KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
COLLEGE OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE

ARC 305
DESIGN STUDIO V

INSTRUCTOR: YAHYA AL-NAJJAR
TEACHING ASSISTANT: OMAR AL-MAHDI

PROJECT 1

DIGITAL DESIGN ANALYSIS OF AN EXISTING BUILDING

(25% of the total grade)

Issued: Monday 18 February, 2008
Due: Wednesday 19 March, 2008

OBJECTIVES

The objectives of this project are two folds:

1. To analyze and understand the basic systems and components of a given work of architecture, and
2. To analyze and understand some of the basic architectural articulation of form, envelope, volume, fenestration, solids and voids, ... etc.

ANALYSIS

Based on the site visit to Riyahd and given a set of images and drawings for a renowned building by ADA, the objective of this exercise is to breakdown the project into its basic components. This will result in an understanding of the general concept of form and the forces generating the shapes of the building (aesthetics, environmental, site considerations, technology, or any other determining force).

A hierarchy of systems should be explained and interpreted diagrammatically on separate layers to investigate systematically the relationship between the different systems that determine the overall

organization of the project at hand. Major systems of the project would include:

1. Functional system: space organization of the main components as represented by bubble diagrams of each major component, as well as of the whole building.
2. Circulation system: different types of circulation, horizontal and vertical, should be studied and presented separately on different layers and then, shown as a composite layer for all types together.
3. Structural system(s).
4. Environmental system(s).
5. Contextual system.
6. Architectural order and articulation: solids and voids, facade articulation, basic shapes that determine the architectural form of the building.

TASK

Through a process of abstraction and generalization, you are to distil the underlying analysis in different layers of the project at hand using the following guidelines:

1. Topology: the topology of a given set is defined, among other things, by:
   a. The number of elements in a set.
   b. The number of adjacencies, or linkages between every pair of elements in the set. (In architecture, the "bubble diagram" typically represents these relationships).
   c. The number of closed subsystems within the elements of the set.

The composition of a set is defined by the relationships that exist among elements of the set. It is a bubble diagram from which diverse concepts can be developed. The 3D construct for such a diagram exists in a flexible, deformable space, i.e., you can squeeze, stretch, and twist such a diagram without adversely affecting the basic relationships in it.

2. Configuration or shape Relationships: The shape systems that govern the design of the building.

3. Spatial order: In how many ways is space defined? Where is space defined by enclosure? Where is it defined by closure? What types of spatial relationships exist between the major and minor components of the building?

On the basis of the understanding and analysis of the given design project, each student will graphically discuss, evaluate, and criticize the various systems and components of the building topologically, spatially, and configurationally.

PROJECT REQUIREMENTS

Other than the 2D set of drawings and diagrams, you are required to create a 3D computer model of the building and a set of animated sequences to assemble the different parts of the building (i.e. a catalog of key spatial and formal components) in addition to the diagram of the whole building.

Your presentation material should be prepared to include the following:

- Plan(s) of the building.
- Spatial components of the building.
- Zoning (bubble) diagrams of the whole building and the major functions, as well as a detailed one for each major function in the building.
- Elevations and sections as required.
- Diagrammatic studies and analysis of solids and voids as well as facade treatment, building envelope, volume and form.
- Diagrammatic studies and analysis of the different systems of the building.
- 3D computer models.
- Animations: you should capture and render selected sequences of exterior and interior key frames of the building and print them.
- A walkthrough (animation) of the major space(s) in the building.

Colored printouts of the above should be arranged on A2 size sheets. In addition, prepare a PowerPoint or KeyNote presentation in which you skillfully organize all of the above material as well as any supplementary text and scanned visual material.

More detailed instructions will be issued at the appropriate time.

SCHEDULE

Stage	Due Date
Problem Assigned	Mon. 18 February
Construction of Basic Drawings	Mon. 03 March
Analysis of Systems	Wed. 05 March
Preliminary Jury	Mon. 10 March
All Presentations Requirements	Sat. 15 March
Final Touches & Printing	Mon. 17 March
Final Jury	Wed. 19 March

Good Luck