



A **coreTech** Company

Think Different, Think Brilliant.

IMT School (I Make Technology School) is not a place where you can take some courses; it is a place in which you practice technology. We believe that listening to someone speaking about something is not a good way of learning, so, "Do it yourself" is our way. Our learning methodology totally depends on hands on labs that transfers the knowledge you get from being just information to be an experience. Our staffs are engineers from leading companies in the same field. In other words, if you want to go Professional, IMT School is your destination! Let's meet the experts, let's practice technology.

Introduction

IMT is an Egyptian company that started in 2015 by embedded systems engineers based in Egypt and Germany who have graduated from ITI 9-month program, Embedded Systems and currently working in Valeo. Total graduates till the date of releasing this document is more than 500 Engineers. The following, is some of the recommendation letters we honored to have:

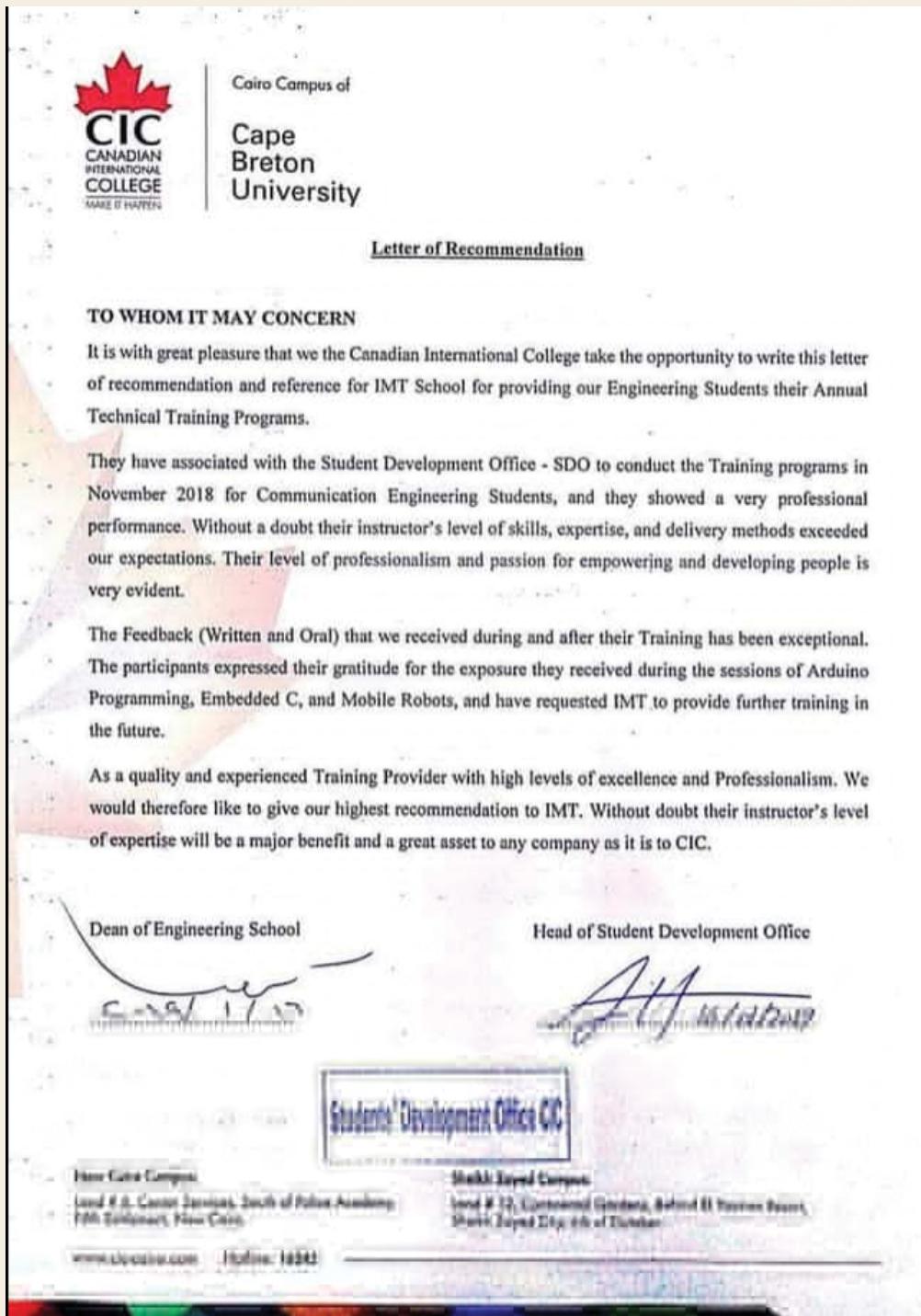
1- Egyptian Engineers Syndicate



2- United Nations Development Program.



3 - Canadian International College.



4- Modern Academy



Modern Academy for
Engineering and Technology
Electronic Engineering and Communication Department

To Whom It May Concern

We would like to inform you that our cooperation with *IMT School* through students training was a great experience in Embedded system field. Such training center is characterized by professional team of instructors, accurate procedure of evaluation, and up to date lab equipments.

Communication department in Modern Academy for Engineering and Technology have sent hundreds of students through past two years into *IMT School* for summer training and will continue in coming years.



Manager of Training Office

Dr. Hoda Abo Hamza

Hoda Abo Hamza

Industrial Training in charge
Dr. Nelly Muhammad Hussein

N.H.



M.H.

Embedded Systems Diploma

IMT is offering professional Embedded Systems diploma recommended by national universities and institutes like Cairo University and ITI. The diploma duration is 168 hours consisting of 8 courses. By the end of the diploma students shall deliver a professional graduation project utilizing all the concepts learned during the course on the presence of high level committee from the industry.

We use a unified content selected carefully and ensure all technical and practical aspects. In addition to the technical part, we added an important part to our diploma which is the soft skills. In soft skills part we teach our students the basic concepts of professionalism to prepare them for the practical professional world. Our staff in soft skills are leading HR representatives in multinational companies.

In summer 2022, we offer our courses online as well as on site in 9 branches; Dokki - Nasr City - 6th of October - Abbasya - Maadi - Alexandria - Monufia - Minya - Mansoura.

80% of the diploma is about making your own embedded system (Set your HW environment and start developing your projects) and the rest 20% is embedded systems concepts that you must know. Each student gets a very professional kit developed by our team and its components is listed below.

- AVR Atmega32 Microcontroller and AVR Programmer.
- Motors (DC, Servo and stepper motor).
- Character LCD and Seven Segment Displays.
- Analog Sensors (Temperature and Light).
- Mechanical Switches (DIP Switches, Keypad)
- Electrical Switches (Relay, Transistors, Darlington pair and Optocouplers).
- Basic Elements (Buzzer, LEDs, Power circuit and Op Amp)
- EEPROM
- USB to TTL converter
- Jumber wires to be used to build various circuits

Course 1

C Programming for Embedded Systems – 40 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none">- Introduction to C programming- Code building process- Standard I/O library- Using printf function- Hello world program- Basic Data types in C- Variables in C- Using scanf function- Operators:<ul style="list-style-type: none">- Arithmetic operators- Assignment (=, *=, +=, -=, /=)- Relational (>, <, >=, <=, ==, !=)- Logical (&&, , !)- Bit wise (&, , ^, <<, >>, ~)- Ternary (?:)- Operator "sizeof"- Operator precedence	4 Hours
Lecture 2	<p>Conditional Statements</p> <ul style="list-style-type: none">- If statement- Switch statement	4 Hours
Lecture 3	<p>Loops</p> <ul style="list-style-type: none">- "while" Loop- "for" Loop- "do..while" Loop- "break" and "continue"	4 Hours

Course 1

C Programming for Embedded Systems – 40 Hours

Lectures	Outline	Hours
Lecture 4	<p>Functions</p> <ul style="list-style-type: none">- Defining and calling functions- Function prototypes- Function parameters and return- Special types of functions	4 Hours
Lecture 5	<ul style="list-style-type: none">- Arrays in C- Sorting Algorithms- Searching Algorithms	4 Hours
Lecture 6	<p>Pointer</p> <ul style="list-style-type: none">- Introduction to Basic Pointers- Pointer Syntax- Pointer arithmetic- Pointers Vs Arrays	4 Hours
Lecture 7	<p>Data Modifiers</p> <ul style="list-style-type: none">- Sign modifier- Size modifier- Storage modifier- Constant modifier- Volatility modifier	4 Hours
Lecture 8	<p>User defined data types</p> <ul style="list-style-type: none">- Structures- Unions- Enum	4 Hours

Course 1

C Programming for Embedded Systems – 40 Hours

Lectures	Outline	Hours
Lecture 9	<ul style="list-style-type: none">C Preprocessor#include directive<ul style="list-style-type: none">- Macros in C- Conditional directives- #error and #warning	4 Hours
Lecture 10	<ul style="list-style-type: none">- Dynamic Memory Allocation- Linked List- Multidimensional arrays	4 Hours

Course 2

Embedded Systems Concept - 8 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none">- Embedded Systems definition- Embedded Systems design challenges- Inside the processor<ul style="list-style-type: none">o Control Unito Arithmetic Logic Unito Register Fileo Processor BusesInstruction Set Architecture<ul style="list-style-type: none">o RISC Processoro CISC Processor- Processor Cycle Example	4 Hours
Lecture 2	<ul style="list-style-type: none">- Volatile Memory Types<ul style="list-style-type: none">o Static RAMo Dynamic- Non Volatile Memory Types<ul style="list-style-type: none">o Masked ROMo OTP ROMo EPROMo EEPROMo FLASH ROMo NVRAM- System Architecture<ul style="list-style-type: none">o Von Neumann Architectureo Harvard Architecture- Input Output peripherals- Microcontroller main suppliers- Reading the datasheet and specifications	4 Hours

Course 3

Embedded Systems Interfacing – 64 Hours

Lectures	Outline	Hours
Lecture 1	- Digital Input Output Part 1 <ul style="list-style-type: none">o Interfacing LEDso Interfacing 7-Segmentso Mechanical Switches	4 Hours
Lecture 2	- Introduction to layered architecture <ul style="list-style-type: none">- Defining Microcontroller Registers- Developing DIO Driver	4 Hours
Lecture 3	- Keypad Interfacing and driver	4 Hours
Lecture 4	- LCD Interfacing and driver	4 Hours
Lecture 5	- Electrical Switches <ul style="list-style-type: none">o Transistorso Relayso Opto-couplerso Darlington Pair	4 Hours
Lecture 6	- Introduction to Interrupts <ul style="list-style-type: none">- Interrupt Handling Techniques- Digital External Interrupt- Motors<ul style="list-style-type: none">o DC Motoro Stepper Motor	4 Hours
Lecture 7	- Analog to digital converter driver	4 Hours
Lecture 8	- Analog sensor <ul style="list-style-type: none">o Temperature sensoro Light sensor	4 Hours

Course 3

Embedded Systems Interfacing – 64 Hours

Lectures	Outline	Hours
Lecture 9	- Interval timers driver - Timer in counter mode	4 Hours
Lecture 10	- Pulse Width Modulation <ul style="list-style-type: none">o Servo Motor Interfacingo Controlling Light Intensity	4 Hours
Lecture 11	- Input Capture Unit - Watchdog timer	4 Hours
Lecture 12	- UART Serial Communication – Part 1	4 Hours
Lecture 13	- UART Serial Communication – Part 2 <ul style="list-style-type: none">o USB To serial	4 Hours
Lecture 14	- SPI Serial Communication	4 Hours
Lecture 15	- I2C Serial Communication – Part 1	4 Hours
Lecture 16	- I2C Serial Communication – Part 2 <ul style="list-style-type: none">o EEPROM Interfacing	4 Hours

Course 4

Real Time Operating Systems – 16 Hours

Lectures	Outline	Hours
Lecture 1	Building Real time Scheduler	4 Hours
Lecture 2	<ul style="list-style-type: none">- Real time operating systems concepts<ul style="list-style-type: none">o Basic definitionso Scheduling Techniqueso Dynamic Design Conceptso Shared Resources Analysiso Mutual exclusion Techniqueso Inter task communications	4 Hours
Lecture 3	- Porting Free RTOS on AVR – Part 1	4 Hours
Lecture 4	- Porting Free RTOS on AVR – Part 2	4 Hours

Course 5

Embedded Systems Testing – 8 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none">- Embedded Systems Development Cycle- Basic Development Patterns- Basic Testing Principles- Unit Testing- Module Testing- Integration Testing- Validation Testing	4 Hours
Lecture 2	<ul style="list-style-type: none">- White Box Testing<ul style="list-style-type: none">o Statement Coverageo Decision Coverage- Black Box Testing<ul style="list-style-type: none">o Equivalence Partitioningo Boundary Values Analysiso State Transitiono Decision Table- Exercise	4 Hours

Course 6

Embedded Systems Tooling – 4 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none"> - Memory Sections - Linker Script - Startup Code - Boot loaders - Make files - Batch script - ICP, ISP and IAP 	4 Hours

Course 7

Automotive Bus Technology – 4 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none"> - CAN Protocol Specifications - LIN Protocol Specifications 	4 Hours

Course 8

Soft Skills – 8 Hours

Lectures	Outline	Hours
Lecture 1	<ul style="list-style-type: none"> - CV Writing Skills - Interviewing Skills 	4 Hours
Lecture 2	<ul style="list-style-type: none"> - Presentation Skills - Negotiation Skills 	4 Hours

Graduation Project – 16 Hours



We offer more than 12 practical and attractive ideas, the students are divided into teams each team maximum of 3 members and implement one idea. Then each team shall provide a prototype of the implementation in a formal presentation in front of a high level technical committee.