UNIVERSITY OF WESTMINSTER

FACULTY OF SCIENCE & TECHNOLOGY

Department of Computer Science

Module: Database Systems
Module Code: 5COSC002W

Module Leader: **Francois Roubert**
Date: **Friday 13th January 2017**
Start:
Time allowed: **1 Hour**

Instructions for Candidates:
You are advised (but not required) to spend the first five minutes of the examination reading the questions and planning how you will answer those you have selected

This paper contains 3 Questions.

ALL 3 QUESTIONS ARE COMPULSORY, ANSWER ALL QUESTIONS

QUESTION 1 CARRIES 10 MARKS
QUESTION 2 CARRIES 10 MARKS
QUESTION 3 CARRIES 10 MARKS

The examination is marked out of 30 marks (it is worth 30% of the overall module assessment).

DO NOT TURN OVER THIS PAGE
UNTIL THE INVIGILATOR INSTRUCTS YOU TO DO SO

StaffLearn is a firm that provides the members of staff of a large organisation with training courses in a wide range of subjects and at different levels e.g. beginner, intermediate, proficient, advanced. The training courses are organised over a number of full days (e.g. 2 days, 3 days, 5 days, etc.)

StaffLearn is seeking to design and develop a database-driven management system to be used internally to help organise the scheduling of the training courses.

The Conceptual Entity-Relationship Diagram (ERD) for part of the StaffLearn management system is shown below (figure 1). Carefully consider this conceptual ERD.

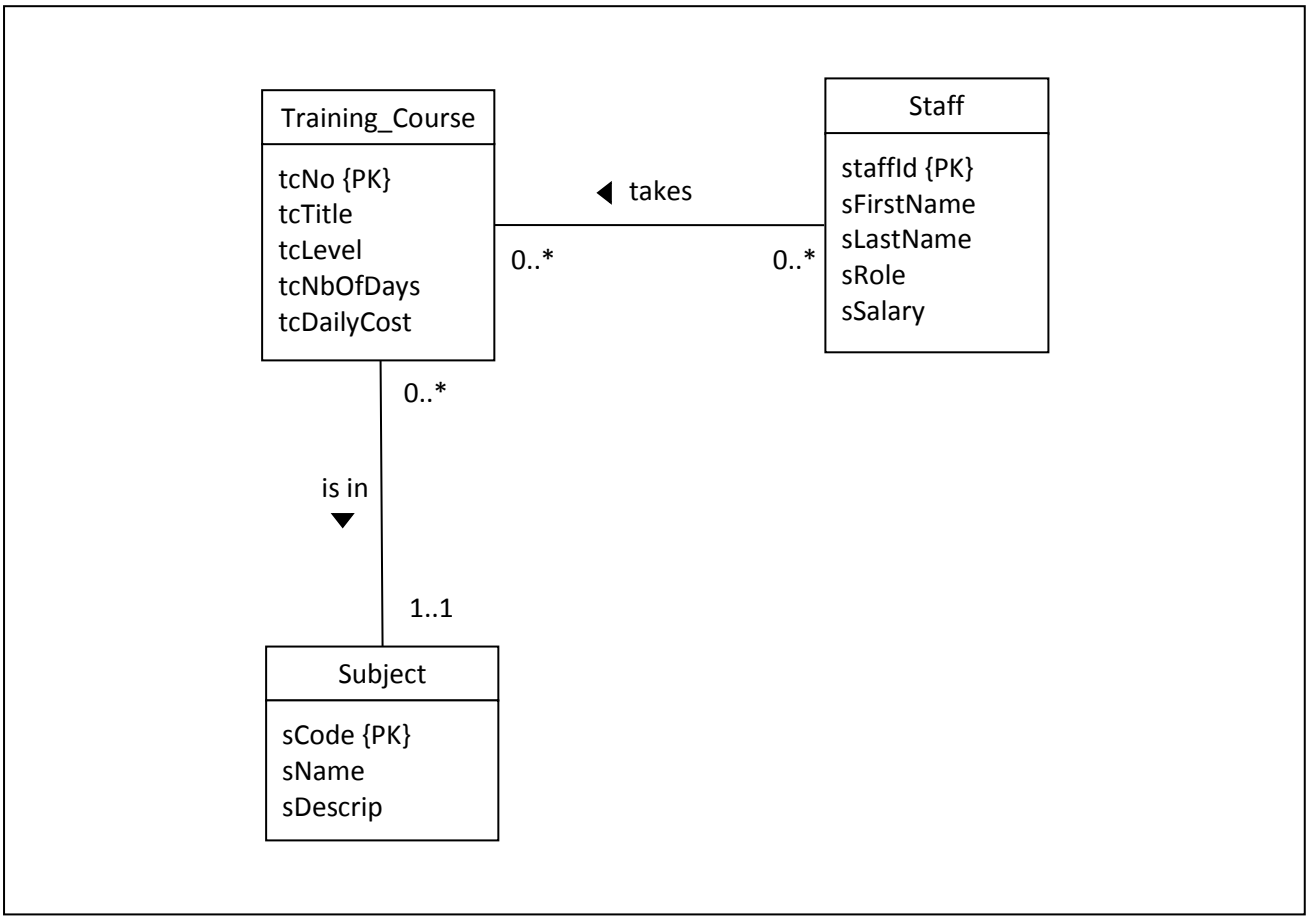

Figure 1: Conceptual ERD for part of the StaffLearn management system

Question 1

(a) Discuss in detail the multiplicity of the relationship *'is in'* (between the entities Training_Course and Subject). Provide adequate justifications to support your answers.

[4 Marks]

(b) Briefly explain how you would map the relationship *'is in'* (between the entities Training_Course and Subject) to a logical ERD. Provide a diagram to support your answer. Make sure you include all the correct attributes and keys.

[6 Marks]

Question 2

(a) Discuss in detail the multiplicity of the relationship '*takes'* (between the entities Staff and Training_Course). Provide adequate justifications to support your answers.

[4 Marks]

(b) Briefly explain how you would map the relationship '*takes'* (between the entities Staff and Training_Course) to a logical ERD. Provide a diagram to support your answer. Make sure you include all the correct attributes and keys.

[6 Marks]

Question 3

(a) Write a SQL query to display the titles, durations and daily costs of courses at beginner level and courses at intermediate level, but only for those courses that cost more than £250.00 daily.

[5 Marks]

(b) Write a SQL query to display the titles, the levels and the total costs, as well as the name and description of the subject, for all the courses in the marketing subject. (Note that the total cost of the course means the cost for the entire duration of the course).

[5 Marks]