

COURSE NET1010: DIGITAL TECHNOLOGY 1

Level: Introductory

Prerequisite: None

Description: Students construct and demonstrate logic systems and their unique functions.

Parameters: Access to a five-volt power supply, a logic probe and related materials.

Outcomes: The student will:

1. describe the binary numbering system and logic gates and construct and verify basic logic gates

- 1.1 research and describe the binary numbering system
- 1.2 develop the circuits and tables for the following logic gates:
 - 1.2.1 AND
 - 1.2.2 OR
 - 1.2.3 NOT
 - 1.2.4 XOR
 - 1.2.5 NAND
 - 1.2.6 NOR
 - 1.2.7 XNOR

2. construct a simple logic circuit and explain its functions

- 2.1 construct digital probes
- 2.2 test digital probes
- 2.3 breadboard a digital system, such as a combination lock and a keyboard
- 2.4 use emulation software; e.g., electronics workbench

3. identify the major integrated circuit (IC) families and describe their unique functions

- 3.1 distinguish between analog and digital systems
- 3.2 identify major component sections of a logic system including:
 - 3.2.1 random-access memory (RAM)
 - 3.2.2 read-only memory (ROM)
 - 3.2.3 central processing unit (CPU)
 - 3.2.4 registers
 - 3.2.5 input/output (I/O) ports
- 3.3 identify the application, pinouts and use of various IC chips from manufacturing codes
- 3.4 identify characteristics of various IC chips from different manufacturers which do similar functions using ECG, NTE and other replacement guides
- 3.5 identify the pinouts and function of any IC using the IC master reference texts
- 3.6 identify the difference between various logic families
- 3.7 identify and explain differences between various logic systems
- 3.8 solve a digital problem and build a digital system for a solution; e.g., two or three inputs for a single output

4. demonstrate established laboratory procedures and safe work practices

- 4.1 identify and follow laboratory safety procedures
- 4.2 explain how to avoid electrostatic discharges around IC chips
- 4.3 demonstrate an understanding of grounding, voltage and current rating of various IC families
- 4.4 use a digital probe

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. make personal connections to the cluster content and processes to inform possible pathway choices

- 6.1 complete/update a personal inventory; e.g., interests, values, beliefs, resources, prior learning and experiences
- 6.2 create a connection between a personal inventory and occupational choices

COURSE NET1910: NET PROJECT A

Level: Introductory

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: Introductory project courses must connect with a minimum of two CTS courses, one of which must be at the introductory level and be in the same occupational area as the project course. The other CTS course(s) can be either at the same level or 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. demonstrate basic competencies**
 - 4.1 demonstrate fundamental skills to:
 - 4.1.1 communicate
 - 4.1.2 manage information
 - 4.1.3 use numbers
 - 4.1.4 think and solve problems
 - 4.2 demonstrate personal management skills to:
 - 4.2.1 demonstrate positive attitudes and behaviours
 - 4.2.2 be responsible
 - 4.2.3 be adaptable
 - 4.2.4 learn continuously
 - 4.2.5 work safely
 - 4.3 demonstrate teamwork skills to:
 - 4.3.1 work with others
 - 4.3.2 participate in projects and tasks
- 5. make personal connections to the cluster content and processes to inform possible pathway choices**
 - 5.1 complete/update a personal inventory; e.g., interests, values, beliefs, resources, prior learning and experiences
 - 5.2 create a connection between a personal inventory and occupational choices