



**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** B.Sc. Architectural Engineering and Environmental Design

### Form no. (12): Course Specification

#### 1- Course Data

Course Code: <b>AR 428</b>	Course Title: <b>Computer Applications in Architecture</b>	Academic Year/Level: <b>4<sup>th</sup> year / 8<sup>th</sup> semester</b>
Specialization: <b>Architecture</b>	No. of Instructional Units Credit <b>2</b> Lecture <b>1</b> Tutorial <b>3</b>	Prerequisite <b>AR283</b>

#### 2- Course Aim

Computer applications in architecture are expected to be form of architectural presentations used in the future. This course provides hands on experience to students seeking the use of advanced applications and techniques to produce and enhance building ideas and concepts. The student will develop their skills and apply new skills in computer applications regarding Building Information Modeling (BIM), which is the process of generating and managing building data during its life cycle. Typically, the student will study how to apply computer software of BIM such as Autodesk Revit Architecture, which uses three-dimensional, real-time, dynamic building modeling software to increase productivity in building design and construction. The student will work with the process that produces the BIM, which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.

**The course aims to:**

- Enhance the student's knowledge of Building Information Modeling.
- Enhance the student's practical skills to produce the BIM, which encompasses building geometry, spatial relationships, geographic information, and quantities and properties of building components.
- Assist the student to interact with computer software of BIM such as Autodesk Revit Architecture, which uses three-dimensional, real-time, dynamic building modeling software.

#### 3- Intended Learning Outcomes

<b>a- Knowledge and Understanding</b>	<b>Through knowledge and understanding, students will be able to:</b> <ul style="list-style-type: none"> <li>• Define building Information Modeling.</li> <li>• Describe some computer programs that help in BIM field.</li> </ul>
<b>b- Intellectual Skills</b>	<b>Through intellectual skills, students will be able to:</b> <ul style="list-style-type: none"> <li>• Apply how to use building information modeling and the tools for parametric building design and documentation.</li> <li>• Create their first Revit Architecture project, using parametric design.</li> <li>• Integrate schematic design and construction documentation, before finishing with design visualization.</li> </ul>
<b>c- Professional Skills</b>	<b>Through professional and practical skills, students will be able to:</b> <ul style="list-style-type: none"> <li>• Use the fundamental features of Revit Architecture program.</li> <li>• Use the parametric 3D design tools to design projects.</li> <li>• Created detailing and drafting views, and create construction documentation.</li> <li>• Use the presentation tools for design visualization.</li> </ul>
<b>d- General Skills</b>	<b>Through general and transferable skills, students will be able to:</b> <ul style="list-style-type: none"> <li>• Independently seek knowledge, set aims, targets, objectives and plan to meet them with a deadline (time management).</li> <li>• Listen and critically respond to the views of others.</li> <li>• Transfer techniques and solutions from one field of architecture to another.</li> </ul>

#### 4- Course Content

<b>Week No.1</b>	<b>Introduction:</b> What's Building Information Modeling (BIM)?, Exploring Revit Architecture program User Interface, Working with Revit Elements and Families, Starting a Project with Revit.
<b>Week No.2</b>	<b>Starting a Design:</b> Creating a Basic Floor Plan, Creating and Modifying Levels, Working with Grids.
<b>Week No.3</b>	<b>The Basics of the Building Model:</b> Adding and Modifying Walls, Working with Compound and Vertically Compound Walls, Using Editing Commands.
<b>Week No.4</b>	<b>Loading Additional Building Components:</b> Working with Doors, Adding and Modifying Windows, Adding and Modifying Component Families.
<b>Week No.5</b>	<b>Viewing the Building Model:</b> Managing Views, Controlling Object Visibility, Working with Section and Elevation Views, Creating and Modifying 3D Views.
<b>Week No.6</b>	<b>Using Dimensions and Constraints:</b> Working with Dimensions, Applying and Removing Constraints, General Revision.
<b>Week No.7</b>	Continuation of the previous lecture and evaluation.
<b>Week No.8</b>	<b>Developing the Building Model:</b> Creating and Modifying Floors, Adding and Modifying Ceilings, Adding and Modifying Roofs.
<b>Week No.9</b>	<b>Developing the Building Model (2):</b> Creating Curtain Walls, Adding Stairs and Railings.
<b>Week No.10</b>	<b>Detailing and Drafting:</b> Creating Callout Views, Working with Text and Tags, Working with Detail Views, Working with Drafting Views.
<b>Week No.11</b>	<b>Construction Documentation:</b> Creating and Modifying Schedules, Creating Rooms and Room Schedules, Creating Legends and Keynotes.
<b>Week No.12</b>	Continuation of the previous lecture and evaluation.
<b>Week No.13</b>	<b>Construction Documentation (2):</b> Creating and Printing Drawing Sheets, Working with Title Blocks, Managing Revisions.
<b>Week No.14</b>	<b>Presenting the Building Model:</b> Creating Renderings, Using Walkthroughs, Using Sun and Shadow Settings.
<b>Week No.15</b>	Presentation of projects

#### 5- Teaching and Learning Methods

The course comprises a combination of:  
Lectures, class activities, discussion sessions, and practical training.

#### 6-Teaching and Learning Methods for Students with Special Needs

- Consulting with lecturer during office hours.
- Consulting with teaching assistant during office hours.
- Private sessions for redelivering the lecture contents.
- For handicapped accessibility, please refer to program specification.

## 7- Student Assessment

Students must present two projects per semester. This consists of a first project to be submitted in the 7<sup>th</sup> week, the second one to be submitted in the final exam week.

Asses No.	Procedures used		Start Week No.	Subm. Week No.	Weighting of Asses.
	Type	To assess			
1	Practical exam..	Knowledge and understanding Practical skills	3	3	5%
2	Project.	All skills	3	7	10%
3	Practical exam..	Knowledge and intellectual skills Practical skills	7	7	15%
4	Project.	All skills	8	15	30%
5	Practical exam..	Knowledge and intellectual skills Practical skills	12	12	20%
6	Practical exam..	Knowledge and intellectual skills Practical skills	16	16	20%
<b>Total</b>					100%

## 8- List of References:

<b>a- Course Notes</b>	Notes are handed out to students at weekly intervals.
<b>b- Required Books (Textbooks)</b>	<ul style="list-style-type: none"> <li>• Paul F. Aubin's Mastering Revit Architecture 2010 (Available in PDF on our local Server)</li> <li>• Revit Architecture 2010: No Experience Required (Available in PDF on our local Server)</li> </ul>
<b>c- Recommended Books</b>	<ul style="list-style-type: none"> <li>• Autodesk Official training books (PDF) are available on the server plus video tutorials to cover the same topics.</li> </ul>
<b>d- Periodicals, Web Sites, etc.</b>	<p>20 Hours video tutorials (1.8 Gigs) are available in the local server covers Revit 2010 from Basics to Advanced Techniques plus working file for every stage. Libraries of RPC's and Working Projects (plus Materials are available on the server). Blogs, user groups and internet help (Get Active).</p> <p><a href="http://therevitkid.blogspot.com/2009/04/revit-classroom-workflow.html">http://therevitkid.blogspot.com/2009/04/revit-classroom-workflow.html</a></p> <p><a href="http://usa.autodesk.com/adsk/servlet/pc/index?id=3781831&amp;siteID=123112">http://usa.autodesk.com/adsk/servlet/pc/index?id=3781831&amp;siteID=123112</a></p>