DEPARTMENT OF INDUSTRIAL ENGINEERING
COURSE SYLLABUS

COURSE TITLE	*ENGLISH CODE/NO*	*ARABIC CODE/NO.*	*CREDITS*			
			Th.	*Pr.*	*Tr.*	*Total*
Dynamic Forecasting	**IE 436**	هـ ص ٤٣٦	3	1	-	3
Pre-requisites:	IE 332					
Course Role in Curriculum	*Required or Elective:*		Elective			

Catalogue Description:
Time series and forecasting. Forecasting accuracy. Monitoring and controlling forecasts. Linear and multiple regression with forecasting applications. Box-Jenkins (ARIMA) methodology. Introduction to fundamental and technical analysis with applications in financial markets. Introduction to neural networks. Judgmental forecasting.

***Textbooks*:**

- **BUSINESS FORECASTING**, Hanke&Wichern, 8th Edition, Pearson Prentice Hall, 2005.
- **OPERATIONS MANAGEMENT**, R.Russell& B. W. Taylor III, 4th Edition, Pearson Prentice Hall, 2005

***Supplemental Materials*:**

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

1. Understand the difference between time series forecasting and causal (regression) forecasting.
2. Compute forecasts using the various methods and tools presented in the course outline
3. Measure forecast accuracy.
4. Learn how to use forecasting packages (Minitab and Excel) for various forecasting.
5. Apply Box-Jenkins (ARIMA) methodology for forecasting.
6. Work in a group for case studies analysis and reporting.
7. Develop & use power-point for case studies oral presentation.

	Topics to be Covered:	***Duration in Weeks***
1	Introduction to Forecasting	1
2	Exploring data Patterns	1
3	Choosing a Forecasting Technique	0.5
4	Measures of forecasting accuracy	0.5
5	Moving averages	1
6	Exponential smoothing	1
7	Trend, Seasonal & cyclic variations in data	2
8	Simple Linear regression	1
9	Multiple Regression Analysis	1
10	Introduction to Box-Jenkins (ARIMA) Methodology	2
11	Judgmental Forecasting	1
12	Case Study	2

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: ( ) and ( )

Instructor or course coordinator: Dr. Said Ali Hassan El-Quliti
Last updated: Sep. 2014