

# HIGHER NITEC IN INTEGRATED MECHANICAL & ELECTRICAL DESIGN (3 YEARS)

## CERTIFICATION

Credits required for certification:

Sector Foundation Modules	: 18
Core Modules	: 18
Specialisation Modules	: 21
Internship Programme	: 12
Life Skills Modules	: 10
Cross Disciplinary Core Modules	: 9
Elective Modules	: 8
<b>Total</b>	<b>: 96</b>

## COURSE STRUCTURE

Module Title	Credits
<b>SECTOR FOUNDATION MODULES</b>	
Workplace Safety, Health & Environment	3
Data & Digital Essentials	3
Electrical Fundamentals	3
IoT for Engineering	3
Sustainable Engineering	3
Green Building Technology	3
<b>CLUSTER CORE MODULES</b>	
Integrated Digital Delivery	3
Technical Drawing	3
Building Drawing and Design Specifications	3
Design for Manufacturing and Assembly	3
Building Information Modelling Application	3
BIM Management	3
<b>SPECIALISATION MODULES</b>	
Building Mechanical & Electrical Services	3
Electrical Systems Design I	3
Plumbing, Sanitary, Drainage and Gas Systems Design	3
Air Conditioning and Mechanical Ventilation Systems Design I	3
Electrical Systems Design II	3
Fire Protection Systems Design	3
Air Conditioning and Mechanical Ventilation Systems Design II	3
<b>INTERNSHIP PROGRAMME</b>	
Internship 1	4
Internship 2	8
<b>ELECTIVES (COURSE SPECIFIC)</b>	
Presentations Through Infographic Design	2
Technical Communication & Documentation	2

Module Title	Credits
3D Printing	2
Engineering Surveying	2
<b>ELECTIVES (GENERAL) AND LIFE SKILLS MODULES</b>	
For details, click <a href="#">here</a>	

*Note: The offer of electives is subject to the training schedule of respective ITE Colleges. Students are advised to check with their Class Advisors on the availability of the elective modules they intend to pursue.*

## MODULE OBJECTIVES

### Sector Foundation Modules

#### Workplace Safety, Health & Environment

On completion of the module, students should be able to apply Workplace Safety and Health (WSH) policies, Environmental Management System procedures and practices in the planning, preparation and execution of work activities to ensure a safe and reliable workplace environment.

#### Data & Digital Essentials

On completion of the module, students should be able to prepare data for analysis, use online tools for collaborative work and maintain information security when online.

#### Electrical Fundamentals

On completion of the module, students should be able to interpret circuit schematic and board layout, perform DC circuit connection and in-circuit measurement.

#### IoT for Engineering

On completion of the module, students should be able to set up an IoT, configure the controller to transmit sensor's collected data wirelessly to an IoT platform.

#### Sustainable Engineering

On completion of the module, students should be able to determine key contributors to environmental changes and the challenges involved in implementing sustainable initiatives, and propose effective strategies to promote sustainability and address environmental challenges across various industries.

#### Green Building Technology

On completion of the module, students should be able to interpret and determine green building features and performance; and to develop best practices for sustainable buildings in accordance with BCA Green Mark Framework.

### Cluster Core Modules

#### Integrated Digital Delivery

On completion of this module, students should be able to identify key processes and implement the Integrated Digital Delivery (IDD) technologies across projects and building life-cycle in accordance with local standard.

#### Technical Drawing

On completion of the module, students should be able to produce technical sketches, engineering drawings to support construction, operations and maintenance of buildings in accordance to International Standard Organisation (ISO) and Code of Practice (CP).

#### Building Drawing & Design Specifications

On completion of the module, students should be able to produce assembly drawings of building components and create CAD layering in accordance with the industry standards.

#### Design for Manufacturing and Assembly

On completion of the module, students should be able to prepare typical drawings and installation schedules for DfMA projects.

### Building Information Modelling Application

On completion of the module, students should be able to create BIM components' details and BIM model of building.

### BIM Management

On completion of the module, students should be able to produce execution plan, perform 4D BIM schedule, cost estimation of BIM model and clash detection using BIM tools.

## Specialisation Modules

### Building Mechanical & Electrical Services

On completion of the module, student should be able to perform mechanical, electrical, plumbing and sanitary services for buildings in accordance to standard code of practice and government regulations.

### Electrical Systems Design I

On completion of the module, student should be able to perform electrical drafting and design for building in accordance to the standard codes of practice and government regulations.

### Plumbing, Sanitary, Drainage and Gas Systems Design

On completion of the module, students should be able to perform design of plumbing, sanitary, drainage and gas systems in accordance to the standard codes of practice and government regulations.

### Air Conditioning and Mechanical Ventilation Systems I

On completion of the module, students should be able to estimate the cooling load, perform design of chilled water air conditioning system for non-residential units, prepare layout and schematic drawings for the air conditioning systems in accordance to standard code of practice and government regulations.

### Electrical Systems Design II

On completion of the module, student should be able to perform electrical drafting and design for non-residential building.

### Fire Protection Systems Design

On completion of the module, students should be able to perform design of fire protection and fighting systems in accordance to the standard codes of practice and government regulations.

### Air Conditioning and Mechanical Ventilation Systems II

On completion of the module, students should be able to estimate the cooling load of a non-residential building, create 3D models and perform air-conditioning and mechanical ventilation design, prepare ducting, piping layouts and schematic drawings in accordance to the standard codes of practice, government regulations and sustainability measures.

### Internship 1

On completion of the module, students should be able to integrate and apply the skills and knowledge acquired at ITE College, and further develop competencies at the workplace.

### Internship 2

On completion of the module, students should be able to integrate and apply the skills and knowledge acquired at ITE College, and further develop competencies at the workplace.

## Electives (Course Specific)

### Presentations Through Infographic Design

On completion of the module, students should be able to communicate their presentation information more effectively through colours, visuals and infographics.

### Technical Communication and Documentation

On completion of the module, students should be able to apply both oral and written communication skills in technical documentation, presentation and determine relevant technical documentation for the purpose of workplace submissions.

### 3D Printing

On completion of the module, students will gain a comprehensive understanding of 3D printing technology and its applications, enabling them to contribute effectively in various professional fields where 3D printing is utilized.

### Engineering Surveying

On completion of this module, students should be able to perform levelling run and traversing network for topographical survey of site features such as site boundary, road kerbs, manholes, inspection chambers and footings.

### **Electives (General) and Life Skills Modules**

For details, click [here](#).