Drafting & Design 11/12

Objective

*This senior-level course challenges students to refine their drafting and design skills while exploring advanced architectural and engineering concepts. Students will build on their foundation in freehand, manual, and CAD work, with a strong focus on professional-level software such as **AutoCAD** and **Revit**.*

Through projects and historical design studies, students will explore how classical styles influence modern architecture and will apply their learning in the design, drafting, and construction of scale models and digital structures.

By the end of this course, students will:

- *Demonstrate advanced freehand and manual drafting skills.*
- *Apply architectural standards and conventions in drawings.*
- *Use AutoCAD and Revit for 2D drafting and 3D building design.*
- *Identify and apply principles of European Classical architecture (Doric, Ionic, Corinthian).*
- *Translate digital designs into physical models using fabrication technologies.*
- *Collaborate on large-scale design projects such as model houses and furniture.*

Course Content

*a. **Advanced Sketching and Manual Drafting***

- *Architectural sketching and design visualization*
- *Proportions, perspectives, and shading for presentation drawings*
- *Advanced orthographic and isometric projections*

*b. **Architectural History & Styles***

- *European Classical orders: Doric, Ionic, Corinthian*
- *Influence of classical architecture on modern design*
- *Application in projects (columns, facades, details)*

*c. **CAD & BIM (Building Information Modeling)***

- *AutoCAD (advanced drafting and 3D applications)*
- *Revit (architectural design, parametric modeling, building systems)*
- *File management, collaboration tools, and rendering*

*d. **Digital Fabrication***

- *Integration of CAD drawings with 3D printers, CNC routers, vinyl plotters, and laser engravers*
- *Designing architectural details and models for fabrication*

Skill-Building Projects

*Projects at this level emphasize **applied architectural design** and integration of digital/physical modeling.*

Proposed Projects (Semester Plan):

- *Advanced Freehand Sketch Portfolio (architectural details, perspectives)*
- *Column Study (Doric, Ionic, Corinthian – sketching, CAD, Revit modeling)*
- *AutoCAD Residential Floor Plan (2D plan, layers, dimensions)*
- *Revit Project: House Model (walls, roof, windows, furniture, rendering)*
- *Furniture Design Project (chair, table, or interior piece – CAD + physical prototype)*
- *CNC/Laser Project: Architectural detail or facade panel*
- *Final Project –* ***Building and Furnishing a Model House*** *(team or individual):*
    - *Complete floor plan and elevations (AutoCAD/Revit)*
    - *Structural and interior detailing*
    - *Scale model (3D printed, CNC, or hand-built)*
    - *Presentation of drawings and model*

Evaluation

A. Diagnostic Assessment

1. *Prior knowledge assessment (skills, software, design principles).*
2. *Safety and tool/software competency quizzes.*
3. *Self-assessment of design interests and goals.*

B. Formative Assessment – 30%

1. *Class activities and sketching assignments.*
2. *Employable skills (time management, collaboration, professionalism).*
3. *Drafting and software practice exercises.*

C. Summative Assessment – 70%

1. *Architectural Style Study (Classical columns).*
2. *Skill-building projects (AutoCAD, Revit, fabrication).*
3. *Final Project: **Model House with Furniture** (design, drawings, model, presentation).*

Course Costs

*As per Surrey School District policy, there is **no course fee**. Students will have access to required software and lab machines. Students may choose to purchase specialty materials for extended projects (upgraded 3D prints, higher-quality model-building supplies, etc.) at their own cost with teacher approval.*

Classroom Rules and Expectations

- ***Food and Drinks**: Not permitted in lab areas. Water bottles allowed.*
- ***Attendance**: Critical for collaborative projects and demonstrations.*
- ***Workspace Care**: Drafting boards, computers, and machines must be left in ready-to-use condition.*
- ***Projects**: Must be teacher-approved. Optional personal projects may be pursued with approval and pre-paid costs.*
- ***Electronics**: Personal devices permitted only for school-related tasks. Unauthorized use will result in loss of privileges.*
- ***Integrity**: Copying files or designs will not be tolerated. Collaborative projects require clear contribution from all members.*
- ***Contact**:*
  Teacher: Mr. Sirian
  District Email: sirian_c@surreyschools.ca