteria for formation of lots, criteria for sample selection and decisions concerning rejected lots.
9. Determine the sampling plan using Dodge-Romig tables, know the switching plan, and determine the sampling plan for continuous production.

	Topics to be Covered:	Duration in Weeks
1	Introduction to quality improvement, tools-lean enterprise, value stream map, implementing lean	2
2	Introduction to six sigma, statistical aspects, improvement methodology,	2
3	Pareto diagram, Cause-and-effect diagram, check sheets, scatter diagram, histogram.	2
4	Fundamentals of statistics: frequency distribution, measures of central tendency and dispersion, concept of population and sample, the normal curve, test of normality, scatter diagram.	2
5	Introduction to control chart techniques, specifications, process capabilities, six sigma, other control charts, Additional SPC techniques for variables	2.5
6	Fundaments of probability; basic concepts, Discrete probability distribution, Continuous probability distribution.	1.5
7	Control charts for attributes: control charts for nonconforming units, a quality rating system.	2
8	Lot-by-lot acceptance sampling by attributes; fundamental concepts, statistical aspects, sampling plan design, Lot-by-lot acceptance sampling plans for attributes, Acceptance sampling for continuous production, acceptance sampling plans for variables.	3

Student Outcomes addressed by the course: (Put a √ sign)

(a)	an ability to apply knowledge of mathematics, science, and engineering	
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	√
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	√
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	

Key Student Outcomes assessed in the course: (e) and (j)

Instructor or course coordinator: Dr. Osman Taylan
Last updated: February 2015