

COURSE DES2035: 2-D DESIGN 2

Level: Intermediate

Prerequisite: DES1030: 2-D Design 1

Description: Students continue to develop skills and techniques for 2-D design by using tools, materials and processes common to 2-D design to complete a variety of project activities.

Parameters: Access to drawing tools, equipment and materials.

Outcomes: The student will:

1. plan and produce solutions to 2-D design briefs

- 1.1 apply the design process to solve a 2-D design problem; e.g., floor plan, wrought iron gate, stained glass window, clothing pattern
- 1.2 select and use appropriate tools and materials as outlined in the design brief
- 1.3 use and maintain tools and materials in a safe and appropriate manner

2. incorporate the elements and principles of design to achieve the design solution

- 2.1 apply techniques, tools, materials and other resources in design solution; e.g., tone, texture and colour, markers and paints, images, typeface, drawing, layout, measuring, notation, rendering, assembly drawing and correct use of tools
- 2.2 use mathematical and/or scientific principles as they apply to design projects assigned; e.g., organization of visual space, measurement of internal space, borders, columns, use of scale
- 2.3 experiment with one or more elements (e.g., colour, line, shape) and/or principles (e.g., rhythm, balance) to achieve desired effects

3. produce and present a portfolio-ready drawing, image or rendering

- 3.1 participate in interim critiques; e.g., self, peer, instructor
- 3.2 discuss intentions and decision making related to the application of the elements and principles of design
- 3.3 present sketches or drawings for assessment
- 3.4 maintain a design folder, journal or sketchbook as part of the portfolio of ongoing observational drawing activities

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. identify possible life roles related to the skills and content of this cluster**
 - 7.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 7.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2045: 3-D DESIGN 2

Level: Intermediate

Prerequisite: DES1040: 3-D Design 1

Description: Students continue to develop skills and techniques for 3-D design by using tools, materials and processes common to 3-D design to complete a variety of project activities.

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

Outcomes: The student will:

- 1. plan and produce solutions to 3-D design briefs**
 - 1.1 select and use appropriate tools and materials as outlined in the design brief
 - 1.2 apply the design process to solve a 3-D design problem; e.g., software modelling, cutting, joining, bending, measuring
 - 1.3 use and maintain tools and materials in a safe and appropriate manner
- 2. incorporate the elements and principles of design to achieve the design solution**
 - 2.1 apply techniques, tools, materials and other resources in design solution; e.g., tone, texture and colour, markers and paints, images, typeface, drawing, layout, measuring, notation, rendering, assembly drawing and correct use of tools
 - 2.2 use mathematical and/or scientific principles as they apply to design projects assigned; e.g., organization of visual space, measurement of internal space, borders, columns, use of scale
 - 2.3 experiment with one or more elements (e.g., colour, line, shape) and/or principles (e.g., rhythm, balance) to achieve desired effects
- 3. produce and present a portfolio-ready drawing, image or rendering**
 - 3.1 participate in interim critiques; e.g., self, peer, instructor
 - 3.2 discuss intentions and decision making related to the application of elements and principles of design
 - 3.3 present images and/or model(s) for assessment
 - 3.4 maintain a design folder, journal or sketchbook as part of the portfolio of ongoing observational drawing 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. identify possible life roles related to the skills and content of this cluster**
 - 7.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 7.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2055: CAD 2

Level: Intermediate

Prerequisite: DES1050: CAD 1

Description: Students develop intermediate knowledge and skills in computer-aided design (CAD).

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

Outcomes: The student will:

- 1. demonstrate intermediate knowledge and skills required to operate CAD software**
 - 1.1 acknowledge the advantages and disadvantages of various types of CAD software available
 - 1.2 identify and demonstrate appropriate use of software and hardware
 - 1.3 effectively manage file types and folders according to industry standards
- 2. use CAD tools to create 2-D and 3-D drawings to demonstrate the following intermediate skills**
 - 2.1 identify and demonstrate appropriate tools, methods and functions; e.g., insert and explode, wire frame, solid drawings, polylines, coordinates and vectors, isometric grid/snap tools
 - 2.2 select and use CAD tools, methods and functions to produce layered multiview drawings and pictorial drawings and/or surface developments based on pictorial sketches or real three-dimensional objects
 - 2.3 print/plot or display drawings/renderings or animation
- 3. produce and present a portfolio-ready drawing, image or rendering**
 - 3.1 participate in interim critiques; e.g., self, peer, instructor
 - 3.2 discuss intentions and decision making related to the application of elements and principles of design
 - 3.3 present images and/or model(s) 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. identify possible life roles related to the skills and content of this cluster

7.1 recognize and then analyze the opportunities and barriers in the immediate environment

7.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2060: EVOLUTION OF DESIGN

Level: Intermediate

Prerequisite: None

Description: Students develop a historical framework and study the importance and relevance of design within a cultural context by examining past and contemporary examples of designed artifacts.

Parameters: Access to resources; e.g., library, Internet.

Outcomes: The student will:

1. demonstrate knowledge of historical and contemporary design resources

- 1.1 describe historical influences in design
- 1.2 identify and explain the relationship between a design solution in the past and a current design solution (e.g., buildings, graphics, fashion and transportation) including the influence of cultural, global, ethical and environmental conditions on the solution
- 1.3 maintain a design journal/sketchbook of the project

2. present research findings

- 2.1 prepare a presentation of research findings; e.g., a research paper, a media presentation, graphic illustrations
- 2.2 use tools, materials and other resources appropriate for the presentation; e.g., computer, software, display materials
- 2.3 prepare for and actively participate in a final presentation and critique describing the area of study and findings

3. include the presentation in a portfolio

- 3.1 participate in a final critique
- 3.2 use appropriate terminology within the design context

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. identify possible life roles related to the skills and content of this cluster

- 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
- 6.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2065: TECHNICAL DESIGN 2

Level: Intermediate

Prerequisite: DES1060: Technical Design & Drafting 1

Description: Students refine skills and techniques to present appropriate drawings and/or model(s) for visualizing and illustrating solutions to design problems.

Parameters: Access to drawing tools, equipment and materials.

Supporting Course: DES2055: CAD 2

Outcomes: The student will:

- 1. demonstrate intermediate skills by producing pictorial drawings (e.g., isometric, oblique, one- and two-point perspective, technical flats) including rendering styles and techniques**
 - 1.1 select appropriate drawing types and styles and use them to accurately illustrate potential design solutions
 - 1.2 select and use appropriate tools and materials as outlined in each design brief
- 2. present a pictorial representation complete with surface developments and renderings to a client**
 - 2.1 assess client needs based on design brief; e.g., time management, cost, technology available, aesthetics
 - 2.2 produce a presentation plan for approval; e.g., what style of images and modelling meets client needs set out in the design brief
 - 2.3 construct, critique and revise presentation
 - 2.4 present a solution to the client
- 3. include the design solution in a portfolio**
 - 3.1 participate in interim critiques; e.g., self, peer, instructor
 - 3.2 discuss intentions and decision making related to the application of elements and principles of design
- 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. identify possible life roles related to the skills and content of this cluster

7.1 recognize and then analyze the opportunities and barriers in the immediate environment

7.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2075: TECHNICAL DRAFTING 2

Level: Intermediate

Prerequisite: DES1060 Technical Design & Drafting 1

Description: Students produce technical drawings from sketches and apply industry standards, conventions and terminology associated with technical drawing creation.

Parameters: Access to drawing tools, equipment and materials.

Supporting Courses: DES2055: CAD 2
DES2065: Technical Design 2

Outcomes: The student will:

- 1. produce technical drawings for simple structures, products and/or components**
 - 1.1 describe the need for specific types of drawings and where and when they are used; e.g., detail, assembly, sectional, exploded view, section and/or auxiliary drawing
 - 1.2 select appropriate drawing types and styles and use them to accurately illustrate potential design solutions
 - 1.3 select and use appropriate tools and materials as outlined in each design brief
 - 1.4 produce a minimum of four of each of the following drawings based on the sketches provided:
 - 1.4.1 multi-view drawing (showing a minimum of three views)
 - 1.4.2 detail drawing
 - 1.4.3 assembly drawing
 - 1.4.4 sectional drawing
 - 1.4.5 auxiliary drawing
 - 1.4.6 exploded view drawing
- 2. dimension and annotate drawings accurately**
 - 2.1 demonstrate standard conventions of annotating technical drawings; e.g., title blocks, labelling/lettering, notes
 - 2.2 demonstrate the correct use of line types; e.g., solid, hidden, projection, break, fold, phantom
 - 2.3 demonstrate industry standards regarding dimensioning; e.g., extension lines, dimension placement, scale and measuring
- 3. present the portfolio-ready drawings**
 - 3.1 use appropriate terminology within the context
 - 3.2 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. identify possible life roles related to the skills and content of this cluster**
 - 7.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 7.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2910: DES PROJECT B

Level: Intermediate

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: Intermediate project courses must connect with a minimum of two CTS courses, one of which must be at the intermediate level and be in the same occupational area as the project course. The other CTS course(s) can be at any 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. identify possible life roles related to the skills and content of this cluster**
 - 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 6.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2920: DES PROJECT C

Level: Intermediate

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: Intermediate project courses must connect with a minimum of two CTS courses, one of which must be at the intermediate level and be in the same occupational area as the project course. The other CTS course(s) can be at any 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. identify possible life roles related to the skills and content of this cluster**
 - 6.1 recognize and then analyze the opportunities and barriers in the immediate environment
 - 6.2 identify potential resources to minimize barriers and maximize opportunities

COURSE DES2950: DES INTERMEDIATE PRACTICUM

Level: Intermediate

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 advanced (3XXX) 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. identify possible life roles related to the skills and content of this cluster

4.1 recognize and then analyze the opportunities and barriers in the immediate environment

4.2 identify potential resources to minimize barriers and maximize opportunities