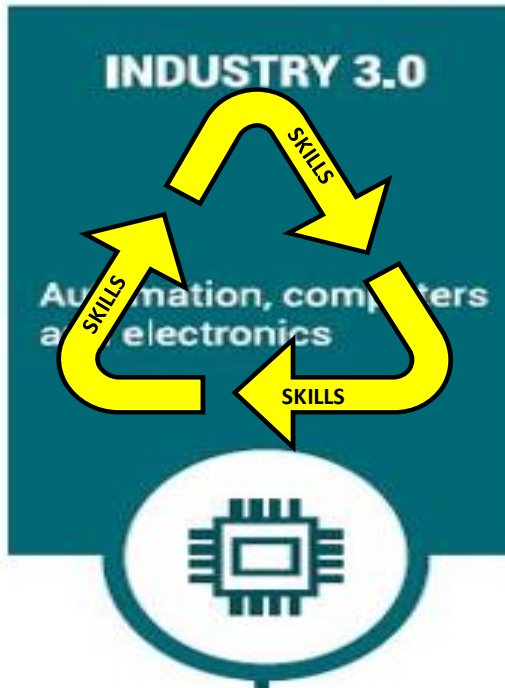
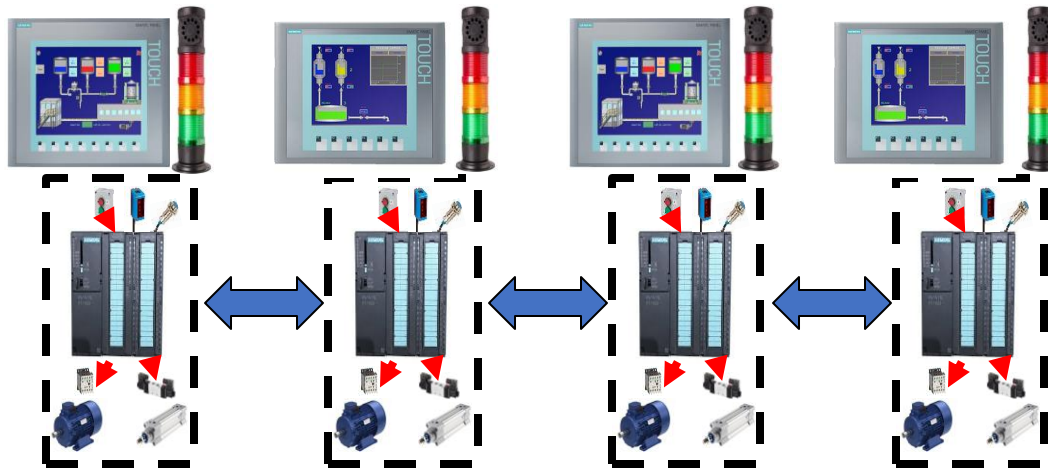


Addressing the Skills Gap



TOP FLOOR



SHOP FLOOR





CPD Upskilling example



Design/Process
Personnel



Senior/Line
Management



Sales
Personnel

TOP FLOOR



Engineering/Maint
Personnel



Shopfloor
Operators



Quality/Operations
Personnel

SHOP FLOOR





CPD Upskilling example



Design/Process Personnel



Senior/Line Management



Sales Personnel

Top-Down View

TOP FLOOR



Engineering/Maint Personnel



Shopfloor Operators



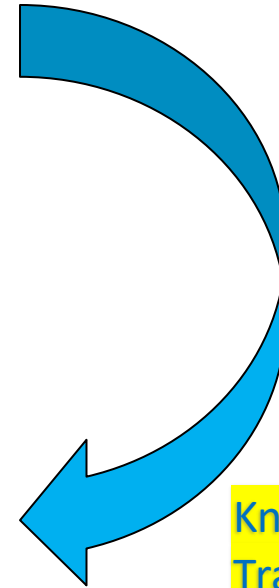
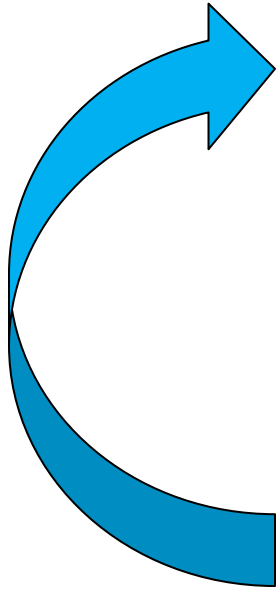
Quality/Operations Personnel

Bottom-UP View

SHOP FLOOR

Knowledge Transfer

Knowledge Transfer





CPD Upskilling example



Design/Process Personnel



Engineering/Maint Personnel



Senior/Line Management



Shopfloor Operators



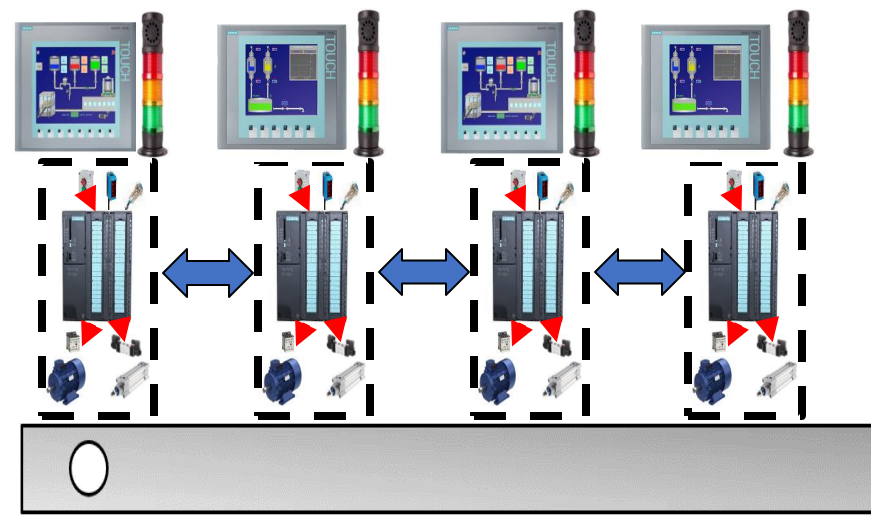
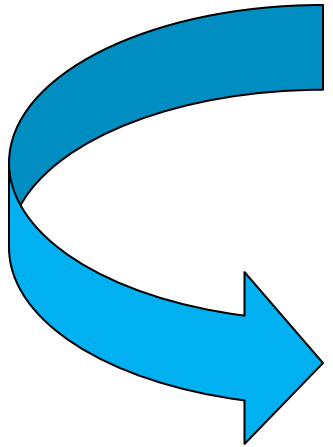
Sales Personnel



Quality/Operations Personnel

TOP FLOOR & SHOP FLOOR

Up Skilling multi-disciplinary "TEAMS"





CPD Upskilling example



Design/Process Personnel

Senior/Line Management

Sales Personnel

TOP FLOOR

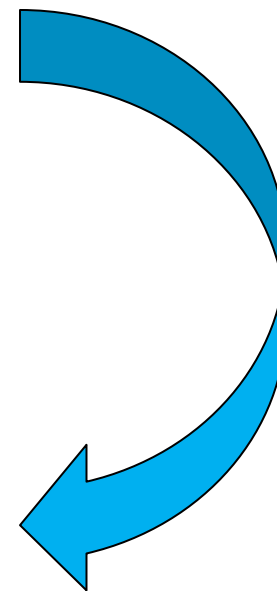
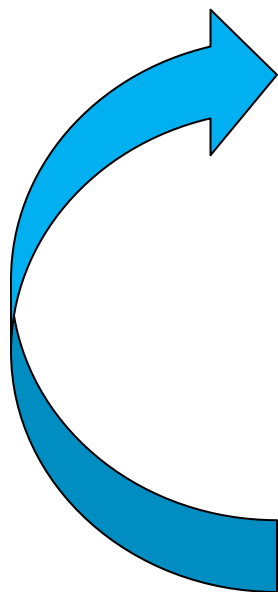


Engineering/Maint Personnel

Shopfloor Operators

Quality/Operations Personnel

SHOP FLOOR



Knowledge Transfer

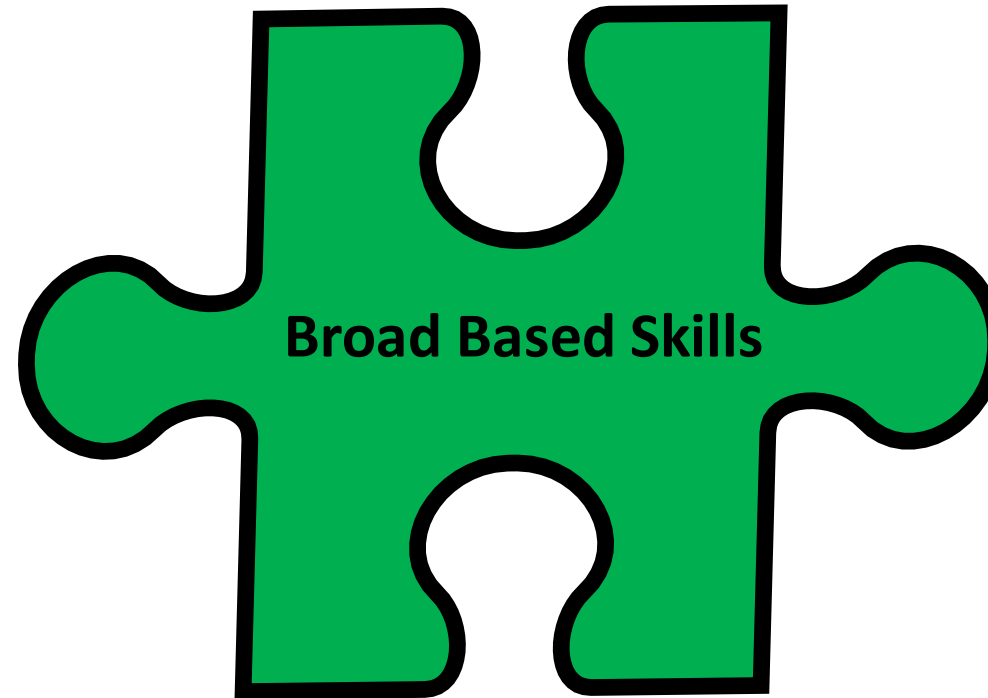
Knowledge Transfer

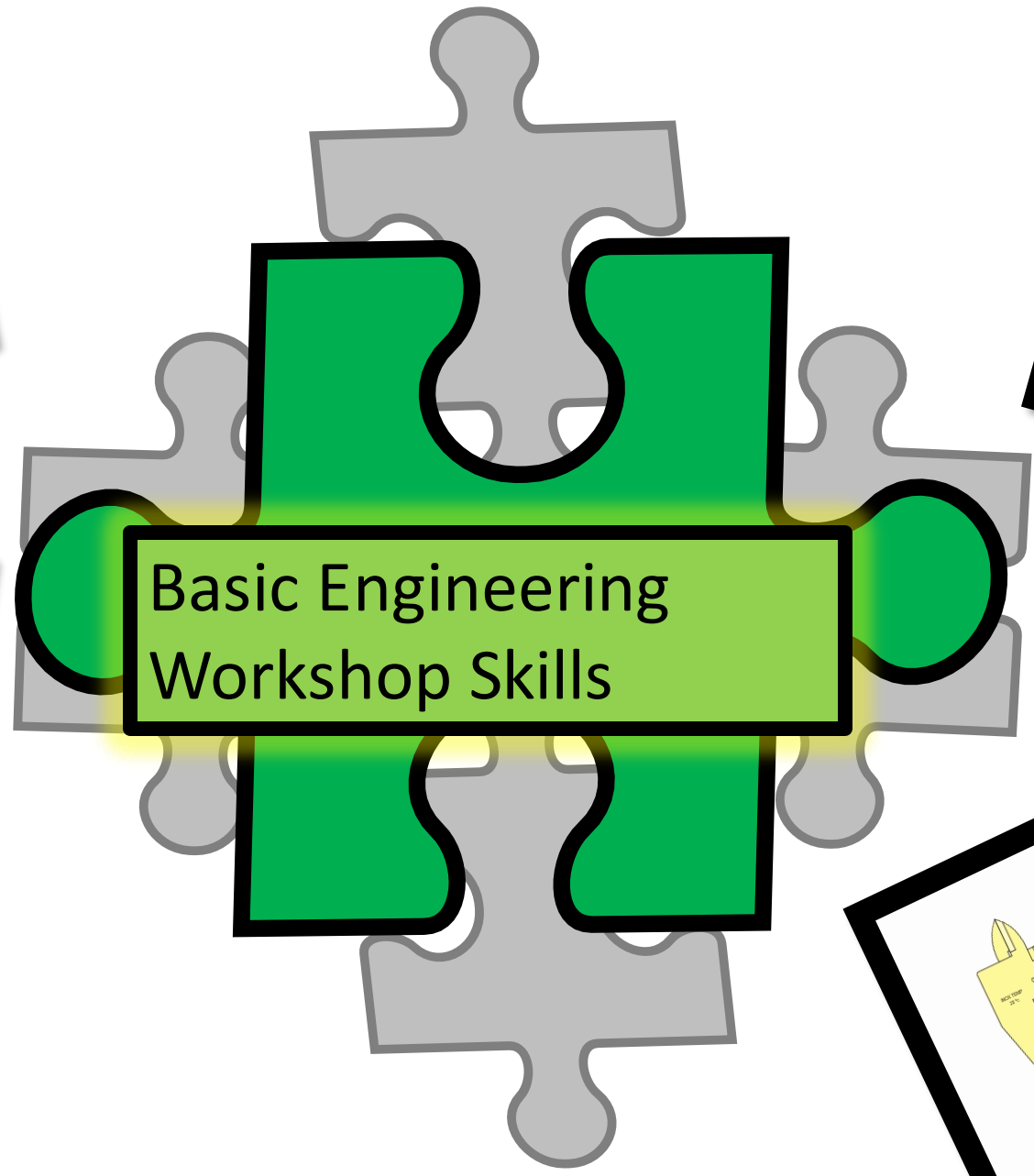
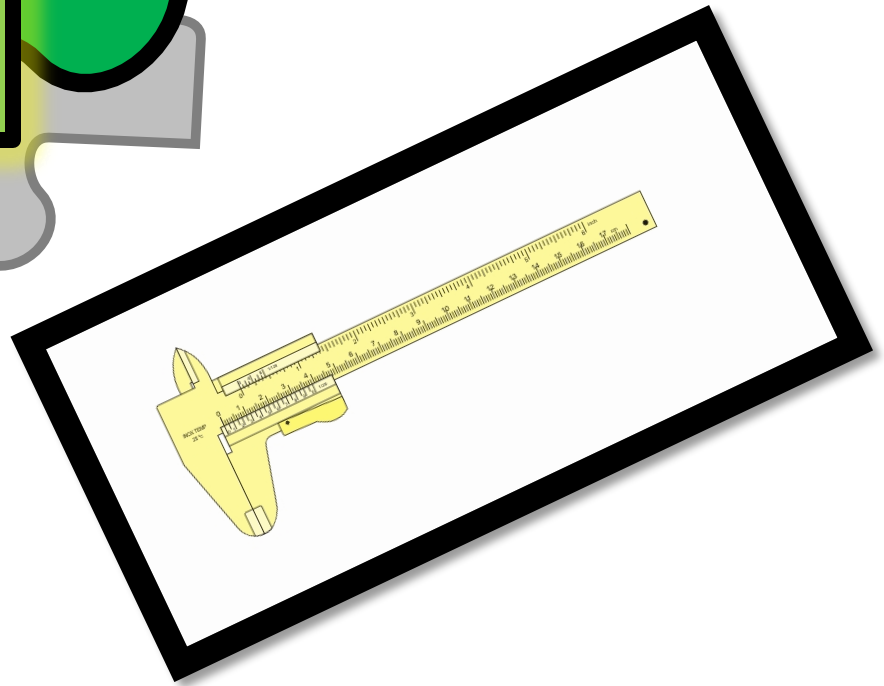
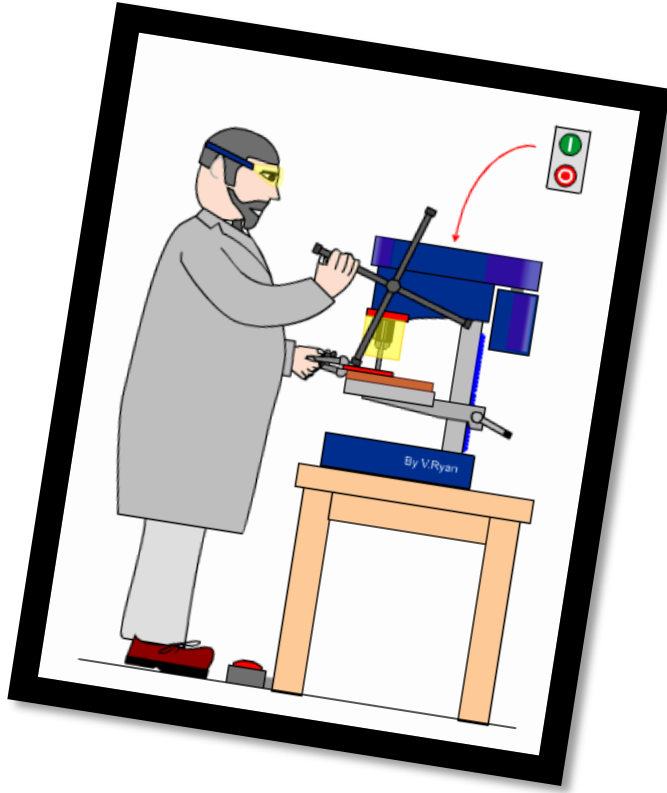
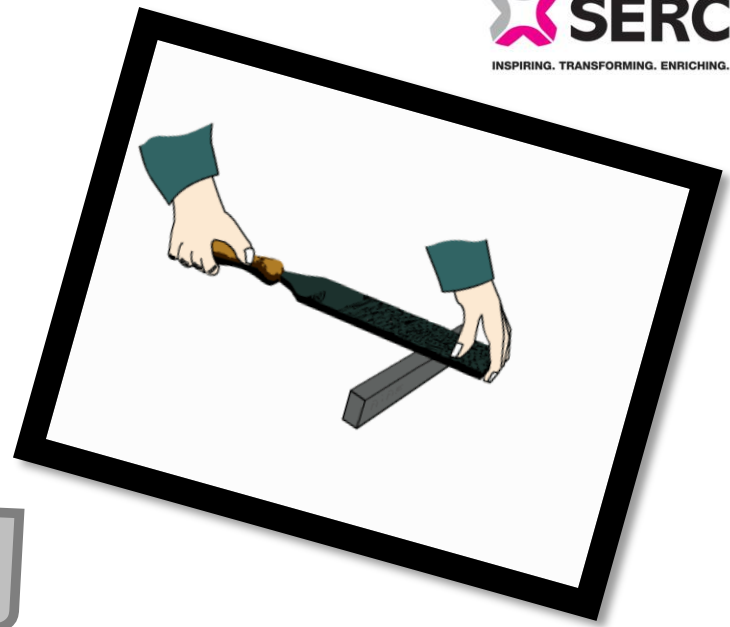
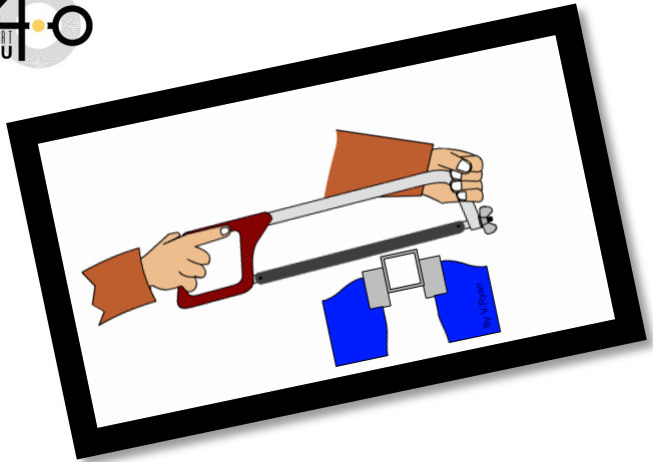
New & Existing Workforce Skills

Up-Skilling Existing Workforce

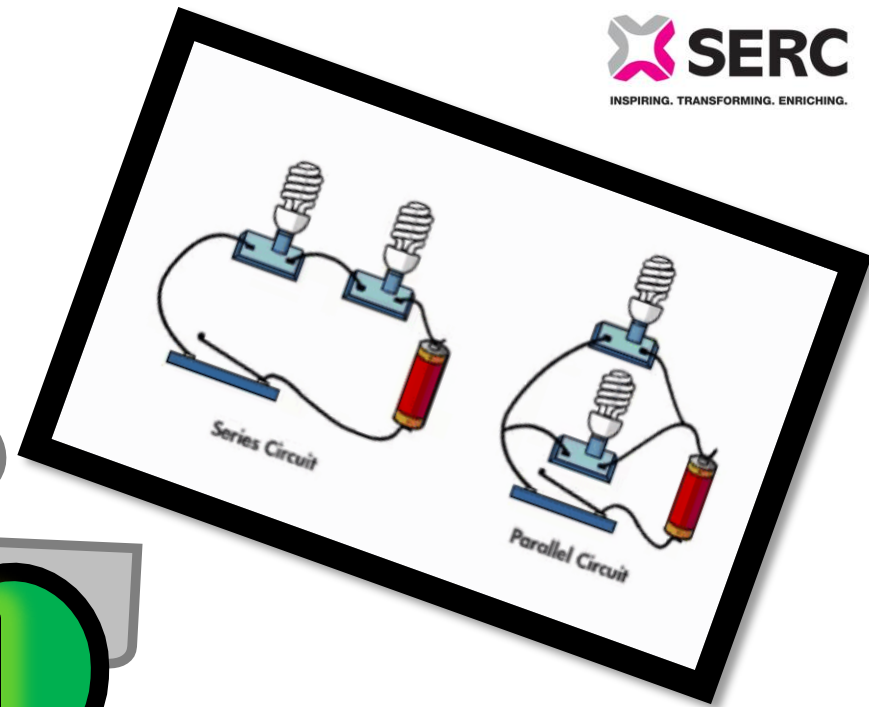
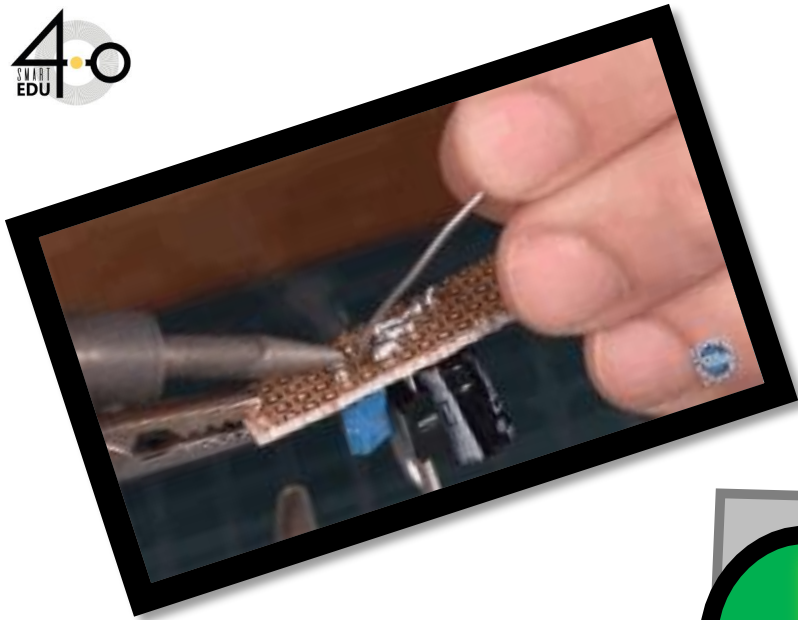
Re-Skilling Existing Workforce

Training New Employees

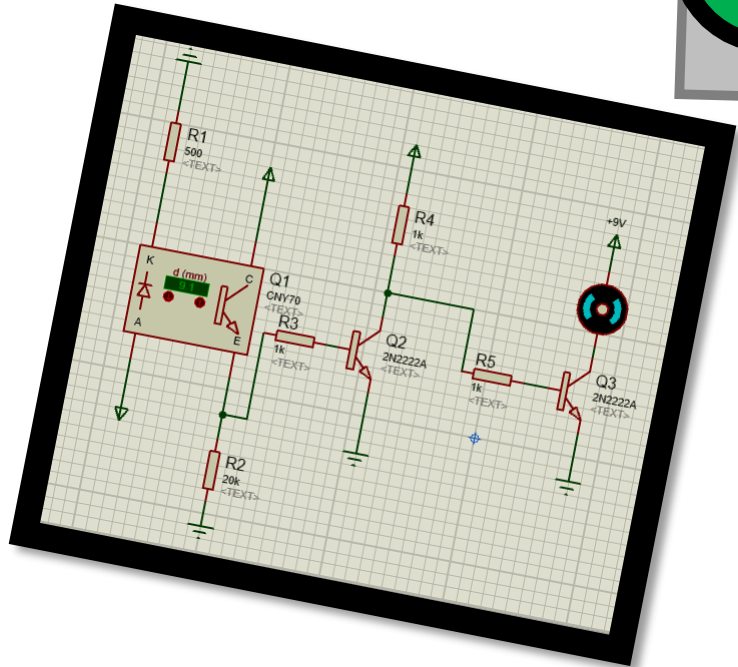


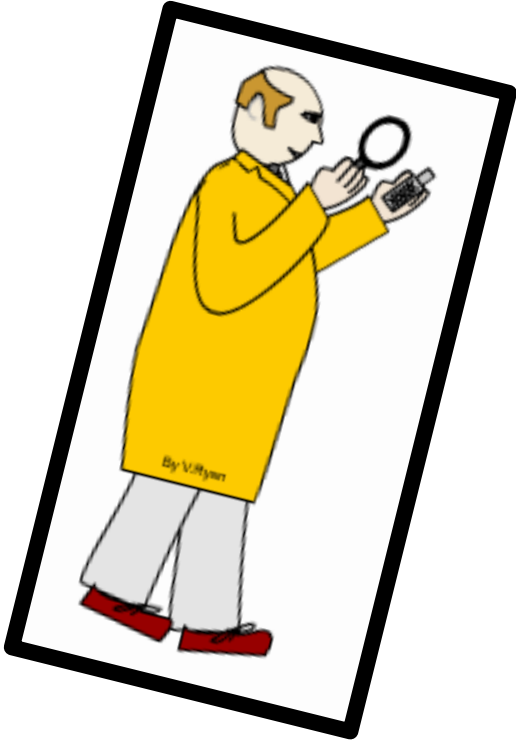
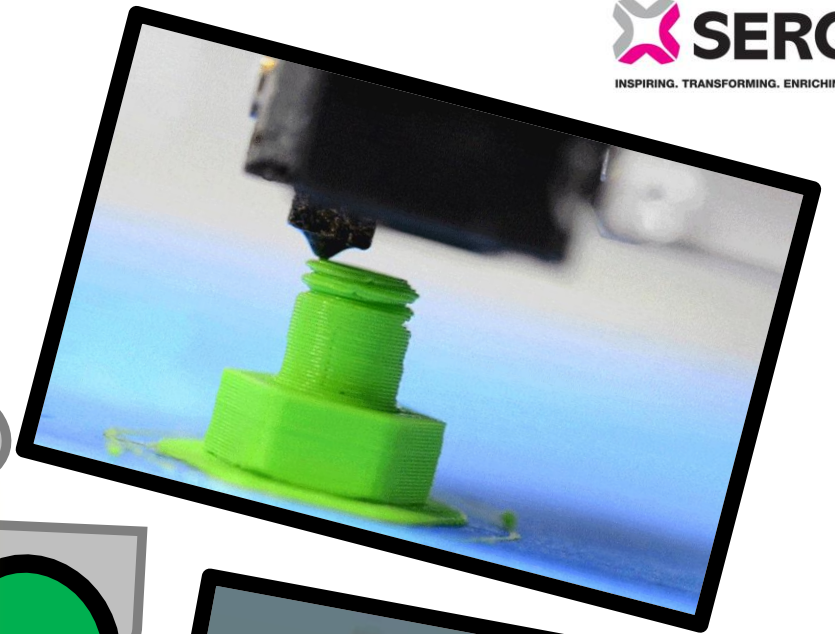
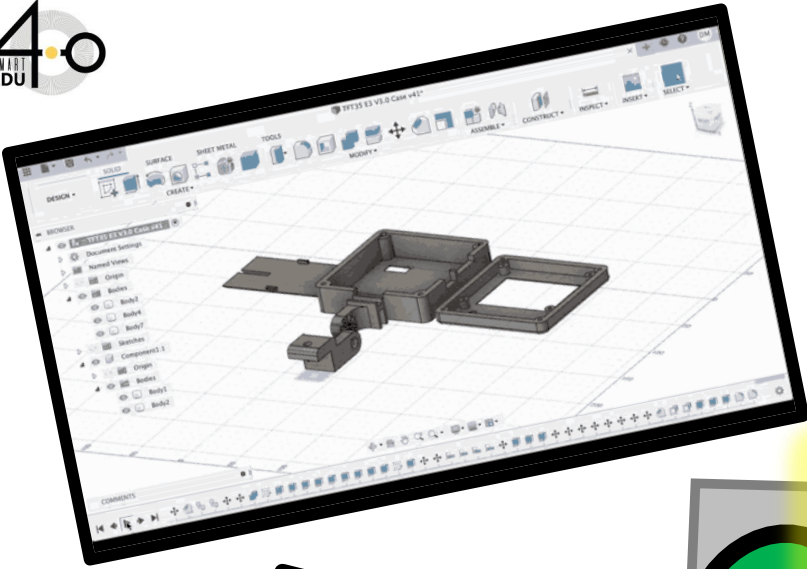


Basic Engineering
Workshop Skills

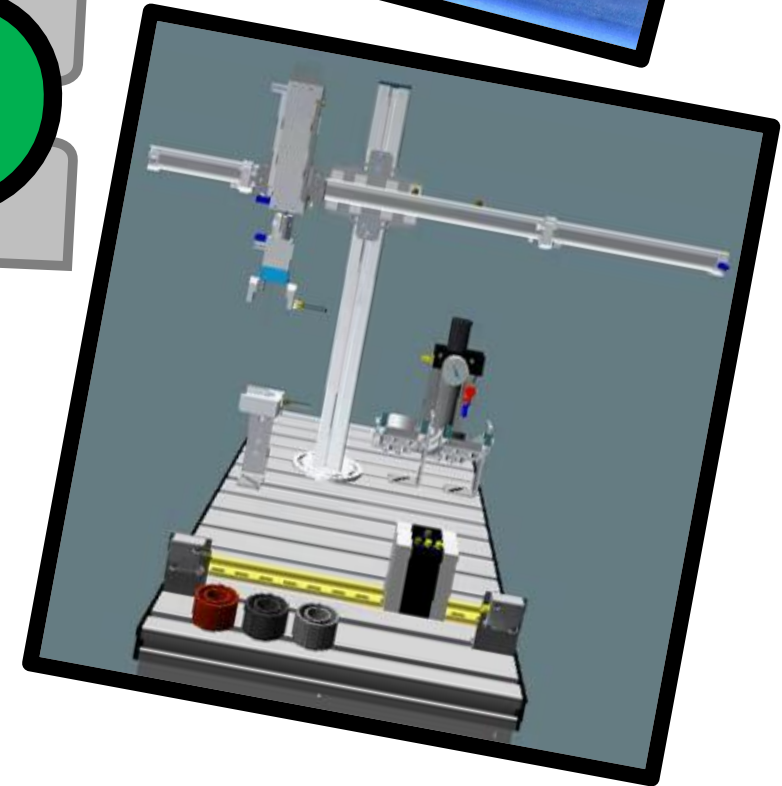


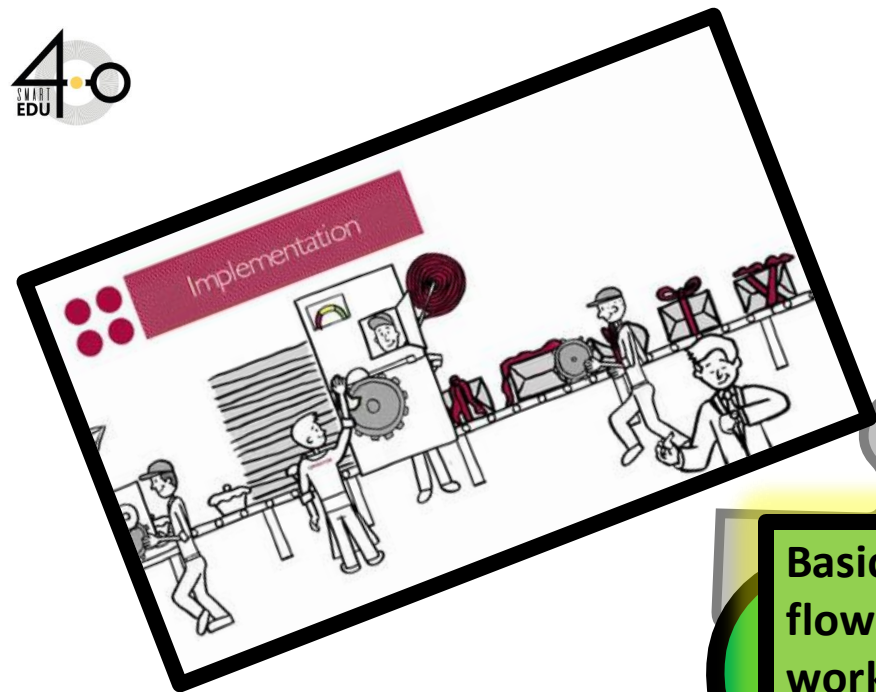
Basic Electronic Skills



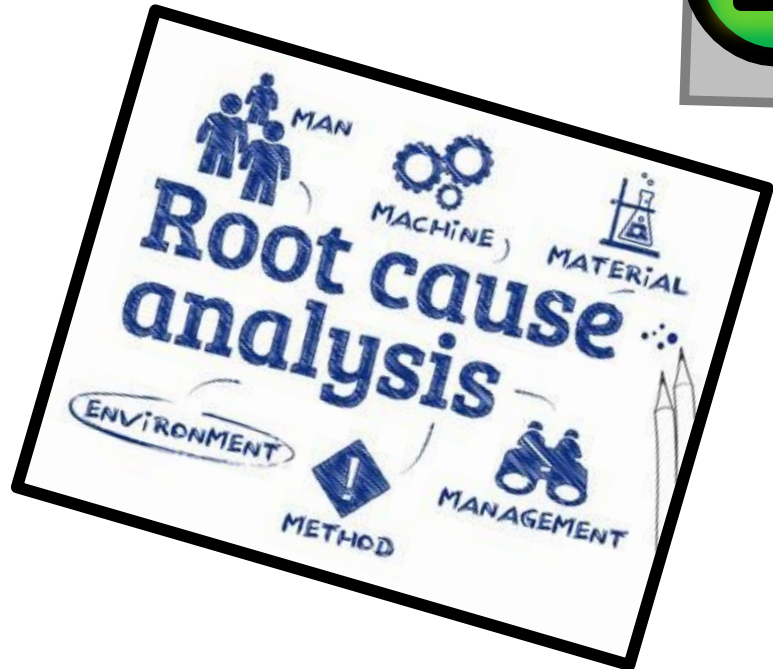


Basic CAD, how are products designed for manufacture, and checked for quality.





Basic LEAN manufacturing, how a factory flows, continuous improvement & team work.

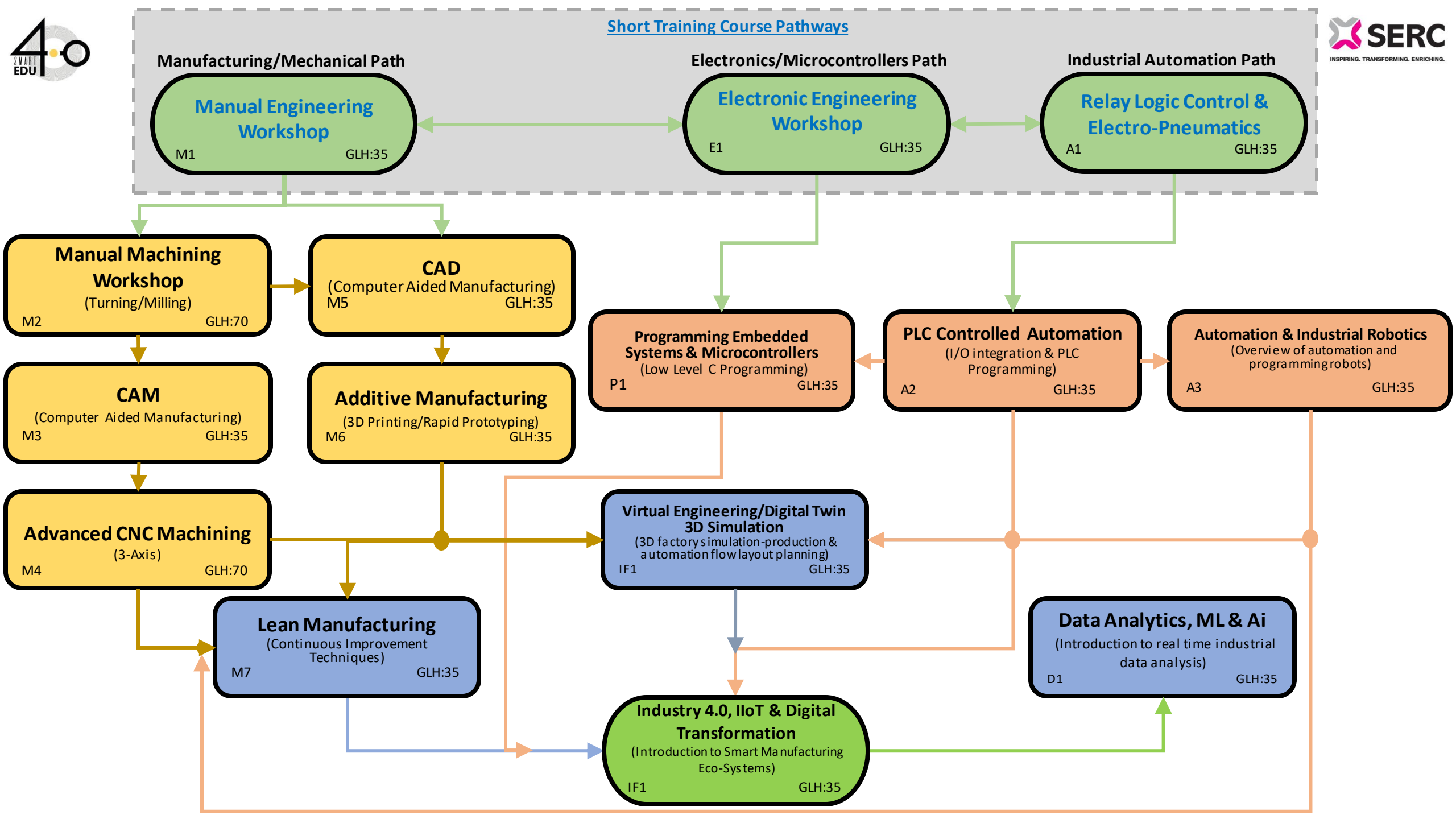


Addressing the Current Manufacturing Skills Gap

A new international upskilling & training curriculum model is being developed in the following 3 areas of the manufacturing workforce.

- Training pathway for the current *Low Skilled* manufacturing workforce in each country bringing them up to at least the minimum skilled standard to enable them to compete in this rapidly technologically advancing industry.
- Training pathway for *New Industry Entrants* that is fit for the highly skilled workforce of the future and based on global manufacturing knowledge development.
- Development of a lifelong training pathway for *Existing People* in the manufacturing industry that is responsive to continuous technological advancements which will enable them to maintain a competitive edge throughout their career.

15 courses are being developed.



Manufacturing/Mechanical Path

Manual Engineering Workshop
M1 GLH:35

Electronics/Microcontrollers Path

Electronic Engineering Workshop
E1 GLH:35

Industrial Automation Path

Relay Logic Control & Electro-Pneumatics
A1 GLH:35

Manual Machining Workshop
(Turning/Milling) M2 GLH:70

CAD
(Computer Aided Manufacturing) M5 GLH:35

Programming Embedded Systems & Microcontrollers
(Low Level C Programming) P1 GLH:35

PLC Controlled Automation
(I/O integration & PLC Programming) A2 GLH:35

Automation & Industrial Robotics
(Overview of automation and programming robots) A3 GLH:35

CAM
(Computer Aided Manufacturing) M3 GLH:35

Additive Manufacturing
(3D Printing/Rapid Prototyping) M6 GLH:35

Virtual Engineering/Digital Twin 3D Simulation
(3D factory simulation-production & automation flow layout planning) IF1 GLH:35

Data Analytics, ML & Ai
(Introduction to real time industrial data analysis) D1 GLH:35

Advanced CNC Machining
(3-Axis) M4 GLH:70

Lean Manufacturing
(Continuous Improvement Techniques) M7 GLH:35

Industry 4.0, IIoT & Digital Transformation
(Introduction to Smart Manufacturing Eco-Systems) IF1 GLH:35

Mechanical/Manufacturing Pathway

Build foundational engineering workshop skills, develop knowledge, understanding and some experience in:

- Using manual machining equipment (turning & milling).
- Designing for manufacturing in the real world.
- Using CNC manufacturing machinery (3-axis milling).
- Using CAD systems to design and develop parts/assemblies.
- Rapid prototyping of 3D designed CAD models.
- LEAN manufacturing & continuous improvement processes/tools.

Industry 3.0

Manual Engineering Workshop

M1

GLH:35

Manual Machining Workshop
(Turning/Milling)

M2

GLH:70

CAD

(Computer Aided Manufacturing)

M5

GLH:35

CAM

(Computer Aided Manufacturing)

M3

GLH:35

Additive Manufacturing

(3D Printing/Rapid Prototyping)

M6

GLH:35

Advanced CNC Machining
(3-Axis)

M4

GLH:70

Lean Manufacturing

(Continuous Improvement Techniques)

M7

GLH:35

Industry 4.0

Virtual Engineering/Digital Twin
3D Simulation

(3D factory simulation-production & automation flow layout planning)

IF1

GLH:35

Industry 4.0, IIoT & Digital Transformation

(Introduction to Smart Manufacturing Eco-Systems)

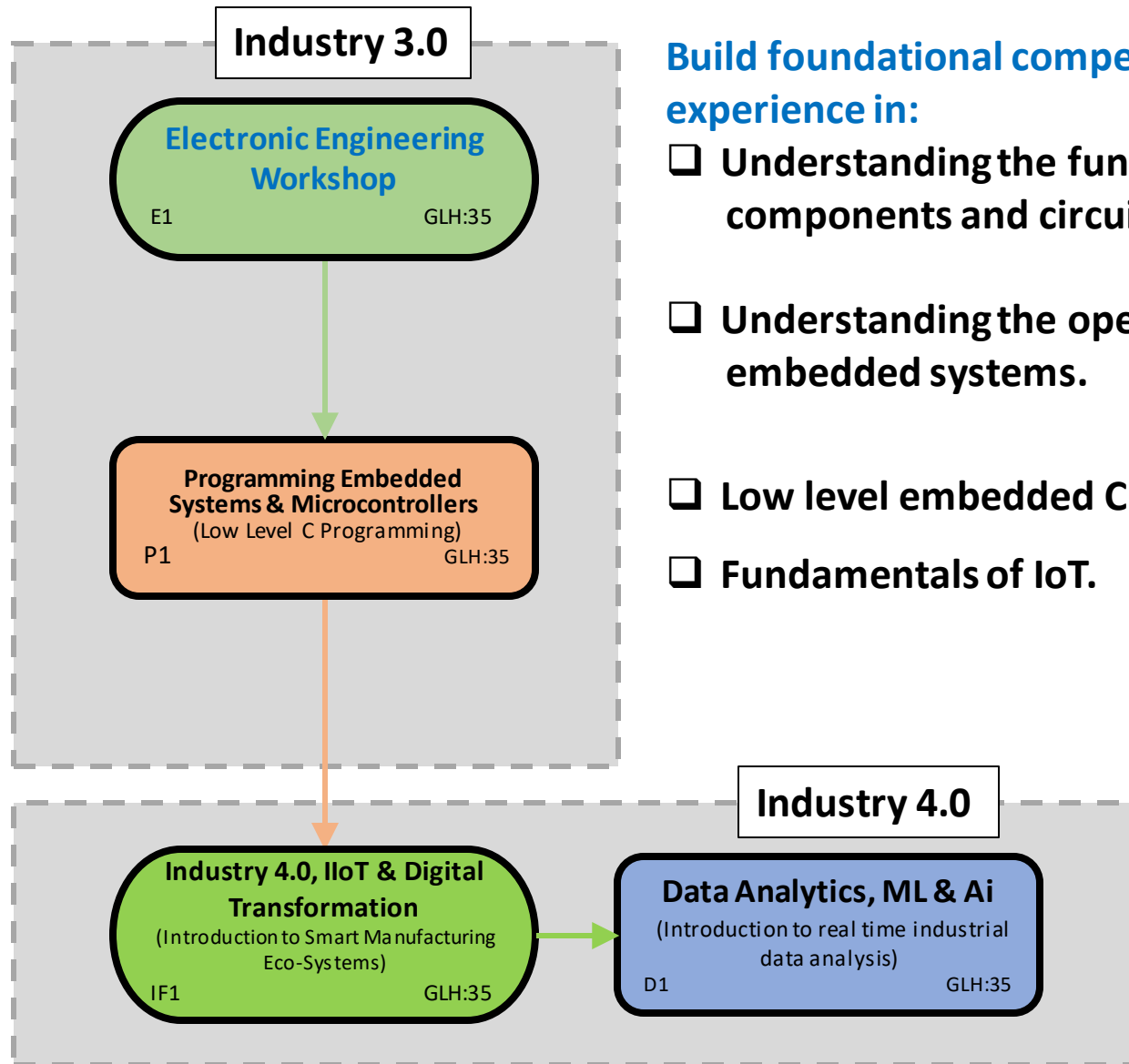
IF1

GLH:35

Develop knowledge, understanding and some experience in:

- Using 3D simulation to develop digital twins & production flow simulations.
- Industry 4.0 methodology/ecosystems for digital transformation using IIoT.

Electronics & Microcontrollers Pathway



Build foundational competency, develop knowledge, understanding and some experience in:

- Understanding the fundamental operation of key electronic components and circuits.
- Understanding the operation of microcontroller hardware & software used in embedded systems.
- Low level embedded C programming/debugging techniques.
- Fundamentals of IoT.

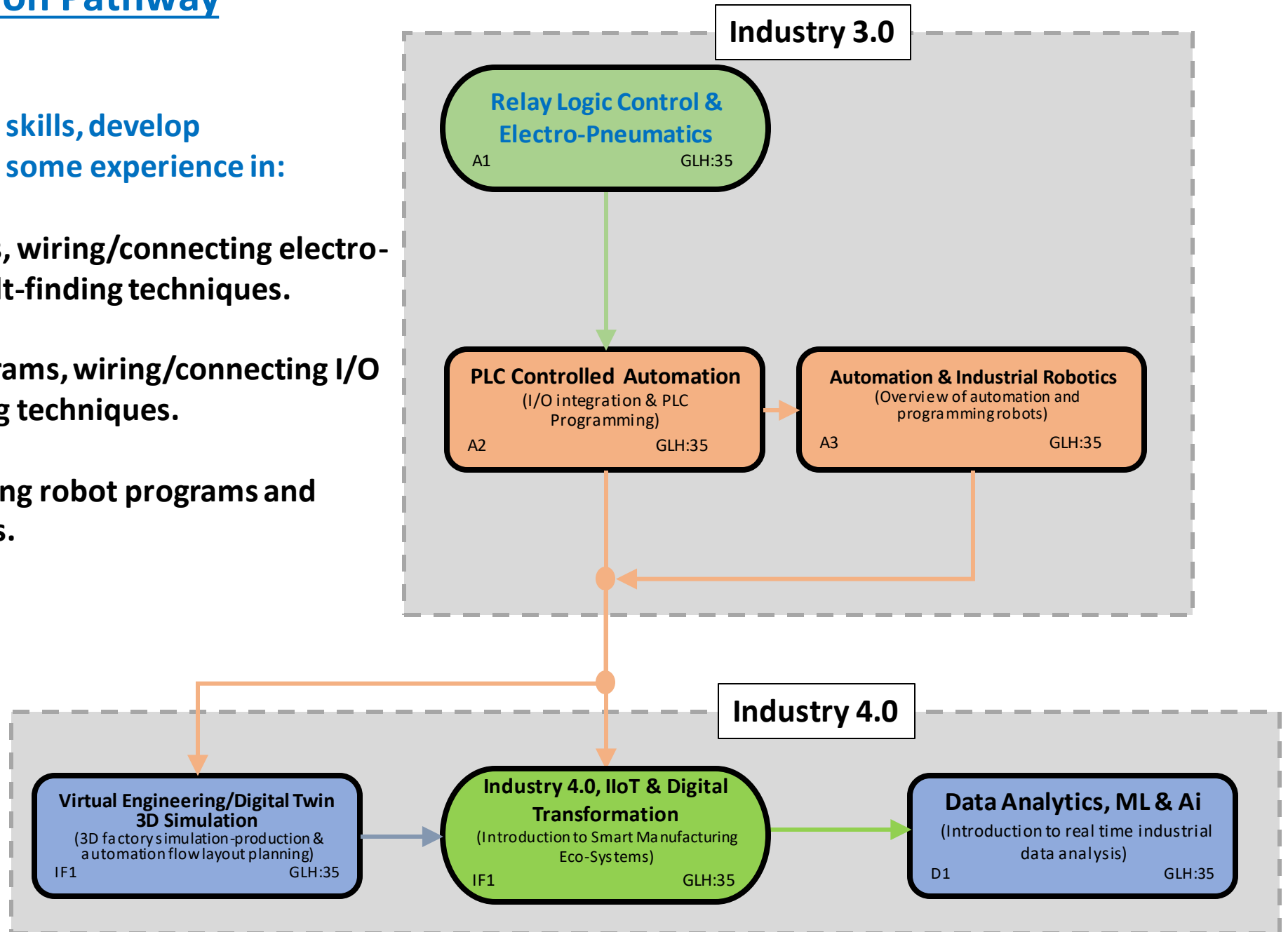
Build foundational understanding, develop knowledge and some experience in:

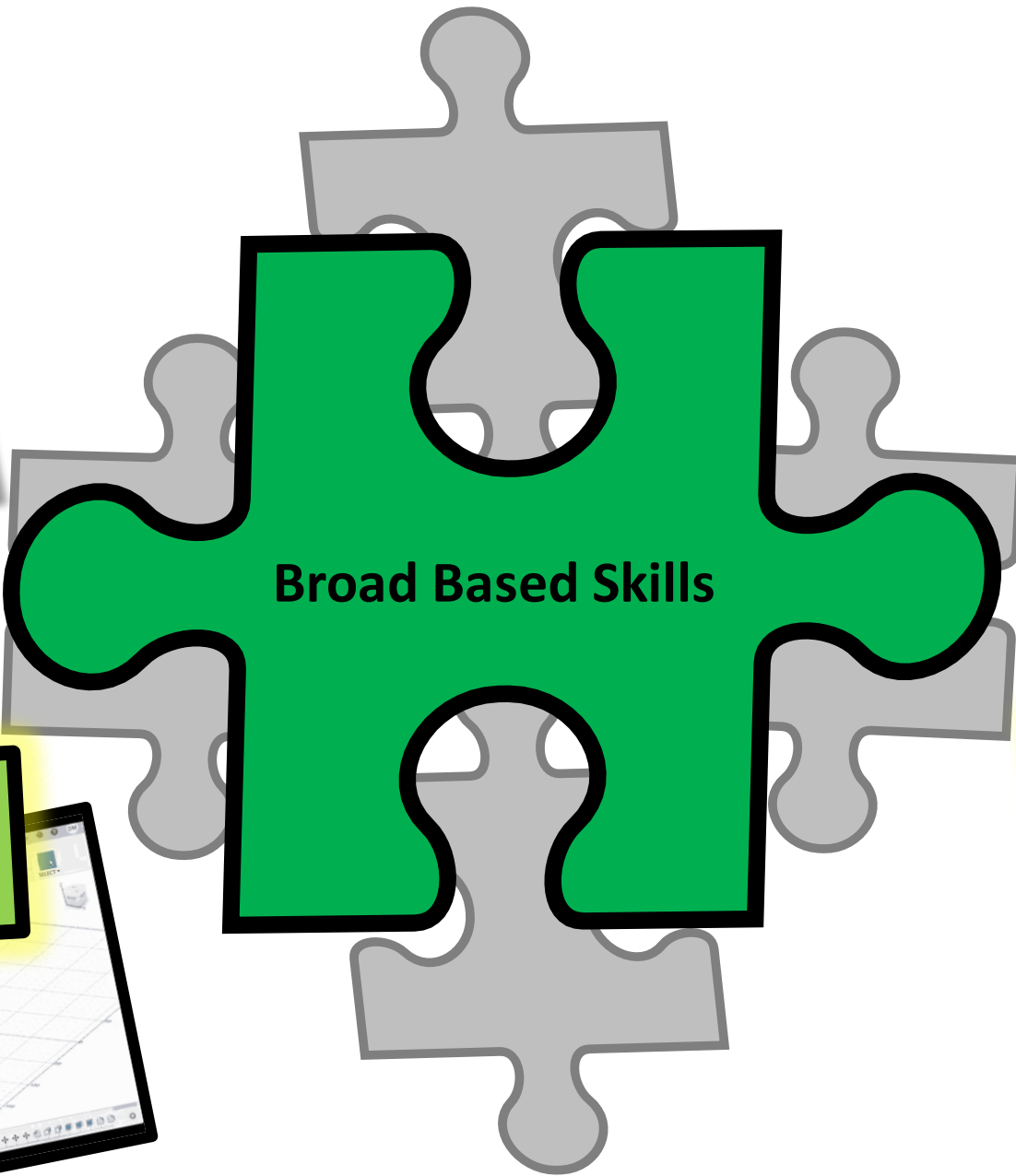
- Data collection, transport and analytics for IoT/IIoT.

Industrial Automation Pathway

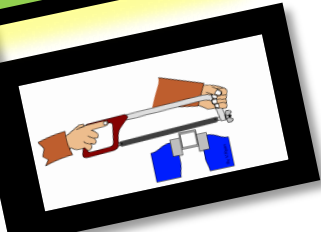
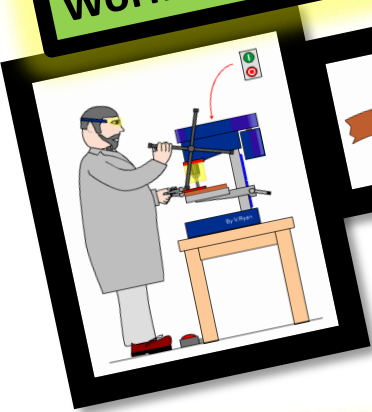
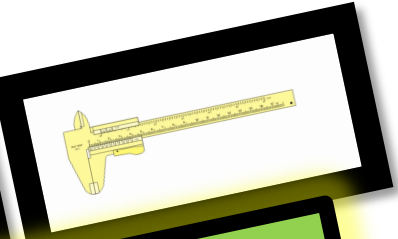
Build foundational automation skills, develop knowledge, understanding and some experience in:

- ❑ Designing relay logic circuits, wiring/connecting electro-pneumatic systems and fault-finding techniques.
- ❑ Designing/writing PLC programs, wiring/connecting I/O devices and trouble shooting techniques.
- ❑ Designing/robot tasks, writing robot programs and trouble shooting techniques.

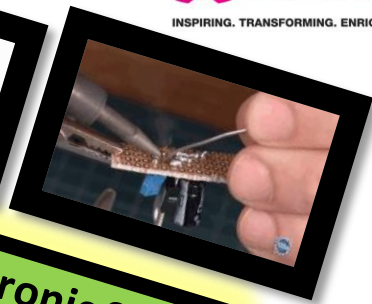
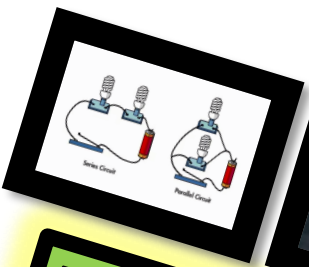
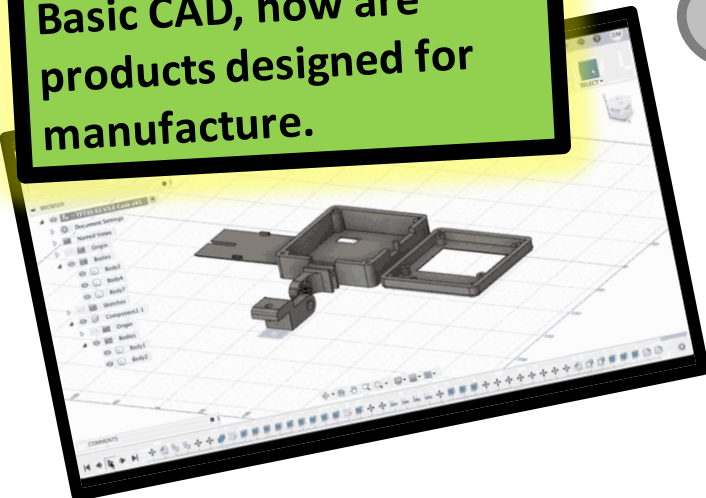




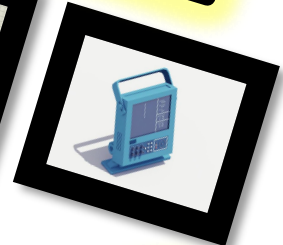
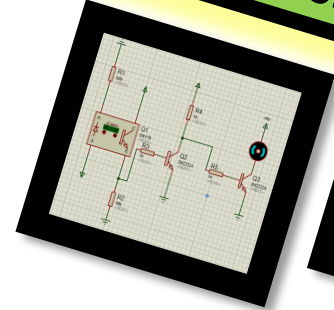
Basic Engineering Workshop Skills



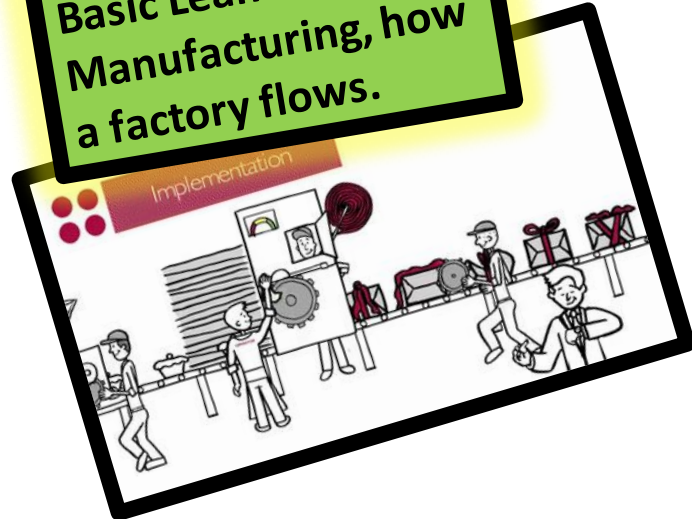
Basic CAD, how are products designed for manufacture.



Basic Electronic Skills



Basic Lean Manufacturing, how a factory flows.



Foundation Degree in Industry 4.0 (September 2023)

South Eastern Regional College in N'Ireland have recently developed and received approval to deliver a Foundation Degree in Industry 4.0.

The Foundation Degree will be delivered as a 2yr Full-Time course or as a 3yr Part-Time Higher Level Apprenticeship.

Level 4 Modules (120 Credits).

| Compulsory modules | Credit points |
|--|---------------|
| Engineering and Computational Mathematics | 20 |
| Mechatronic Systems and Control | 20 |
| Programming Fundamentals | 20 |
| Industrial Internet of Things (IIOT) | 20 |
| Digital Manufacturing Infrastructure | 20 |
| Science for Modern Engineering Technicians | 20 |

Level 5 Modules (120 Credits).

| Compulsory modules | Credit points |
|--|---------------|
| Computer Aided Engineering | 20 |
| Manufacturing Systems Management | 20 |
| Data Analytics and Artificial Intelligence | 20 |
| IIOT Data Security | 20 |
| Work Based Learning | 40 |

Thank You for your time.