

COURSE DES3035: 2-D DESIGN 3

Level: Advanced

Prerequisite: DES2035: 2-D Design 2

Description: Students apply theories, skills and techniques to resolve complex 2-D design problems. Emphasis is placed on exploring shape, composition, aesthetics, cultural context, materials, processes and systems, while addressing social responsibility and environmental stewardship.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Outcomes: The student will:

- 1. produce an advanced 2-D design solution for an advanced level design brief**
 - 1.1 identify a problem considering architecture, landscape architecture, industrial design, engineering or interior design, and write a design brief
 - 1.2 identify and accommodate human factors commonly affected by design solutions
 - 1.3 describe the impact regarding shape, composition and aesthetics of the solution on the stakeholders; e.g., cultural, psychological and physiological
 - 1.4 identify and select materials based on their properties and justify their use in the context of the design solution
 - 1.5 identify and select production processes and justify their use in the context of the design solution
 - 1.6 consider environmental stewardship
- 2. select the most appropriate solution based on the design brief**
 - 2.1 assess intentions and decision making related to the application of elements and principles of design
 - 2.2 participate in interim critiques; e.g., self, peer, instructor, client
- 3. construct presentation for design solution**
 - 3.1 prepare a detailed plan for the construction and presentation of the design solution; e.g., write up, sequential diagram, safety concerns, cost and material sheet
 - 3.2 secure approval to begin the design solution
 - 3.3 identify and use techniques, tools, materials and other resources as outlined in the plan for presenting the design solution
- 4. present and produce a portfolio-ready design solution**
 - 4.1 maintain a journal/sketchbook throughout the process that illustrates skill building
 - 4.2 present design work for assessment
 - 4.3 participate in a final critique
 - 4.4 print/plot design work and include in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**
- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work

7. demonstrate basic competencies

7.1 demonstrate fundamental skills to:

- 7.1.1 communicate
- 7.1.2 manage information
- 7.1.3 use numbers
- 7.1.4 think and solve problems

7.2 demonstrate personal management skills to:

- 7.2.1 demonstrate positive attitudes and behaviours
- 7.2.2 be responsible
- 7.2.3 be adaptable
- 7.2.4 learn continuously
- 7.2.5 work safely

7.3 demonstrate teamwork skills to:

- 7.3.1 work with others
- 7.3.2 participate in projects and tasks

8. create a transitional strategy to accommodate personal changes and build personal values

- 8.1 identify short-term and long-term goals
- 8.2 identify steps to achieve goals

COURSE DES3045: 3-D DESIGN 3

Level: Advanced

Prerequisite: DES2045: 3-D Design 2

Description: Students apply theories, skills and techniques appropriate to 3-D design. Students will deal with such aspects as shaping, massing, proportion, scale, contrast, colour, texture and finish within the context of complex 3-D design projects. Students are introduced to cultural, symbolic and human factors, principles and ergonomic considerations.

Parameters: Basic sketching, drawing, layout and modelling tools and/or a computer with 3-D design software.

Outcomes: The student will:

- 1. analyze 3-D design projects/products; e.g., displays, exhibits, dramatic sets, products, packaging, furniture, lighting, interface, new technology**
 - 1.1 discuss the strengths and weakness of the projects/products
 - 1.2 evaluate based on set criteria; e.g., usefulness, aesthetic, function, form, material use
 - 1.3 consider symbolic and cultural connotations to make aesthetic judgments about projects/products
- 2. plan advanced level designed solutions for 3-D design problem**
 - 2.1 identify a problem considering architecture, landscape architecture, industrial design, engineering or interior design, and write a design brief
 - 2.2 identify and accommodate human factors commonly affected by design solutions
 - 2.3 describe the impact regarding shape, composition and aesthetics of the solution on the stakeholders; e.g., cultural, psychological and physiological
 - 2.4 consider environmental stewardship
- 3. construct 3-D design for design solution**
 - 3.1 prepare a detailed plan for the construction and presentation of the design solution/prototype; e.g., write up, sequential diagram, safety concerns, cost and material sheet
 - 3.2 secure approval to begin the design solution
 - 3.3 identify and use techniques, tools, materials and other resources as outlined in the plan for presenting the design solution
 - 3.4 demonstrate appropriate use of elements, principles and considerations common to 3-D design
- 4. present a portfolio-ready 3-D design solution; e.g., model, image or rendering**
 - 4.1 participate in interim critiques; e.g., self, peer, instructor
 - 4.2 assess intentions and decision making related to the application of elements and principles of design
 - 4.3 present a solution for assessment; e.g., images, model and/or prototype
 - 4.4 maintain a design folder, journal or sketchbook as part of the portfolio of ongoing observational drawing activities that illustrates skill building
 - 4.5 evaluate the design solution based on set criteria; e.g., usefulness, aesthetic, function, form, material use
 - 4.6 explain symbolic and cultural connotations of the generated 3-D design solution
- 5. identify copyright restrictions and permissions and put them into practice**

- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3055: CAD 3

Level: Advanced

Prerequisite: DES2055: CAD 2

Description: Students solve design problem(s) using advanced computer-aided design (CAD) methods, advanced commands, 2-D and/or 3-D modelling techniques, rendering, shading, and animation techniques.

Parameters: Access to a computer with CAD software, a printer and/or plotter.

Outcomes: The student will:

- 1. use advanced features of CAD program to design and model a working prototype of a solution to an advanced level design problem**
 - 1.1 identify an advanced CAD problem
 - 1.2 develop a solution that uses advanced software features, such as student-developed materials, lighting, walk through, Booleans, biological form, multi-part, mechanical, intricate detail, animated assemblies
 - 1.3 create a model, image and/or working drawings on a computer in response to the outlined problem
- 2. demonstrate the ability to locate and use advanced tools, resources and processes of the program when working with design or model; e.g., tutorials, help, manuals**
- 3. produce and present a portfolio-ready CAD drawing, image or rendering**
 - 3.1 participate in interim critiques; e.g., self, peer, instructor
 - 3.2 assess intentions and decision making related to the application of elements and principles of design
 - 3.3 present images for assessment
 - 3.4 maintain a design folder, journal or sketchbook as part of the portfolio of ongoing activities that illustrates skill building
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. apply consistent and appropriate work station routines**
 - 5.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 5.2 demonstrate security for hardware, software, supplies and personal work
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems
 - 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely

- 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks
- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3065: TECHNICAL DESIGN 3

Level: Advanced

Prerequisite: DES2065: Technical Design 2

Description: Students concentrate on various drawing and drafting types to illustrate design concepts and solutions, including freehand drawings, illustrative views, perspective drawings, axonometric drawings and surface developments (flat pattern).

Parameters: Access to drawing tools, equipment and materials.

Outcomes: The student will:

- 1. produce illustrative drawings for a student-generated or teacher-specified designed item**
 - 1.1 produce illustrative drawings for the production of a designed item; e.g., a building interior/exterior, landscape, fashion, machined item, pre-fabricated component
 - 1.2 select and use appropriate tools and materials
 - 1.3 select, propose and justify the drawings needed to produce the designed item and approve before starting; e.g., freehand drawings, illustrative views, perspective drawings, axonometric drawings, surface developments (flat pattern)
 - 1.4 produce illustrative drawings using appropriate drawing techniques; e.g., accuracy in proportion and scale, using freehand perspective grids, underlay isometric grids
 - 1.5 demonstrate competency in conventional and/or software techniques for construction of accurate, illustrative views of design solutions
 - 1.6 select and use appropriate drawing instruments, materials and computer applications
- 2. apply design detailing, and make rational judgments with respect to proportion, scale and composition**
 - 2.1 resolve problems of design detailing during drawing projects, with attention to such aspects as proportion, scale and composition
 - 2.2 complete as line drawings only; i.e., no surface textures or shading
- 3. include the design solution in a portfolio**
 - 3.1 maintain a journal/sketchbook throughout the process
 - 3.2 participate in a final critique
 - 3.3 use appropriate terminology within the context
 - 3.4 print/plot drawings and include them in a portfolio
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. apply consistent and appropriate work station routines**
 - 5.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 5.2 demonstrate security for hardware, software, supplies and personal work
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems

- 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely
- 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks
- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3075: TECHNICAL DRAFTING 3

Level: Advanced

Prerequisite: DES2075: Technical Drafting 2

Description: Students use drawing conventions and procedures to draw with and manipulate manual drafting equipment and/or CAD. Students draw orthographic, sectioned view, auxiliary view and axonometric drawings. Students demonstrate the ability to draw complete drawings using accepted line-work, lettering, layout and dimensioning techniques, while adhering to a drafting standard.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Outcomes: The student will:

- 1. produce working drawings for a student-generated or teacher-specified designed item**
 - 1.1 produce working drawings for the production of a designed item (e.g., a building, system, fashion, machined item, pre-fabricated component), ensuring that:
 - 1.1.1 all dimensioning details required for production are included
 - 1.1.2 appropriate codes are met in the specifications indicated
 - 1.2 select and use appropriate tools and materials
 - 1.3 select, propose and justify the drawings needed to produce the designed item for approval before completion; e.g., multi-view drawing (showing a minimum of three views), detail drawing, assembly drawing, sectional drawing, auxiliary drawing, exploded view, stretchout, revolved sections, offset sections
 - 1.4 dimension and annotate drawings accurately
- 2. present portfolio-ready drawings**
- 3. include the design solution in a portfolio**
 - 3.1 maintain a journal/sketchbook throughout the process
 - 3.2 participate in a final critique
 - 3.3 use appropriate terminology within the context
 - 3.4 print/plot drawings and include them in a portfolio
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. apply consistent and appropriate work station routines**
 - 5.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 5.2 demonstrate security for hardware, software, supplies and personal work
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems
 - 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely

- 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks
- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3095: ARCHITECTURAL DESIGN

Level: Advanced

Prerequisites: DES2055: CAD 2 *or*
DES2075: Technical Drafting 2

Description: Students translate architectural design concepts into graphic images, and then convert those images into technical drawings and specifications that result in the creation of the built environment.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Supporting Courses: DES3055: CAD 3
DES3075: Technical Drafting 3
ENS2210: Sustainable Building Design & Construction

Outcomes: The student will:

- 1. identify a client need and create an architectural design brief**
 - 1.1 investigate architectural design meeting human, environmental and cultural needs
 - 1.2 consider residential or commercial requirements, including:
 - 1.2.1 materials
 - 1.2.2 appropriate codes; e.g., building code, zoning, fire, accessibility
 - 1.2.3 styles
 - 1.2.4 environment
 - 1.2.5 client needs
- 2. produce an architectural design that addresses human and/or environmental needs**
 - 2.1 structure a plan for resolution; e.g., concept drawings, thumbnail sketch
 - 2.2 produce architectural drawings, including:
 - 2.2.1 detailed floor plan
 - 2.2.2 elevations
 - 2.2.3 building section
 - 2.3 demonstrate organization and management of personal learning with minimal external direction, in both individual and cooperative learning situations
 - 2.4 consider environmental stewardship in proposed design
- 3. present and describe the solution based on the needs outlined in the design brief**
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of the plan for resolution in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**
- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work

7. demonstrate basic competencies

7.1 demonstrate fundamental skills to:

- 7.1.1 communicate
- 7.1.2 manage information
- 7.1.3 use numbers
- 7.1.4 think and solve problems

7.2 demonstrate personal management skills to:

- 7.2.1 demonstrate positive attitudes and behaviours
- 7.2.2 be responsible
- 7.2.3 be adaptable
- 7.2.4 learn continuously
- 7.2.5 work safely

7.3 demonstrate teamwork skills to:

- 7.3.1 work with others
- 7.3.2 participate in projects and tasks

8. create a transitional strategy to accommodate personal changes and build personal values

- 8.1 identify short-term and long-term goals
- 8.2 identify steps to achieve goals

COURSE DES3105: ENGINEERING DESIGN

Level: Advanced

Prerequisites: DES2055: CAD 2 *or*
DES2075: Technical Drafting 2

Description: Students develop complex explanatory drawings for civil, mechanical, structural or electrical systems. This is a skill-building course with an emphasis on explanatory line drawings suitable for presentation and assembly.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Supporting Courses: DES3055: CAD 3
DES3075: Technical Drafting 3
ENS2210: Sustainable Building Design & Construction

Outcomes: The student will:

- 1. identify a client need and create an engineering design brief**
 - 1.1 investigate engineering design meeting human, environmental and cultural needs
 - 1.2 consider personal and industrial requirements, including:
 - 1.2.1 appropriate codes; e.g., Canadian Standards Association (CSA), Underwriters Laboratory (UL), building code
 - 1.2.2 materials
 - 1.2.3 schematics
 - 1.2.4 schedules
 - 1.2.5 environment
 - 1.2.6 client needs
- 2. produce a design solution that addresses human and/or environmental needs**
 - 2.1 structure a plan for resolution; e.g., concept drawings, thumbnail sketch
 - 2.2 produce engineering drawings according to the needs set in the design brief, including:
 - 2.2.1 assembly
 - 2.2.2 exploded views
 - 2.2.3 cut-away
 - 2.2.4 detail
 - 2.2.5 revolutions
 - 2.2.6 section
 - 2.2.7 stretchout
 - 2.3 demonstrate organization and management of personal learning with minimal external direction, in both individual and cooperative learning situations
 - 2.4 consider environmental stewardship in proposed design
- 3. present and describe the solution based on the needs outlined in the design brief**
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of the plan for resolution in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**

- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3115: INDUSTRIAL DESIGN

Level: Advanced

Prerequisites: DES2055: CAD 2 *or*
DES2075: Technical Drafting 2

Description: Industrial design incorporates innovation, aesthetics, functional requirements, technology and ergonomics into a product in order to better meet the needs of the user. Students work creatively with design problems to analyze, propose and produce solutions using contemporary materials, techniques and finishes. The resulting presentations are both professional and unique.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Supporting Courses: DES3055: CAD 3
DES3075: Technical Drafting 3
ENS2210: Sustainable Building Design & Construction

Outcomes: The student will:

- 1. identify a client need and create a brief for a designed product**
 - 1.1 investigate industrial design meeting human, environmental and cultural needs
 - 1.2 consider personal or industrial requirements, including:
 - 1.2.1 materials
 - 1.2.2 ergonomics
 - 1.2.3 environmental impact; e.g., sustainability, packaging, resources
 - 1.2.4 function
 - 1.2.5 aesthetic
 - 1.2.6 client needs
- 2. produce a design solution that addresses human and/or environmental needs**
 - 2.1 structure a plan for resolution; e.g., concept drawings, thumbnail sketches
 - 2.2 produce technical drawings according to the needs set in the design brief, including:
 - 2.2.1 assembly drawings
 - 2.2.2 orthographic
 - 2.2.3 detail drawing
 - 2.2.4 rendered perspective
 - 2.2.5 section
 - 2.2.6 axonometric
 - 2.3 demonstrate organization and management of personal learning with minimal external direction, in both individual and cooperative learning situations
 - 2.4 consider environmental stewardship in proposed design
- 3. present and describe the solution based on the needs outlined in the design brief**
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of the plan for resolution in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**

- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3125: INTERIOR DESIGN

Level: Advanced

Prerequisites: DES2055: CAD 2 *or*
DES2075: Technical Drafting 2

Description: Students learn to consider form and space when developing interior design solutions specific to human and/or environmental needs. Students assess solutions on the basis of functional and aesthetic considerations and appropriateness within the human environment. The design process is applied to solve abstract and realistic interior design problems.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Supporting Courses: DES3055: CAD 3
DES3075: Technical Drafting 3
ENS2210: Sustainable Building Design & Construction

Outcomes: The student will:

- 1. identify a client need and create an interior design brief**
 - 1.1 investigate interior design that meets human, environmental and cultural needs
 - 1.2 consider residential or commercial requirements, including:
 - 1.2.1 current materials
 - 1.2.2 appropriate codes; e.g., building code, zoning, fire
 - 1.2.3 styles
 - 1.2.4 colour theory
 - 1.2.5 lighting; e.g., mood, principles of illumination, lighting sources
 - 1.2.6 traffic flow
 - 1.2.7 environment
 - 1.2.8 client needs
- 2. produce an interior design that addresses human and/or environmental needs**
 - 2.1 structure a plan for resolution; e.g., concept drawings, thumbnail sketch
 - 2.2 produce appropriate interior drawings according to the needs set in the design brief, including:
 - 2.2.1 floor plan, complete with furnishings
 - 2.2.2 rendered elevations
 - 2.2.3 rendered perspectives
 - 2.2.4 lighting plan
 - 2.3 produce a materials sample board; e.g., colour swatches, textures, material swatches
 - 2.4 demonstrate organization and management of personal learning with minimal external direction, in both individual and cooperative learning situations
 - 2.5 consider environmental stewardship in proposed design
- 3. present and describe the solution based on the needs outlined in the design brief**
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of the plan for resolution in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**

- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3135: LANDSCAPE DESIGN

Level: Advanced

Prerequisites: DES2055: CAD 2 *or*
DES2075: Technical Drafting 2

Description: Students learn to consider form and space when producing man-made environments that are ecologically appropriate, functionally successful and aesthetically pleasing. Students learn about the need to establish a balance between use and enjoyment of the land and the conservation and health of the environment. The design process is applied to solve abstract or realistic landscape design problems.

Parameters: Access to drawing tools (conventional and/or software), equipment and materials.

Supporting Courses: DES3055: CAD 3
DES3075: Technical Drafting 3
ENS2210: Sustainable Building Design & Construction

Outcomes: The student will:

- 1. identify a client need and create a landscape design brief**
 - 1.1 investigate landscape design that meets human, environmental and cultural needs
 - 1.2 consider residential or commercial requirements, including:
 - 1.2.1 topography
 - 1.2.2 ecology
 - 1.2.3 geographic location
 - 1.2.4 materials/resources
 - 1.2.5 appropriate codes; e.g., building code, zoning, fire
 - 1.2.6 styles; e.g., formal, informal, natural, groomed
 - 1.2.7 environment; e.g., sustainability, xeriscape, reclamation
 - 1.2.8 client needs
- 2. produce a landscape design that addresses human and/or environmental needs**
 - 2.1 structure a plan for resolution; e.g., concept drawings, thumbnail sketch
 - 2.2 produce appropriate landscape drawings according to the needs set in the design brief, including:
 - 2.2.1 site plan; e.g., survey, legal, planting
 - 2.2.2 rendered elevations
 - 2.2.3 rendered perspectives
 - 2.2.4 drainage
 - 2.3 demonstrate organization and management of personal learning with minimal external direction, in both individual and cooperative learning situations
 - 2.4 consider environmental stewardship in proposed design
- 3. present and describe the solution based on the needs outlined in the design brief**
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of the plan for resolution in a portfolio

- 5. identify copyright restrictions and permissions and put them into practice**
- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely
 - 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3145: MODELLING – REAL

Level: Advanced

Prerequisite: DES1010: Sketch, Draw & Model

Description: Students use the principles and techniques of physical modelling. They will develop the ability to construct models using a variety of materials, equipment and techniques from working drawings.

Parameters: Access to drawing and modelling tools, equipment and materials.

Outcomes: The student will:

- 1. identify a client need and create a brief for a designed model**
 - 1.1 determine the type of model best suited to the design brief; e.g., detail, massing, topographic, study, presentation
 - 1.2 consider safety, equipment, materials, scale and cost
- 2. produce a physical model**
 - 2.1 select, organize and use appropriate tools and materials
 - 2.2 schedule construction time line
 - 2.3 demonstrate accuracy in measurement
 - 2.4 use correct scale and layout techniques
 - 2.5 demonstrate precision in cutting and assembly
 - 2.6 use appropriate joinery and fastening techniques
- 3. present the model**
- 4. include the model in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 include images of the model in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems
 - 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely
 - 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks
- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3155: MODELLING – VIRTUAL

Level: Advanced

Prerequisite: DES2055: CAD 2

Description: Students use virtual 3D design concepts as a starting point for developing the skill and knowledge needed to design in virtual space. Students develop an understanding of light, form, texture and shape. These components are explored through digital modelling exercises.

Parameters: Access to drawing and modelling software, equipment and materials.

Outcomes: The student will:

- 1. identify a client need and create a brief for a designed model**
 - 1.1 determine the type of model best suited to the design brief; e.g., detail, massing, topographic, study, presentation, fly-through, shadow study
 - 1.2 consider materials, scale and cost
- 2. produce a virtual model**
 - 2.1 use correct scale, and workspace and layout techniques
 - 2.2 construct and label elements appropriately
 - 2.3 group elements correctly
 - 2.4 import/export model files using correct scale
 - 2.5 include elements of design in the model with precision and accuracy
 - 2.6 apply materials, textures and colour
 - 2.7 create sources of illumination
 - 2.8 render the model
 - 2.9 output the rendered image
- 3. present the model**
- 4. include the model in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 include images and/or animation of the model in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**
- 6. apply consistent and appropriate work station routines**
 - 6.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 6.2 demonstrate security for hardware, software, supplies and personal work
- 7. demonstrate basic competencies**
 - 7.1 demonstrate fundamental skills to:
 - 7.1.1 communicate
 - 7.1.2 manage information
 - 7.1.3 use numbers
 - 7.1.4 think and solve problems
 - 7.2 demonstrate personal management skills to:
 - 7.2.1 demonstrate positive attitudes and behaviours
 - 7.2.2 be responsible
 - 7.2.3 be adaptable
 - 7.2.4 learn continuously
 - 7.2.5 work safely

- 7.3 demonstrate teamwork skills to:
 - 7.3.1 work with others
 - 7.3.2 participate in projects and tasks
- 8. create a transitional strategy to accommodate personal changes and build personal values**
 - 8.1 identify short-term and long-term goals
 - 8.2 identify steps to achieve goals

COURSE DES3165: PRESENTATION

Level: Advanced

Prerequisite: None

Description: Students apply rendering techniques to line drawings (base or developed), concentrating on light, colour and various media; e.g., coloured pencils, marker pens, water colours, computer rendering. Presentation techniques are used to compose high quality images to communicate a design solution.

Parameters: Access to drawing tools, equipment and materials.

Supporting Courses: DES2065: Technical Design 2
DES2075: Technical Drafting 2
DES3065: Technical Design 3
DES3075: Technical Drafting 3

Outcomes: The student will:

- 1. research and consider the various types of media that can be used to render illustrative drawings for a student-generated or teacher-specified designed item**
 - 1.1 select and use appropriate materials and/or software
 - 1.2 consider application and audience; e.g., trade show, community, town hall, formal/informal presentation
- 2. use various rendering techniques and media to create high quality visual representations of design solutions**
 - 2.1 create a set of rendered drawings using appropriate tools and materials (e.g., water colour, marker pens, CAD) based on illustrative drawings from other courses or provided by the teacher
 - 2.2 select, propose and justify the media and techniques used to render the designed item for application and audience approval before completion
 - 2.3 render the design solution through the use of materials, textures and quality of light
- 3. create and present the design solution**
 - 3.1 compose high quality illustrations; e.g., presentation software, pamphlets, photographs, collage and montage techniques, titles, text, bulletin board for visual presentation of design solutions
 - 3.2 present to an appropriate audience
- 4. include the design solution in a portfolio**
 - 4.1 participate in a final critique
 - 4.2 use appropriate terminology within the context
 - 4.3 include examples of renderings in a portfolio
- 5. identify copyright restrictions and permissions and put them into practice**
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems

- 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely
- 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks
- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3170: FUTURE OF DESIGN

Level: Advanced

Prerequisite: None

Description: Students explore new possibilities in design, including the role of the designer and the challenges that are faced by designers.

Parameters: Access to the Internet, drawing/modelling tools, equipment and materials.

Supporting Course: DES2060: Evolution of Design

Outcomes: The student will:

- 1. identify future challenges designers will face**
 - 1.1 describe the role of designers in the future and some of the challenges they will face
 - 1.2 indicate how this role and these challenges differ from those currently faced by designers
- 2. create a design solution; e.g., model, drawings, rendering or animation**
 - 2.1 write a design brief detailing a possible future problem to be solved; e.g., environmental, societal
 - 2.2 identify and structure a possible design solution by:
 - 2.2.1 researching the future of design and applying what is learned to the design solution
 - 2.2.2 using new and emerging technology or techniques in the solution
 - 2.3 provide analysis and/or research supporting the design solution
 - 2.4 produce the solution
- 3. include the design solution in a portfolio**
 - 3.1 participate in a final critique
 - 3.2 use appropriate terminology within the context
 - 3.3 include examples of the solution in a portfolio
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. apply consistent and appropriate work station routines**
 - 5.1 demonstrate good health and safety practices; e.g., posture, positioning of hardware and furniture
 - 5.2 demonstrate security for hardware, software, supplies and personal work
- 6. demonstrate basic competencies**
 - 6.1 demonstrate fundamental skills to:
 - 6.1.1 communicate
 - 6.1.2 manage information
 - 6.1.3 use numbers
 - 6.1.4 think and solve problems
 - 6.2 demonstrate personal management skills to:
 - 6.2.1 demonstrate positive attitudes and behaviours
 - 6.2.2 be responsible
 - 6.2.3 be adaptable
 - 6.2.4 learn continuously
 - 6.2.5 work safely
 - 6.3 demonstrate teamwork skills to:
 - 6.3.1 work with others
 - 6.3.2 participate in projects and tasks

- 7. create a transitional strategy to accommodate personal changes and build personal values**
 - 7.1 identify short-term and long-term goals
 - 7.2 identify steps to achieve goals

COURSE DES3910: DES PROJECT D

Level: Advanced

Prerequisite: None

Description: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Parameters: Advanced project courses must connect with a minimum of two CTS courses, one of which must be at the advanced level and be in the same occupational area as the project course. The other CTS course(s) must be at least at the intermediate level from any occupational area.

Project courses cannot be connected to other project courses or practicum courses.

All projects and/or performances, whether teacher- or student-led, must include a course outline or student proposal.

Outcomes:

The teacher/student will:

- 1. identify the connection between this project course and two or more CTS courses**
 - 1.1 identify the outcome(s) from each identified CTS course that support the project and/or performance deliverables
 - 1.2 explain how these outcomes are being connected to the project and/or performance deliverables
- 2. propose the project and/or performance**
 - 2.1 identify the project and/or performance by:
 - 2.1.1 preparing a plan
 - 2.1.2 clarifying the purposes
 - 2.1.3 defining the deliverables
 - 2.1.4 specifying time lines
 - 2.1.5 explaining terminology, tools and processes
 - 2.1.6 defining resources; e.g., materials, costs, staffing
 - 2.2 identify and comply with all related health and safety standards
 - 2.3 define assessment standards (indicators for success)
 - 2.4 present the proposal and obtain necessary approvals

The student will:

- 3. meet goals as defined within the plan**
 - 3.1 complete the project and/or performance as outlined
 - 3.2 monitor the project and/or performance and make necessary adjustments
 - 3.3 present the project and/or performance, indicating the:
 - 3.3.1 outcomes attained
 - 3.3.2 relationship of outcomes to goals originally set

- 3.4 evaluate the project and/or performance, indicating the:
 - 3.4.1 processes and strategies used
 - 3.4.2 recommendations on how the project and/or performance could have been improved
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. demonstrate basic competencies**
 - 5.1 demonstrate fundamental skills to:
 - 5.1.1 communicate
 - 5.1.2 manage information
 - 5.1.3 use numbers
 - 5.1.4 think and solve problems
 - 5.2 demonstrate personal management skills to:
 - 5.2.1 demonstrate positive attitudes and behaviours
 - 5.2.2 be responsible
 - 5.2.3 be adaptable
 - 5.2.4 learn continuously
 - 5.2.5 work safely
 - 5.3 demonstrate teamwork skills to:
 - 5.3.1 work with others
 - 5.3.2 participate in projects and tasks
- 6. create a transitional strategy to accommodate personal changes and build personal values**
 - 6.1 identify short-term and long-term goals
 - 6.2 identify steps to achieve goals

COURSE DES3920: DES PROJECT E

Level: Advanced

Prerequisite: None

Description: Students develop project design and management skills to extend and enhance competencies and skills in other CTS courses through contexts that are personally relevant.

Parameters: Advanced project courses must connect with a minimum of two CTS courses, one of which must be at the advanced level and be in the same occupational area as the project course. The other CTS course(s) must be at least at the intermediate level from any occupational area.

Project courses cannot be connected to other project courses or practicum courses.

All projects and/or performances, whether teacher- or student-led, must include a course outline or student proposal.

Outcomes:

The teacher/student will:

- 1. identify the connection between this project course and two or more CTS courses**
 - 1.1 identify the outcome(s) from each identified CTS course that support the project and/or performance deliverables
 - 1.2 explain how these outcomes are being connected to the project and/or performance deliverables
- 2. propose the project and/or performance**
 - 2.1 identify the project and/or performance by:
 - 2.1.1 preparing a plan
 - 2.1.2 clarifying the purposes
 - 2.1.3 defining the deliverables
 - 2.1.4 specifying time lines
 - 2.1.5 explaining terminology, tools and processes
 - 2.1.6 defining resources; e.g., materials, costs, staffing
 - 2.2 identify and comply with all related health and safety standards
 - 2.3 define assessment standards (indicators for success)
 - 2.4 present the proposal and obtain necessary approvals

The student will:

- 3. meet goals as defined within the plan**
 - 3.1 complete the project and/or performance as outlined
 - 3.2 monitor the project and/or performance and make necessary adjustments
 - 3.3 present the project and/or performance, indicating the:
 - 3.3.1 outcomes attained
 - 3.3.2 relationship of outcomes to goals originally set

- 3.4 evaluate the project and/or performance, indicating the:
 - 3.4.1 processes and strategies used
 - 3.4.2 recommendations on how the project and/or performance could have been improved
- 4. identify copyright restrictions and permissions and put them into practice**
- 5. demonstrate basic competencies**
 - 5.1 demonstrate fundamental skills to:
 - 5.1.1 communicate
 - 5.1.2 manage information
 - 5.1.3 use numbers
 - 5.1.4 think and solve problems
 - 5.2 demonstrate personal management skills to:
 - 5.2.1 demonstrate positive attitudes and behaviours
 - 5.2.2 be responsible
 - 5.2.3 be adaptable
 - 5.2.4 learn continuously
 - 5.2.5 work safely
 - 5.3 demonstrate teamwork skills to:
 - 5.3.1 work with others
 - 5.3.2 participate in projects and tasks
- 6. create a transitional strategy to accommodate personal changes and build personal values**
 - 6.1 identify short-term and long-term goals
 - 6.2 identify steps to achieve goals

COURSE DES3950: DES ADVANCED PRACTICUM

Level: Advanced

Prerequisite: None

Description: Students apply prior learning and demonstrate the attitudes, skills and knowledge required by an external organization to achieve a credential/credentials or an articulation.

Parameters: This practicum course, which may be delivered on- or off-campus, should be accessed only by students continuing to work toward attaining a recognized credential/credentials or an articulation offered by an external organization. This course must be connected to at least one CTS course from the same occupational area and cannot be used in conjunction with any introductory (1XXX) level course. A practicum course cannot be delivered as a stand-alone course, cannot be combined with a CTS project course and cannot be used in conjunction with the Registered Apprenticeship Program or the Green Certificate Program.

Outcomes: The student will:

1. perform assigned tasks and responsibilities, as required by the organization granting the credential(s) or articulation

- 1.1 identify regulations and regulatory bodies related to the credential(s) or articulation
- 1.2 describe personal roles and responsibilities, including:
 - 1.2.1 key responsibilities
 - 1.2.2 support functions/responsibilities/expectations
 - 1.2.3 code of ethics and/or conduct
- 1.3 describe personal work responsibilities and categorize them as:
 - 1.3.1 routine tasks; e.g., daily, weekly, monthly, yearly
 - 1.3.2 non-routine tasks; e.g., emergencies
 - 1.3.3 tasks requiring personal judgement
 - 1.3.4 tasks requiring approval of a supervisor
- 1.4 demonstrate basic employability skills and perform assigned tasks and responsibilities related to the credential(s) or articulation

2. analyze personal performance in relation to established standards

- 2.1 evaluate application of the attitudes, skills and knowledge developed in related CTS courses
- 2.2 evaluate standards of performance in terms of:
 - 2.2.1 quality of work
 - 2.2.2 quantity of work
- 2.3 evaluate adherence to workplace legislation related to health and safety
- 2.4 evaluate the performance requirements of an individual who is trained, experienced and employed in a related occupation in terms of:
 - 2.4.1 training and certification
 - 2.4.2 interpersonal skills
 - 2.4.3 technical skills
 - 2.4.4 ethics

3. demonstrate basic competencies

3.1 demonstrate fundamental skills to:

- 3.1.1 communicate
- 3.1.2 manage information
- 3.1.3 use numbers
- 3.1.4 think and solve problems

3.2 demonstrate personal management skills to:

- 3.2.1 demonstrate positive attitudes and behaviours
- 3.2.2 be responsible
- 3.2.3 be adaptable
- 3.2.4 learn continuously
- 3.2.5 work safely

3.3 demonstrate teamwork skills to:

- 3.3.1 work with others
- 3.3.2 participate in projects and tasks

4. create a transitional strategy to accommodate personal changes and build personal values

4.1 identify short-term and long-term goals

4.2 identify steps to achieve goals