

**DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE SYLLABUS**

<i>COURSE TITLE</i>	<i>ENGLISH CODE/NO</i>	<i>ARABIC CODE/NO.</i>	<i>CREDITS</i>			
			<i>Th.</i>	<i>Pr.</i>	<i>Tr.</i>	<i>Total</i>
Engineering Statistics II	IE 332	هـ.ص. ٣٣٢	٣	2	-	3
<i>Pre-requisites:</i>	IE 331					
<i>Course Role in Curriculum</i>	<i>Required or Elective:</i>		Required Core Course			
<i>Catalogue Description:</i> Basic notions of statistics applicable to engineering problems. Moment generating functions. Random samples and sampling distributions. Parameter estimation. Hypothesis testing. Nonparametric tests. Simple and multiple regressions.						

Textbooks:

Probability & Statistics for Engineers and Scientists, Ninth Edition, Walpole, R., Myers, R., Myers, S. & Ye, K., Prentice Hall, (2012), ISBN: 0321748239

Supplemental Materials:

Probability and Statistics in Engineering, Fourth Edition, Hines, W., Montgomery, D., Goldsman, D., & Borror, C., John Wiley and Sons, (2003), ISBN: 0471240877.

Statistics for Engineers and Scientists, First Edition, Navidi, W., McGraw-Hill, (2006), ISBN: 0071214925.

Probability and Statistics For Engineers, Eight Edition, Johnson, R., Freund, J., & Miller, I., Prentice Hall, (2011), ISBN: 0321694988.

Engineering Statistics, Fourth Edition, Montgomery, D., Runger, G., & Hubele, N., John Wiley & Sons, (2007), ISBN: 978047173557

Course Learning Outcomes:

By the completion of the course the student should be able to:

1. Develop analytical techniques, apply the basic principles of Engineering Statistics to real life problems and interpret the results.
2. Understand the probability distribution for functions of variable and the moment generating functions.
3. Understand the sampling distribution and the central limit theorem.
4. Understand the statistical inferences, estimations, confidence intervals for mean, difference between two means, proportion, and difference between two proportions, variance and ratio for two variances, prediction interval, tolerance limits and maximum likelihood function.
5. Understand how to conduct a test of hypothesis for mean, difference between two means, proportion, and difference between two proportions, variance and ratio for two variances.
6. Understand how to conduct a test of goodness of fit, test of independence and test of

homogeneity.		
7. Understand how to conduct nonparametric tests such as sign test, signed-rank test, Wilcoxon rank-sum test, Kruskal-Wallis test, runs test, tolerance limits for non-normal and rank correlation coefficient test.		
8. Understand and apply simple and multiple linear regression analysis and ANOVA test.		
<u>Topics to be Covered:</u>		<u>Duration in Weeks</u>
1	Review of IE331	1
2	Functions of Random Variables	1
3	Fundamental Sampling Distributions and Data Descriptions	2
4	One- and Two-Samples Estimation Problems	2
5	One- and Two-Samples Tests of Hypotheses	3
6	Nonparametric Statistics	2.5
7	Simple Linear Regression and Correlation	2.5
<u>Student Outcomes addressed by the course:</u> (Put a \checkmark sign)		
(a)	an ability to apply knowledge of mathematics, science, and engineering	\checkmark
(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	\checkmark
(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.	\checkmark

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

Instructor or course coordinator: Eng. Mohammed Alharkan

Last updated: February 2015