

# NITEC IN MECHATRONICS & ROBOTICS

## CERTIFICATION

Credits required for certification:

Core Modules	: 44
Life Skills Modules	: 9
Elective Modules	: 4
<hr/> Total	<hr/> : 57

## COURSE STRUCTURE

Module Title	Credits
<b>CORE MODULES</b>	
Pneumatics	6
Robotics	6
Electrical and Electronics Practices	6
CAD and Mechanical Systems	6
Drives and Motor Control	6
PLC and Automation	6
Industry Attachment	8
<b>ELECTIVES (COURSE SPECIFIC)</b>	
Application Mathematics	3
Animatronics	2
Microcontroller Applications	2
Production Control System and Applications	2
<b>ELECTIVES (INTER-DISCIPLINARY)</b>	
Hydraulics	3
Single Board Micro-Controller Applications	2
Lean Manufacturing	2
<b>ELECTIVES (JOINT ITE-INDUSTRY)</b>	
Robot Palletizing Operations and Programming	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

### Core Modules

#### Pneumatics

On completion of the module, students should be able to install, maintain and troubleshoot pneumatic and electro-pneumatic systems.

#### Robotics

On completion of the module, students should be able to install, program, troubleshoot and maintain a robotics system.

#### Electrical and Electronics Practices

On completion of the module, students should be able to install electrical trunking, carry out system wiring for machine control, check and test industrial electronics components and simple electronics circuits using common test instruments to identify and rectify faults.

#### CAD and Mechanical Systems

On completion of the module, students should be able to read, interpret and produce geometrical and mechanical drawings using Computer-Aided Drafting (CAD) software; fabricate parts according to specifications in work drawing and work samples; carry out maintenance to service, adjust and align mechanical elements.

#### Drives and Motor Control

On completion of the module, students should be able to install, maintain, troubleshoot and modify common AC and DC motor and control circuits used in automated and manufacturing systems.

#### PLC and Automation

On completion of the module, students should be able to carry out installations, operations and troubleshooting of programmable logic controller & sensors systems used in automated system and manufacturing systems.

#### Industry Attachment

On completion of the module, students should be able to acquire and apply a cluster of key technical, social and methodological competencies in the occupation.

### Electives (Course Specific)

#### Application Mathematics

On completion of the module, students should be able to apply the knowledge of mathematics to solve engineering related problems involving the use of basic arithmetic, algebra, graphs and trigonometry.

#### Animatronics

On completion of the module, students should be able to define type of animatronic components and controller as well as assemble and testing of animatronic character.

#### Microcontroller Applications

On completion of the module, students should be able to program and interface microcontroller with external devices.

#### Production Control System and Applications

On completion of the module, students should be able to plan a simple production process, set up, install and troubleshoot an industrial production control system.

### Electives (Inter-disciplinary)

#### Hydraulics

On completion of the module, students should be able to maintain hydraulic systems in industrial automation.

#### Single Board Micro-Controller Applications

On completion of the module, students should be able to write structured programs to interface with peripheral devices and solve simple problems using single board micro-controller.

### Lean Manufacturing

On completion of the module, students should be able to work effectively as a team member to support lean manufacturing and process improvement in the industries and apply PDCA in continuous process improvement to increase productivity.

### Electives (Joint ITE-Industry)

#### Robot Palletizing Operations and Programming

On completion of the module, students should be able to operate the palletizing robot system, including editing and modifying programs for different palletizing operations.

### Electives (General) and Life Skills Modules

For details, click [here](#).