

**King Fahd University of Petroleum and Minerals**  
**Electrical Engineering Department**

**Software Lab # 2**  
**COORDINATE SYSTEMS and CONVERSION**  
**USING 'CAEME SOFTWARE'**

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**Objective:**

To understand the coordinate systems, coordinate conversion using the software "CAEME".

**Equipment Required:**

'CAEME' software. These are licensed software's and cannot be copied.

**Introduction:**

In this experiment we will use the CAEME (Computer Applications in Electromagnetics Education) software is used to visually and interactively identify the independent variables, reference surfaces, base vectors, differential elements associated with the rectangular, cylindrical and spherical coordinate systems. Go through every step of the software carefully as you may have to take a quiz after completing each part of the software.

**Procedure:**

- (1) Execute the software "CAEME".
  - (2) Click on the rectangle with title "Vectors and Coordinate systems".
  - (3) Then Click on the picture-icon to enter the lesson.
  - (4) Click on the "Rectangular Coordinate Systems" icon
  - (5) Bring the mouse pointer to the end of the screen and click on the "right arrow" (or continue button) of the pop-up menu.
  - (6) Next click again on the "right arrow" of the pop-up menu.
  - (7) Now select one item at a time from the left menu and carefully go through them.
- Remember at the end of the lecture, you have to take a quiz on this topic.

- (8) To exit from any session, use the pop-up menu that appears when you drag the mouse pointer at the end of the CAEME screen.
- (9) USING SIMILAR TECHNIQUE, CAREFULLY GO THROUGH THE DETAIL OF,
  - a. CYLINDRICAL COORDINATE SYSTEM,
  - b. SPHERICAL COORDINATE SYSTEM,
  - c. And COORDINATE CONVERSION
- (10) Take the quizzes after each session

**NOTE:**

Remember, the object of these two software labs is to introduce the “CAEME” software to EE 340 students. From now on you can come to this lab (*with the permission of the Lab technician*) and use this software to enhance your understanding of the subject.