

**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>
<b>Fundamentals of Computer Systems</b>	<b>IE 321</b>	321 هـ ص	3	2	-	3
<i>Pre-requisites:</i>	EE 201					
<i>Course Role in Curriculum</i>	<i>Required or Elective:</i>		Required Core Course			
<b><i>Catalogue Description:</i></b> Fundamentals of computers; hardware, software and computer systems concepts. Introduction to operating systems and data processing. Overview of programming languages. Internet and computer security. Introduction to software packages for Industrial Engineering applications.						

**Textbooks:**

- 1. Fluency with Information Technology, skills, concepts & capabilities,** Lawrence Synder. 5<sup>th</sup> Ed., 2013, Prentice Hall, ISBN 978-0273-77438-7.
- 2. Digital Computer Design, Wilkinson, Barry and Makki, Rafic (Second Edition),** Prentice-Hall, Inc.1992, ISBN: 0-13-220286-7

**Supplemental Materials:**

First day materials, Guide to assignments.

**Course Learning Outcomes:**

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

1. Understand and comprehend the fundamentals of computer Systems.
2. Use some application packages for analysing data.
3. Use Internet resources.
4. Work in Programming Environment.
5. Function in multi-disciplinary teams.
6. Explain basic concepts of JavaScript.
7. Communicate effectively in oral and written presentation.

**Topics to be Covered:**

**Duration  
in Weeks**

1	Computer–concepts, developments, configuration and functional details.	1
2	Number Systems, Boolean Algebra, Gate Network and Logical Design	2
3	The Arithmetic-Logic Unit, The memory elements, Control Unit and Computer Organization.	2
4	Some selected software packages for Industrial Engineering applications.	2
5	Defining Information Technology, Exploring the Human-Computer	2

	Interface and Basics of Networking.	
6	Programming Languages, Algorithmic Thinking.	2
7	Social Implications of IT, Privacy and Digital Security, Introduction to Database Concepts.	1
8	Fundamental Concepts Expressed in JavaScript, Programming Functions, Iteration Principles and Limits to Computation.	2
<b><i>Student Outcomes addressed by the course:</i></b> (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:*** (i) and (k)

***Instructor or course coordinator:*** Dr. M. Shafi Ullah

***Last updated:*** February 2015