STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

COURSE OUTLINE

SOET 352: Advanced REVIT and
Building Information Modeling (BIM) Management

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CANINO SCHOOL OF ENGINEERING TECHNOLOGY
Fall 2015

A. **TITLE**: Advanced REVIT and Building Information Modeling (BIM) Management

B. **COURSE NUMBER:** SOET 352

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE**: No

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**   1-1hour lecture and 2 -2 hour labs per week

H. **CATALOG DESCRIPTION:**

Building Information Modeling (BIM) generates and manages all components of a building's life cycle. BIM is a new industry standard, knowledge and efficiency which is highly sought after by employers. Students expand upon their knowledge of how the software works to learn about how it is used as a management tool. Students learn how to coordinate, update, and share design data with team members throughout the design and construction phases of a building project. Specifically, students learn how set up office standards with templates that include annotation styles, preset views, sheets, and schedules; create custom element types and families; and establish a Company/Firm BIM foundation. This course prepares students for certification exams associated with Autodesk Revit certification.

I. **PRE-REQUISITES**

SOET 250 Intro to 3D CADD and BIM

J. **GOALS (STUDENT LEARNING OUTCOMES)**:
By the end of this course, the student will be able to:

	Objective	*Institutional SLO*
1	Apply design and engineering concepts used in commercial and residential building systems by integrating traditional industry methods with current BIM software system design tools	2. Crit. Thinking 3. Prof. Competence
2	Demonstrate the ability to create a fully functional BIM model using parametric design concepts and other analytical tools within the software	2. Crit. Thinking
3	Demonstrate an ability to manipulate a fully coordinated commercial project with BIM using phasing, scheduling and related BIM management concepts	2. Crit. Thinking 3. Prof. Competence
4	Utilize collaboration, scheduling, and project planning BIM tools	2. Crit. Thinking 3. Prof. Competence
5	Utilize BIM as a tool to coordinate MEP building systems such as Plumbing, HVAC, Structural, Electrical trades etc. within a commercial building model using BIM Architecture and MEP collision checking tools and through the use of parametric design concepts	2. Crit. Thinking
6	Apply core concepts within the context of Family concepts & techniques	2. Crit. Thinking 3. Prof. Competence

K.   **TEXTS:**

- ASCENT, "Autodesk Revit 2012 BIM Management", SDC Publications. ISBN: 978-1-58503-677-6
- Moss, Elis, "Unofficial Revit 2012 Certification Exam Guide", *SDC Publications.* ISBN: 978-1-58503-679-0

L.   **REFERENCES:**
- **Autodesk Education Community** http://students.autodesk.com/
- **Revit City** http://www.revitcity.com/index.php

M.   **EQUIPMENT:** Computer labs, plotters provide by campus, Autodesk REVIT ARCHITECTURE , REVIT MEP, STRUCTURAL, ANGEL

N.   **GRADING METHOD:** A-F

N.   **MEASUREMENT CRITERIA/METHODS:**
- Exams
- Quizzes
- ANGEL/Online class café participation
- Participation

P.   **DETAILED COURSE OUTLINE:**

I.   Creating Custom Templates
    A. Preparing Project Templates
    B. Customizing Annotation Styles
    C. Preparing Templates for Autodesk Revit
    D. Creating Title Blocks
    E. View Templates
    F. View Templates for Architectural and
    G. Structural Projects
    H. View Templates for MEP Projects
    I. Settings for Mechanical and Electrical Projects
    J. Settings for Structural Projects

II.   Schedules
    A. Creating Schedules
    B. Graphical Column Schedules
    C. Creating Schedules for Architectural Projects ..
    D. Creating Schedules for Autodesk Revit MEP
    E. Creating Schedules for Structural Projects
    F. Advanced Schedule Options
    G. Creating Material Takeoff Schedules
    H. Creating Material Takeoff Schedules
    I. Creating Complex Schedules in MEP
    J. Creating a Complex Structural Schedule

III. Custom Walls, Roofs, & Sections
  A. Creating Wall, Roof, and Floor Types
  B. Creating Compound Wall Types
  C. Adding Sweeps to Walls, Roofs, and Floors
  D. Adding 3D Profiles
  E. Vertically Compound Walls
  F. Creating Vertically Compound Walls
  G. Vertically Stacked Walls
  H. 3d Creating Stacked and Embedded Walls

IV. Family Concepts & Techniques
  A. Introduction to Creating Families
  B. Creating the Parametric Framework
  C. Setting Up a Bookcase Family
  D. Setting Up a Heat Pump Family
  E. Setting Up a Structural Column Family
  F. Creating Family Elements
  G. Additional Tools for Families
  H. Creating Family Geometry for the Bookcase
  I. Creating Family Geometry for the Heat Pump
  J. Creating Family Geometry for the Structural

V. Creating Family Types
  A. Visibility Display Settings
  B. Creating Family Types for the Bookcase
  C. Creating Family Types for the Heat Pump
  D. Creating Family Types for the Structural
  E. Overview of Family Creation

VI. Creating Specific Families
  A. Creating In-Place Families
  B. Creating Profiles
  C. In-Place Families and Profiles - Door Opening
  D. In-Place Families and Profiles- Concrete
  E. Corbelling
  F. Creating Annotation Families
  G. Creating Annotation Families - Arrow Symbol
  H. Working with Shared Parameters -Architectural
  I. Working with Shared Parameters - MEP
  J. Working with Shared Parameters-Structural

VII. Creating Architectural Specific Families
  A. Creating Custom Doors and Windows
  B. Creating Angled Cornices and Copings
  C. Creating Custom Railings

VIII.   Families for Railings, Balusters, and Panels
          A. Creating Custom Railings

 IX.   Creating MEP Specific Families
          A. Creating a Pipe Fitting Flange
          B. Upgrading an Architectural Plumbing Fixture
          C. to MEP
          D. Creating a Custom Lighting Fixture Family
          E. Creating a Data Device with Annotation
          F. Parameters

  X.   Creating Structural Specific Families
          A. Parametric Gusset Plate
          B. Creating a Slab Depression
          C. Column Stiffeners (In-Place Family)
          D. Creating a Built-Up Column

Q. LABORATORY OUTLINE
   1. Working with Views and View types
   2. Using the REVIT MEP system
   3. Learn Space and Zoning techniques
   4. Performance analysis
   5. HVAC Systems
   6. Hydronic Piping Systems
   7. MEP Systems
   8. Creating Construction Documents
   9. Tags and Schedules
   10. Detailing
   11. Creating Family Types
   12. Creating Custom Templates
   13. Schedules
   14. Custom Walls ,Roofs and floors