

IE-341

Section 1, CRN: 30512/513/514

Section 2, CRN: 30515/516/517

Section 3, CRN: 38299/300/301

Section 4, CRN: 65886/887/888

First Semester 1438-39 H (Fall-2017) – 3(2,1,2)

“HUMAN FACTORS ENGINEERING”

Monday, Nov. 27, 2017 (09/03/1439H)

Homework 2

Name:	Student Number: 43	Section: Mon@8/ Mon@10 / Tu / Wed
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**Answer ALL of the following questions** [10 points; 5 points each].

1. The following is an exercise aimed at performing a sample redundancy comparison between the English and Arabic languages. An entire e-book is attached in each language. For each book (use the first 100 pages of each) you are requested to use both *MS Word* and *MS Excel* to perform the following: [5 points]
  - a) Find the recurrence for each letter of the alphabet in each book, i.e. a/A – z/Z for the English book and ا-أ\ي in the Arabic book. Be careful to consider each variation of a certain letter as a separate letter (e.g. ي يى ئ can be considered 3 different letters).
  - b) Find the total number of letters in each book.
  - c) Calculate the maximum amount of information ( $H_{max}$ ) that can be achieved by each letter set (i.e. alphabet).
  - d) Find the probability ( $p_i$ ) of occurrence of each letter.
  - e) Calculate the average amount of information ( $H_{ave}$ ) for each book using d) above.
  - f) Calculate the redundancy percentage using c) and e) for each book.
  - g) Compare these results (in your own way) to those previously discussed in class.

**BONUS:** you can earn **extra credit** for comparing these figures to the text of the Holy Qur'an (also first 100 pages).

2. You are required to show

- a) any three different control-display assemblies
- b) movement compatibility principles associated with those assemblies (as described in class)
- c) whether or not compatibility stereotypes are satisfied

**BONUS:** you can earn extra credit here by showing how compatibility designs can be improved in each case.

### Rules:

- You must prepare and submit the homework **individually** (this is *not* a group assignment).
- All work must be **neatly** typed and printed.
- Use **proper English**.
- Show all work and answer each question on a **separate sheet**.
- Due date: **Thursday, December 07, 2017 (19/03/1439)**, beginning of class. NO late homework will be accepted.