Introduction

AEC-237 Architectural Technology
1. Manual & computer-aided architectural drawing and scaling
2. Organizing a set of architectural drawings
3. Oral and written presentation skills relevant to the construction industry
4. Commercial building space design and applicable building codes
5. Knowledge related to energy and structural requirements of commercial building design and construction

Context
REVIT Architecture
Sophomore (second year) Undergraduates
B.S. Construction, B.S. Engineering Technology and
B.S. Technology Education
Universal Design for Learning

Three Principles (CAST, 2012)
1. Provide Multiple Means of Representation
   The “what” of learning
2. Provide Multiple Means of Action and Expression
   The “how” of learning
3. Provide Multiple Means of Engagement
   The “why” of learning

Course Features
• Content Management System (CMS) Postings
• Screen Capture Tutorials
• Web Resources
• Written Directions
• Lectures and Demonstrations
• Hands-on Exercises
• Guest Clients and Presenters
• Open Lab/Office hours
Initial BIM Exercise

Strategy
Begin with a building-type that is known by the audience to provide focused instruction of the BIM platform

800 square foot (74.5 m²) wood-framed building shell
1. Setting wall bottom and top constraints
2. Inserting components (doors, windows, furnishings)
3. Minor edits of components (wall assemblies, window and door sizes)
4. Annotations (dimensions, north arrow, general notes)
5. Basic schedules (door, window)
6. Cross-referencing views on sheets
7. Formatting and printing a scaled drawing
Process

Clarity of Expectations

- Timely Information
- Learning Outcomes
- Points Distribution
- UDL Principles
- Multiple Means
- Timely Feedback
- Professional Communications
- Peer Evaluations

AEC-237 Architectural Technology
Design Problem

Building Exercise: Due:

Recreate your AutoCAD floor plan A1.0 using REVIT. Make sure to provide the following:

Part 1: Due

- Exterior Walls: Home, Build, Wall, Wood 2x6 (Need to create this)
- Interior Walls: Home, Build, Wall, Wood 2x4 (Need to create this)
- Windows: Home, Build, Window, You choose type
- Exterior Doors: Home, Build, Door, You choose type
- Dims: Annotate, Dimension, Aligned Dimension Style: 1/8” (Need to create this)
- North Arrow: Annotate, Symbol, Load, Annotations, North Arrow 1
- Section Marker: View: Section: Building Section

We will be printing Sheet A1 on 11x17 with accurate title block information:
- Project Issue Date: Today
- Client Name: ARCH TECH
- Project Number: AEC-237-008
# Sample Assignment Rubric

<table>
<thead>
<tr>
<th>Pts. Possible</th>
<th>Categories</th>
<th>Points</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5</td>
<td>Composition:</td>
<td>Printed to scale</td>
<td>Content Arrangement &amp; Grammar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No overlapping text (symbols, titles, dimensions, etc.)</td>
<td>(2.5)</td>
</tr>
<tr>
<td>6</td>
<td>Floor Plan:</td>
<td>Overall Dimensioning:</td>
<td>Overall</td>
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<tr>
<td></td>
<td></td>
<td>Change In Shape</td>
<td>Openings</td>
</tr>
<tr>
<td>10</td>
<td>At a min:</td>
<td>Furnishings- sofa</td>
<td>Doors (3)</td>
</tr>
<tr>
<td>(To recreate</td>
<td>(To recreate</td>
<td>Bathroom- toilet &amp; sink</td>
<td>Windows (3)</td>
</tr>
<tr>
<td>A1.0)</td>
<td>A1.0)</td>
<td>Kitchen- ref, sink, range, countertop</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Notes:</td>
<td>Dimensions to Stud or Finish Framing, 2x6 walls (if not dimensioned)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Markers:</td>
<td>North Arrow</td>
<td>Section (with item number and page number)</td>
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<tr>
<td></td>
<td></td>
<td>Name</td>
<td>Name</td>
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<tr>
<td>3.5</td>
<td>Title Info (.5 each):</td>
<td>Section</td>
<td>Original Date</td>
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<tr>
<td>30</td>
<td>Sheet Number</td>
<td>Item Title</td>
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</tr>
</tbody>
</table>

Universal Design for Learning within an Interdisciplinary Course for Building Information Modeling
Glendali Rodriguez, AIA, NCARB, Associate Professor
BIM= hands-on learning

Strategy
Continuous dialogue regarding means and methods of construction. Continuous toggling between model views generated and quantities.

Modules
1. Schematic framing- design and insert the light-steel framing structural members, generate a framing schedule
2. Schematic foundation- design and insert the concrete foundation, determine quantities of concrete
3. Schematic site planning- insert terrain and adjust elevations
4. *Thermal heat loss analysis- adjust wall assemblies for efficiencies
BIM model as learning tool

Glendali Rodriguez, AIA, NCARB, Associate Professor
Continuous Improvement

Data
1. CMS Access Report (Frequency and length, etc.)
2. Assignment Scores (Class averages, etc.)
3. Student Course Evaluations
4. Student Dialogue, In and Outside of Class
5. Semester meetings with Industry Advisory Board and employment placement rates/positions

Next Steps
• Collaborate with instructors to build on the BIM model in upper-level courses
• Share/learn best practices
• Integrate structural, mechanical, electrical, plumbing, estimating platforms, life-cycle analysis
• Incorporate energy modeling
• Explore clash detection exercises
Continuous Improvement

Stay current with the AECOO industry inside the classroom, through collaborations and partnerships, as fostered through organizations such as the buildingSMART alliance™

Thank you for this opportunity.

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UDL Resources: http://www.udluniverse.com/