

## Flipped IN-CLASS Lesson Plan Template

Topic or concept:  
Conceptual Data Modeling

### Basic objectives before class:

1. Define an E-R model and list the three components of an E-R model.
2. Define Entity and give three examples of Entity.
3. Distinguish the different types of attributes, such as derived attributes, composite attributes, etc.
4. Define relationship and distinguish the three types of relationships (one to one, one to many and many to many)
5. Define relationship cardinalities and distinguish the maximum and minimum cardinalities.

### Advanced objectives for classwork & after class work:

1. Interpret the relationships between two entities when given a simple E-R diagram.
2. Use notations to draw relationship cardinalities based on given business situation.
3. Draw a complete E-R diagram with key and attributes based on given business situation.

	Time planned	Activity and rationale	Resources needed
Beginning of class period	5 mins	<p>Activities: short quiz (5-8 questions). Questions are simple and directly tie to individual space activities.</p> <p><i>Rationale: Motivate students to complete their tasks assigned in the individual space and review the material introduced in the individual space.</i></p>	Paper
Middle of period	20 mins	<p>Activities: Mini-lecture based on “Muddiest Point” questions submitted before class.</p> <p><i>Rationale: clear up any general confusion or misconceptions.</i></p>	Lecture slides
Middle of period	15 mins	<p>Activities: Students work in small (3-4 persons) groups to draw simple E-R diagrams based on given requirements. The challenge is to understand various notations and use the correct notations to represent relationships between entities.</p> <p><i>Rationale: students can apply the concepts they learn in the individual space to a practical case study.</i></p>	Problem sheets

	Time planned	Activity and rationale	Resources needed
Middle of period	10 mins	<p>Activities: The instructor shows the students what the correct E-R diagrams should look like and discusses the notations. Students are given a chance to discuss and ask questions.</p> <p><i>Rationale: Allow students to self-assess their work and discuss it with peers.</i></p>	Slides
Middle of period	20 mins	<p>Activities: Students work in group to solve a more complex E-R modeling problem (draw complete E-R diagrams with key and attributes).</p> <p><i>Relational: reinforce the concepts by applying them more difficult questions.</i></p>	Problem sheets
End of period	5 mins	<p>Activities: Ask students to comment and evaluate the class on a sheet of paper, also write down the muddiest point they are still not clear about after the group-space meeting.</p> <p><i>Relational: The Instructor knows if the common confusion from pre-class reading have been solved during the group space. If not, the instructor can deal with it in the next group-space meeting.</i></p>	Paper

## Flipped AFTER CLASS Work Plan Template

Advanced learning objective	Activity and rationale	Instructions to students
ALO 2 and 3	Activities: Draw an E-R diagram based on given business situation. The question is similar to the in-class exercises, but students need to complete it individually.	Draw an E-R diagram based on given business situation. You may use any drawing tool for the diagram. However, the diagram should be copied and pasted into a <b>Word document</b> and submitted. Choose identifiers as appropriate. You should clearly represent the <b>entity type names, relationship names, attributes, identifiers, cardinality constraints</b> , etc. in you ERD.

## GUIDED PRACTICE

Class:

Date assigned: 05/01/2019

Date due: 05/06/2019

Time estimate to complete this assignment: 60 mins

### Overview/Introduction

What is this lesson about? Why do we care?

This session will begin your journey of learning how to design and use databases. You will be introduced the first stage of database development—Conceptual data modeling, in which developers analyze the requirements of a database and represent the structure and constraints of a database that is independent of software. The E-R model is a popular tool for conceptual data modeling. You will learn the main features, notations and conventions in E-R modeling. You will be able to construct an E-R model to represent common business situations.

### Learning Objectives

Basic objectives

1. Define an E-R model and list the three components of an E-R model.
2. Define Entity and give three examples of Entity.
3. Distinguish the different types of attributes, such as derived attributes, composite attributes, etc.
4. Define relationship and distinguish the three types of relationships (one to one, one to many, many to many)
5. Define relationship cardinalities and distinguish the maximum and minimum cardinalities.

### Advanced objectives

1. Interpret the relationships between two entities when given an simple E-R diagram.
2. Use notations to draw relationship cardinalities based on given business situation.
3. Draw a complete E-R diagram with key and attributes based on given business situation.

## Preparatory Activities and Resources:

Steps	Estimated Time	Learning Objectives
<p>Step 1: Watch the video “Intro to E-R modeling”                      URL: The instructor will create the video later.</p> <p>Following the video to complete questions #1-#4 of pre-class Exercise on canvas.                      Each question allows students to submit three attempts.</p>	20 mins	#1, #2&#3(Basic)
<p>Step 2: watch the video “Relationship cardinalities in E-R modeling”                      URL: The instructor will create the video later.</p> <p>Following the video to complete questions #4-#8 of pre-class exercise on canvas.                      Each question allows students to submit three attempts.</p>	25 mins	#4&#5(Basic)
<p>step 3: submit a survey about “Muddiest point” questions by canvas.</p>	5 mins	All Basic Los

## Pre-Class Exercise on Canvas:

URL: The instructor will provide the Exercise link later.

Points: 5 points.

Notes: Please complete by 05/06/2019 (1 day before the In-Class Group Space meeting).

## Questions?

If you have any questions with the materials, post your questions on the discussion board by canvas.

### ADVANCED PRACTICE

This is given for students to complete after the class meeting in which they work together.

Class: CIS 3050 Database Analysis and Design

Date assigned: 05/06/2019

Date due: 05/08/2019

Time estimate to complete this assignment: 20 mins

#### Learning Objectives

#### Advanced objectives

1. Interpret the relationships between two entities when given an simple E-R diagram.
2. Use notations to draw relationship cardinalities based on given business situation.
3. Draw a complete E-R diagram with key and attributes based on given business situation.

#### After-Class Assignment on Canvas:

URL: The instructor will provide the Exercise link later.



Points: 5 points.

Notes: Draw an E-R diagram based on given business situation. You may use any drawing tool for the diagram. However, the diagram should be copied and pasted into a **Word document** and submitted. Choose identifiers as appropriate. You should clearly represent the **entity type names, relationship names, attributes, identifiers, cardinality constraints**, etc. in you ERD.

This assignment is due by 11:00 pm on 05/08/2019.

## Questions?

If you have any questions with the assignment, post your questions on the discussion board by canvas.