Build Your Own 3D PRINTER

A Fundamental Skill To Realize Industry 4.0

YOU WILL LEARN:

- All necessary steps to build and tweak your own FDM printer at the desired size and function.
- Properties and applications of different types of plastic printing filaments such as TPU, PETG, ABS, PLA, Nylon, ASA and etc.
- Currently available methods of optimizing an FDM printer for excellent print quality, high speed and high reliability.
- Best methods of modeling suited for FDM printers using Design Spark Mechanical.
- Best methods of slicing your 3D file for physically stronger prints (according to application) or highly elegant prints using Cura.
- Many secrets on maintaining and repairing your 3D printer to maximize longevity and remain excellent print quality throughout time.
- Wireless printing and slicing of 3D models.

AVAILABLE FOR ALL LEVELS

Stay Ahead of This Revolution

You get to build and bring home the 3D PRINTER!

FICTRON INDUSTRIAL SUPPLIES
Serving Industrial Needs

IRS TRAINING

PRESENTED TO YOU BY:
FICTRON Industrial Supplies SDN BHD
& **IRS Training** SDN BHD

DIFFICULTY LEVELS

BEGINNER

A BEGINNER in the electronics field, is considered one whom may have a small knowledge of electricity or may know nothing at all. Such individual would need to learn about electricity, circuitry, how components function in an electrical circuit, and so on to advance in this field.

Although the beginner information is easy to obtain, a fundamental and proper understanding of them will go a long way in understanding more complicated topics later on in more advanced courses.

INTERMEDIATE

THE INTERMEDIATE level in electronics engineering is considered to be the level of an individual whom has at least a diploma in electrical engineering, or has been repairing or building electronic circuits as a hobby.

At this level, one would know about the function of components and how to build different smaller scale circuits with them. In the intermediate level, electronic topics become wider and slightly more difficult to understand.

Therefore, building the relevant circuit of every topic is crucial to a deep understanding of higher level discussions and problems later on.

ADVANCED

THE ADVANCED level in electronic engineering field belongs to individuals whom have finished their bachelors or masters in electronic engineering and have finished quite a few projects in this field.

Such engineers are capable of designing and repairing high-level electronic systems and have no problem tackling different types of electronic circuits. They can learn the methods of repair very quickly and benefit the most from our courses.

As a result of their advanced level of knowledge, it helps to save time when explaining different methods of repair and advanced circuitry.

Table of Content

FICTRON INDUSTRIAL SUPPLIES

Serving Industrial Needs

Get In TOUCH

Call:

+603-8023 9829

+603-8023 8639

WWW.FICTRON.NET

Introduction

Invented in 1984 by CHARLES W. HULL

FDM 3D PRINTERS are not a new phenomenon. In fact they were invented in 1984 by Charles W. Hull. However, their slow printing speed, high price and limited functions at the time didn't allow for good reception by the market. In the past, 3D printers were purchased and used solely for prototyping or R&D by large corporations who could afford them.

However, recent developments in microcontroller technology that has made computing unbelievably cheap, and the existence of a vibrant online open source community have made the adoption of additive manufacturing much easier by the general consumer as well as a range of other industries that are interested in additive manufacturing (3D printing as a means of production) only.

As we move towards industry 4.0, additive manufacturing becomes more relevant to automated systems, one could say that if you're a factory engineer, it is the perfect time to start learning about 3D printing to secure your career in the very near future.

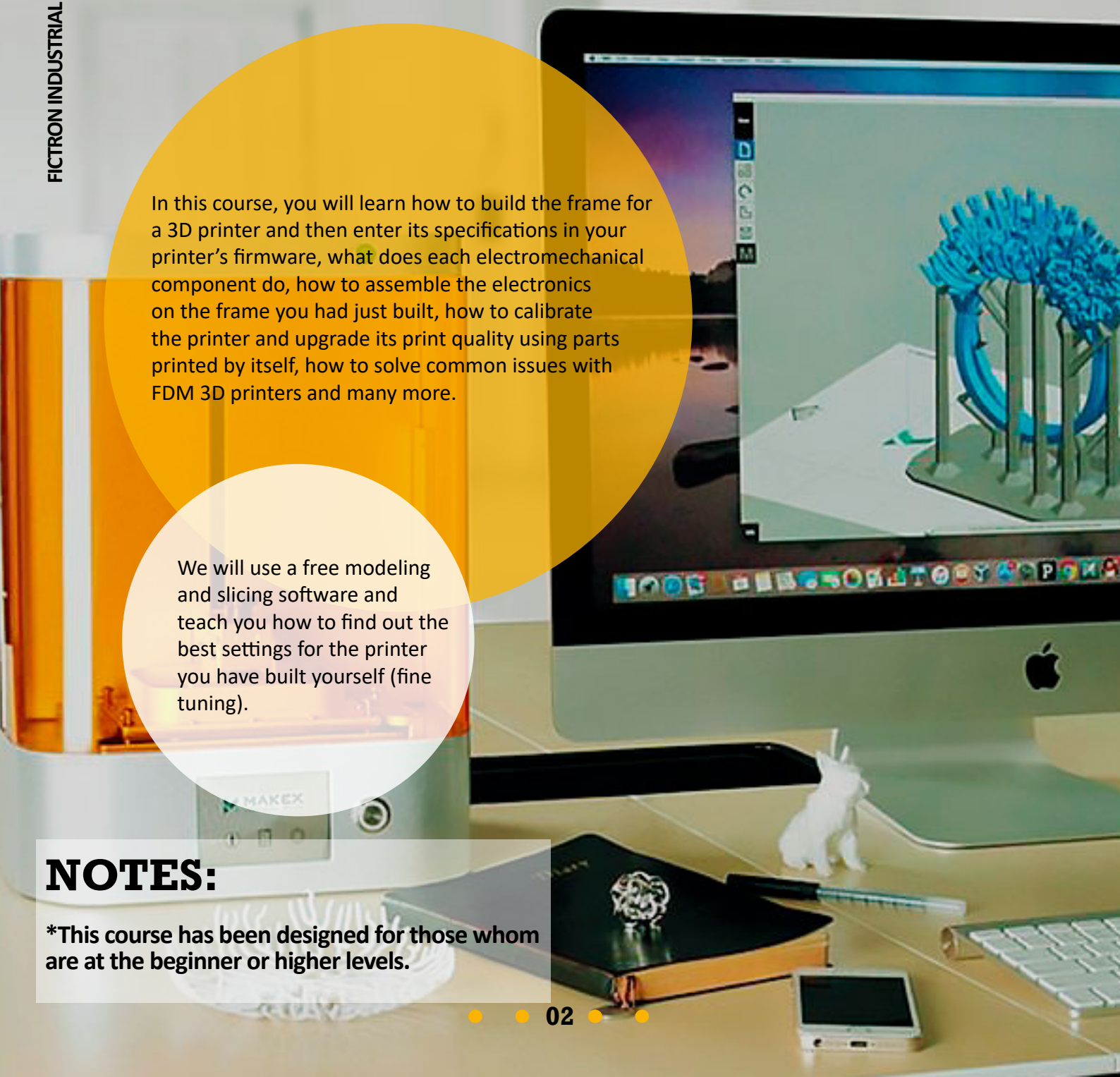
INTRODUCTION

There are plenty of factories adopting additive manufacturing and many new ones opening up due to the benefits of 3D printing:

- When 3D printing a plastic object, there's no need to have a plastic mould. In fact, a different object could be printed in every print. Therefore, you can have a very efficient and cost effective factory that is always ready to manufacture any item without preparation costs (such as creating moulds) by using 3D Printers.

- As a manufacturer, 3D printers will make it much easier for you to support the products you've produced before. There won't be a need to stock spare parts when they can be printed within hours and shipped as per customer demand.

- There won't be a need to stock up manufactured units as they can be printed when there is demand. Printers can stop when there is no demand. This brings a tremendous amount of cost savings for a production facility & allows for smaller production units.



In this course, you will learn how to build the frame for a 3D printer and then enter its specifications in your printer's firmware, what does each electromechanical component do, how to assemble the electronics on the frame you had just built, how to calibrate the printer and upgrade its print quality using parts printed by itself, how to solve common issues with FDM 3D printers and many more.

We will use a free modeling and slicing software and teach you how to find out the best settings for the printer you have built yourself (fine tuning).

NOTES:

***This course has been designed for those whom are at the beginner or higher levels.**

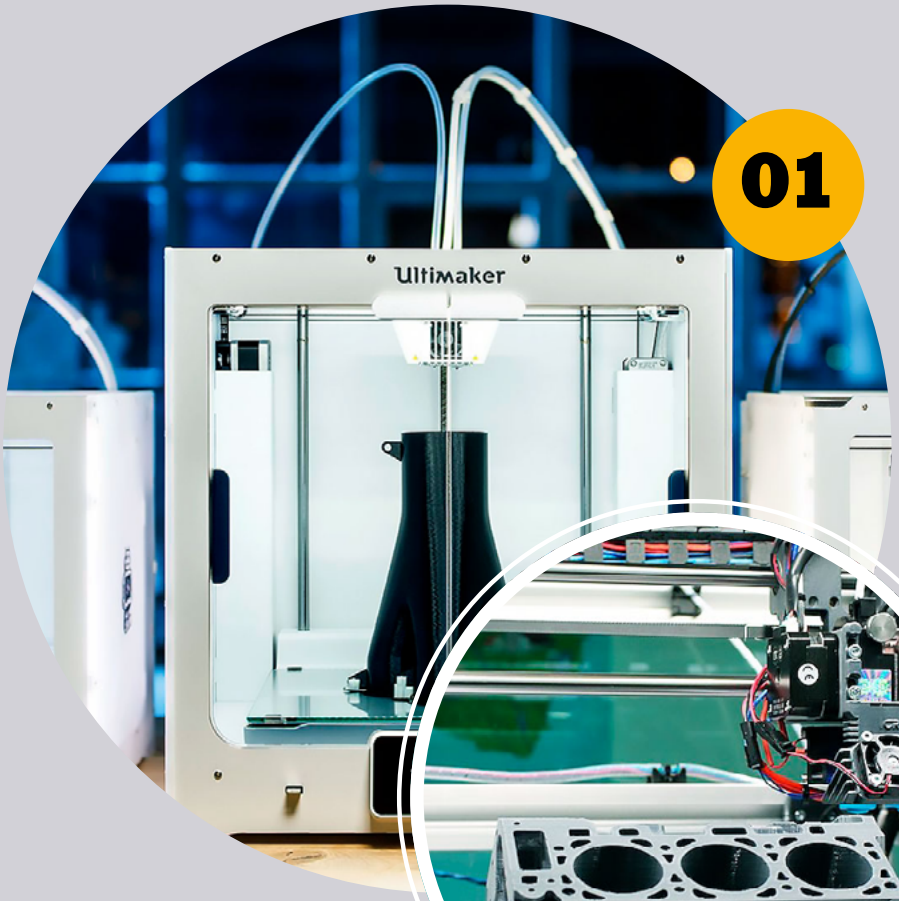
This course is suitable for those individuals whom are working in an industrial environment as an electrical / electronic engineer or production manager as well as hobbyist or DIYers whom work on projects. It is a must for engineers that are working in the R&D unit of a factory and those whom are maintaining a factory with additive manufacturing technologies.

Target Audience

Engineers whom have just graduated from electrical, electronic, mechanical or Industrial engineering are encouraged to apply. So they can reap the benefits of crucial hands-on knowledge later on throughout their career. This is an impressive skill to have during an interview.

If you are the manager of your factory or the CEO of your company and are thinking about adopting industry 4.0 standards, this course is a must. You will have a lot of fun building your 3D printer and will be able to encourage or guide your engineers to build for your factory. At the very least, you would easily be able make the right decision on superior 3D printer machinery for your factory.

The Syllabus



01

Introduction To FDM 3D Printing

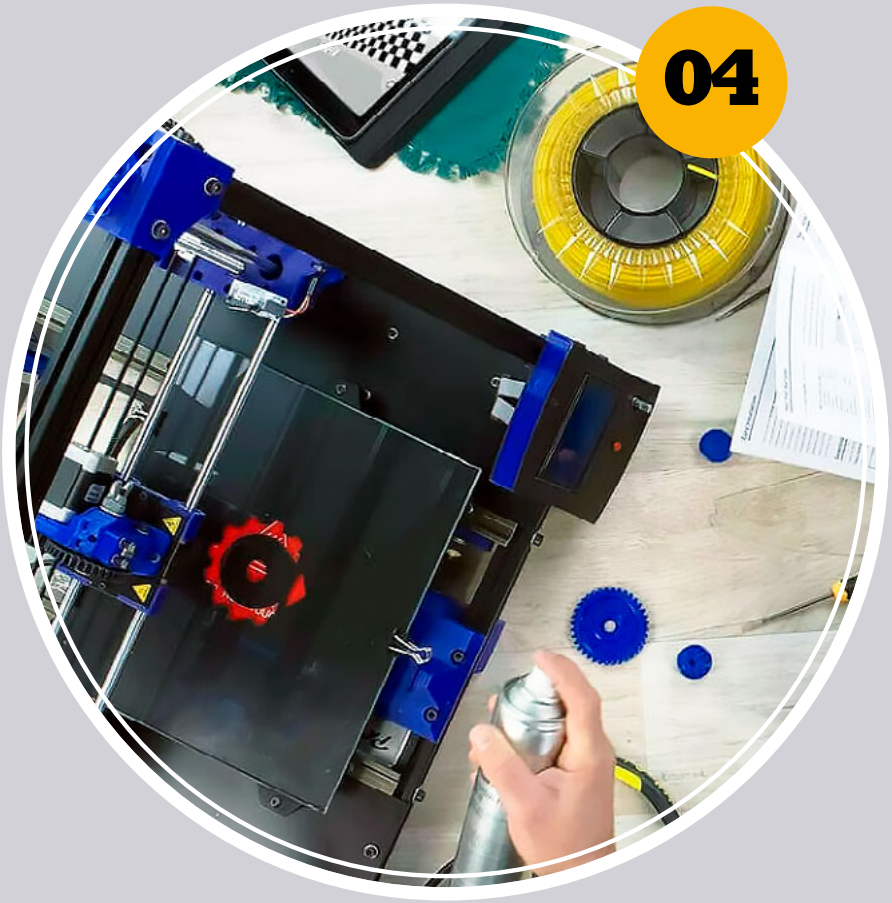
- 3D Printing Technologies
- FDM 3D Printing
- Bio-Printing
- Metal Printing
- Resin-Based Printing

All About Filaments

- Different Filament Sizes
- Properties Of PLA
- Properties Of PETG
- Properties Of ABS
- Properties Of Nylon
- Properties Of ASA

Function Of An FDM Printer

- Stepper Motor
- Motherboard & Switches
- Sensors And Bed Leveling
- Belts And The Correct Tension
- X, Y & Z Axis Function & Calibration
- Filament Extruder
- Hot End And Cooling Fans
- Hotbed
- LCD Display And Controls
- Standalone And Networked Printing



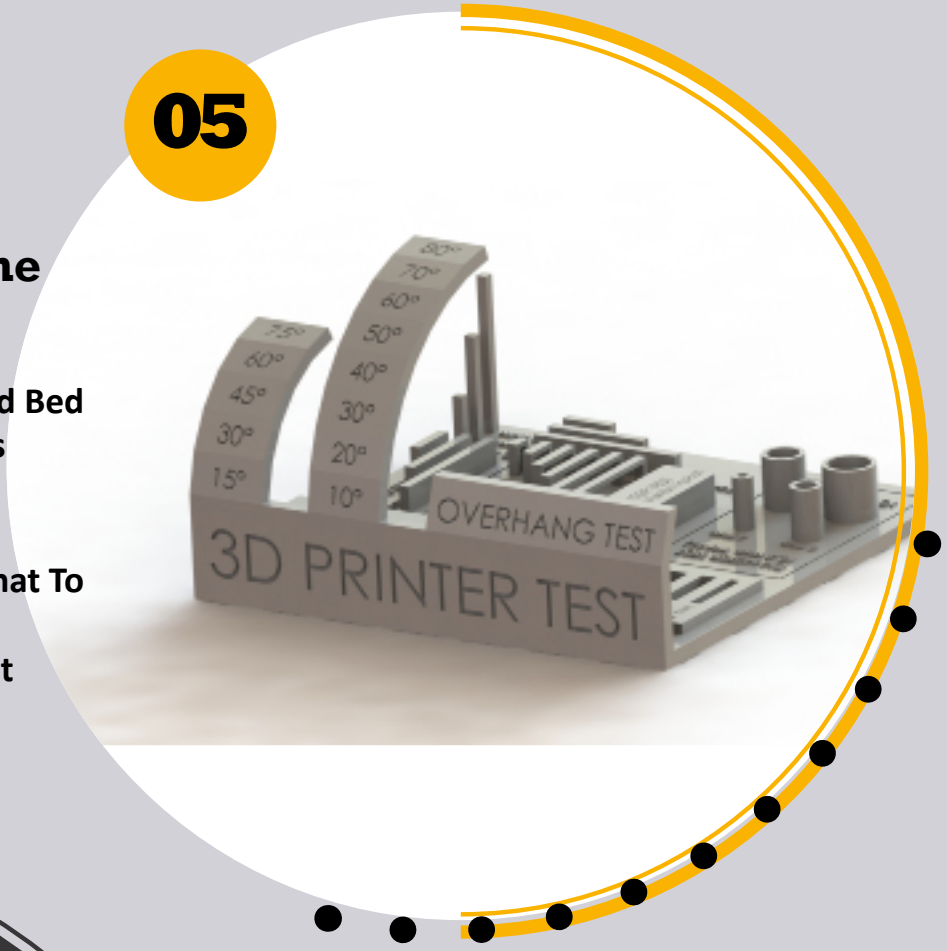
Building Of A 3D Printer

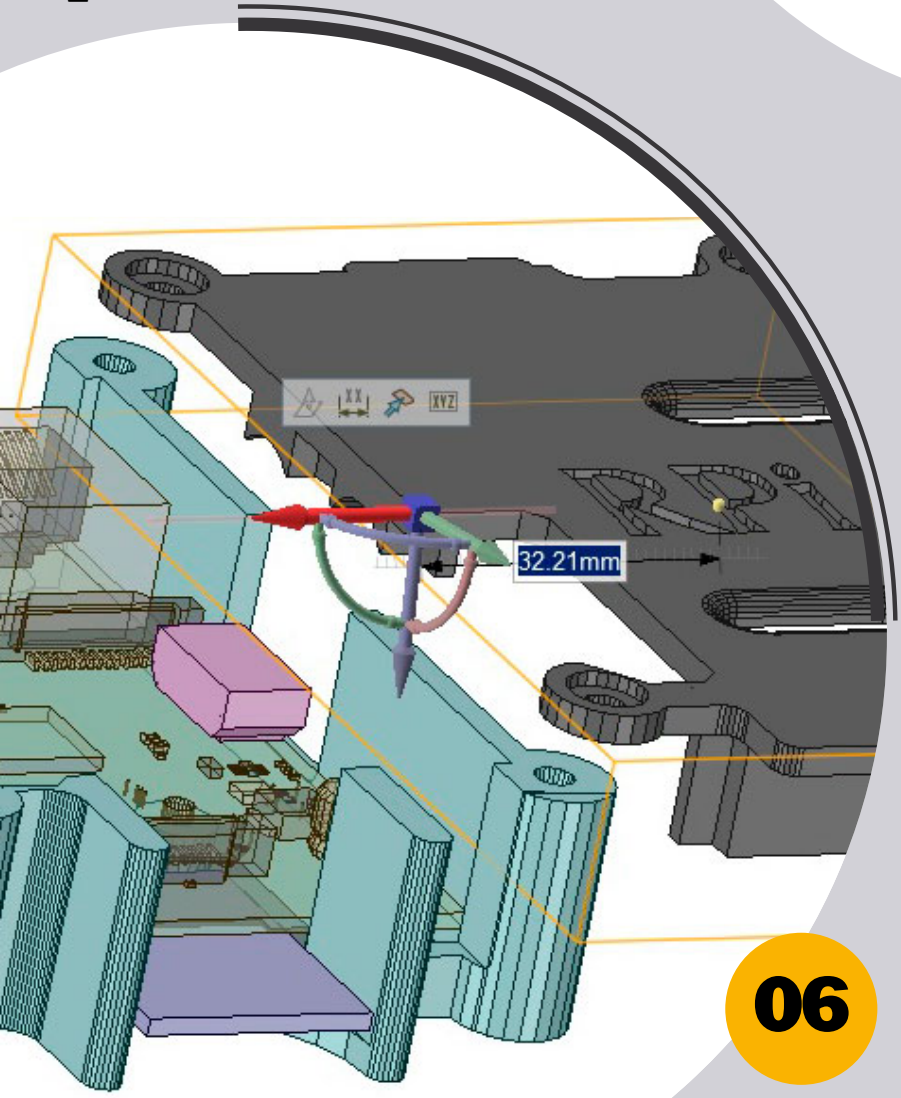
- Different Type Of FDM Frame Designs
- Weaknesses Of Different Frame Designs
- Strengths Of Different Frame Designs
- Frame Design Process And What To Consider
- Building Of The Frame
- Introducing The Frame To The Firmware
- Installation Of Switches And Sensors
- Installation Of Stepper Motors And Tension Belts
- Installation Of The Extruder And Hot End
- Installation Of Motherboard And Wirings

05

Testing Our Machine

- Testing The Electronics
- Testing X, Y, Z & The Heated Bed
- Checking The Belt Tensions
- Leveling The Bed
- Calibrating The Printer
- Test Prints To Print And What To Observe
- Download An STL And Print





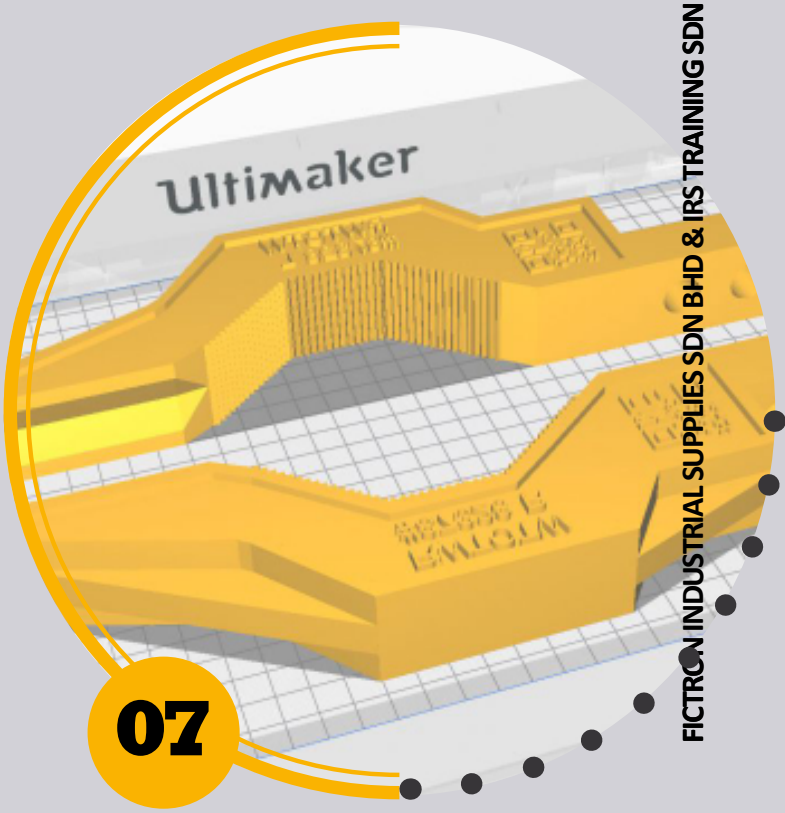
06

Modeling Using Design Spark Mechanical

- What Is Design Spark Mechanical?
- Basic Functions Of DS Mechanical
- Rules To Follow When Modeling
- Limitations Of FDM Printers
- Common 3D Formats For 3D Printers
- How To Create Good STL Files

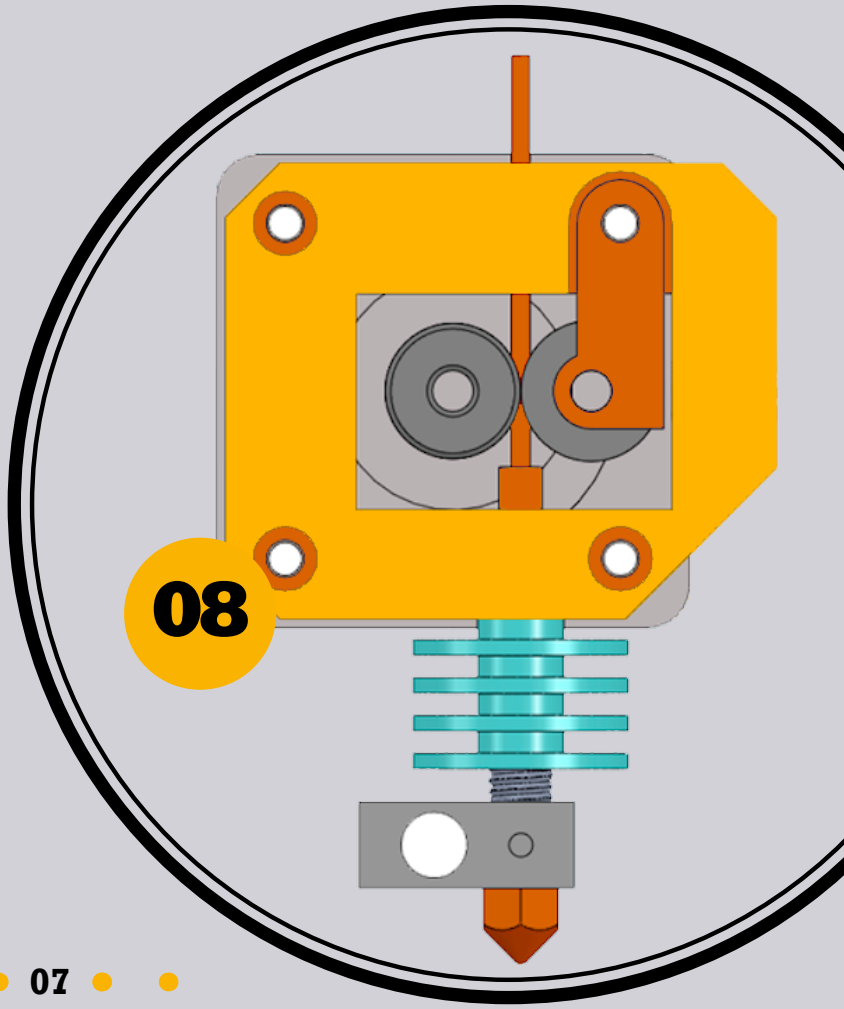
Slicing Designed Models Using Cura

- The Role Of Hotbed Temperature In Quality Of Prints
- The Role Of Printing Speed In Quality Of Prints
- The Role Of Supports In Quality Of Prints
- The Role Of Extrusion Speed In Quality Of Prints
- The Role Of Hotend Travelling And Hopping In Quality Of Prints
- The Role Of Retraction Speed In Quality Of Prints
- How To Avoid Stringing Between Prints
- How To Print Multiple Items At The Same Time
- Importance Of Wall Thickness For Printed Models
- Importance Of Infill Percentage And Mesh For Printed Models
- Using Octoprint For Slicing On Raspberry Pi



Common Printer Issues And Solutions

- **Stringing**
- **Poor Layer Adhesion**
- **Poor Adhesion To Bed**
- **Poor Print Quality**
- **Hydrated Filament**
- **Leaking Hotend**
- **Poor Bed Leveling**
- **Poor Z Layer Thickness**
- **And Many More**



Training Schedule

ITEMS

LESSON : 4 LESSONS A DAY
DURATION : 5 DAYS
QUIZ TIME : 2 TIMES A DAY (TOTAL OF 10 QUIZZES FOR 5 DAYS)
LUNCH TIME : 1230 - 1330 (1 HOUR)

NOTES

1. There are 2 quizzes taken from the participant each day. One is before lunch and the other before the ending of the training day.
2. A day of absence will require the participant to join the next course for that particular day. Same applies to half day of absence.
3. The last 15 minutes of the training session (1645 - 1700) is for reviewing what been taught.
4. There is a 15 minutes break in between each class and the lunch time if from 1230 - 1330.
5. The training course book, quizzes, components and tools are provided by **FICTRON**.
6. Every skill that is taught is practiced and built to ensure a full understanding of subject matter.

ITINERARY / EVENT
DAY 1 - 5

0915 - 1045 (1 HOUR 30 MINS)
- **LESSON**

1045 - 1100 (15 MINS)
- **BREAKTIME**

1100 - 1230 (1 HOUR 30 MINS)
- **LESSON**
- **QUIZ**

1230 - 1330 (1 HOUR)
- **LUNCH**

1330 - 1500 (1 HOUR 30 MINS)
- **LESSON**

1500 - 1515 (15 MINS)
- **BREAKTIME**

1515 - 1645 (1 HOUR 30 MINS)
- **LESSON**
- **QUIZ**

1645 - 1700 (15 MINS)
- **LESSON REVIEW**

About FICTRON

FICTRON Industrial Supplies has had extensive experience in repairing industrial electronic Motor Drives, PLC systems, Servo Systems as well as Human Machine Interfaces.

Our engineers are trained in Germany and we are the authorized repair center for **KEB Automation KG**. As an industrial solution provider, we believe in an open market whereby the repair information is shared for the greater good of industrial electronics and ease of operation for local factories.

FICTRON REPAIR EXPERTISE

- On-site
- In-house
- Rush repair
- 10+ years experience
- KEB GMBH certified
- Parameter setting
- PLC projects and back up
- & many more

AWARDS

- **16th** Asia Pacific International Honesty Enterprise - Keris Award
- **15th** Asia Pacific International Entrepreneur Excellence Award
- **12th** Top Global Brand Leadership Excellence Award
- **World** Confederation of Businesses - Worldcob-Biz 2019 Award

INTRODUCTION

IRS Training Sdn Bhd, est. in 1997 has been a pioneer in delivering Creativity and Competency based trainings throughout Malaysia and Asia Region. Consistently known for delivering excellent creativity training programs such as **Edward De Bono's Six Thinking Hats & Lateral Thinking**, is also known for LEGO Serious Play and Game Storming. Additionally, IRS is also currently moving into innovative and creativity application on team namely Four Sight Toolset and Mindset certification. Locally, IRS Training is famous for their HRDF Train the Trainer, Evaluation on Effectiveness of Training, Master Trainer and Training Needs Analysis programmes.

About IRS

IRS believes that in today's era of **VUCA**, there's no other way but to reinvent. We need to engage, embrace, and adopt new ways of learning and working with the latest and emerging technologies. Digital transformation allows us to achieve sustainable advantage we can have over others. As a testament for its effort in consistently providing and delivering quality training programmes, IRS won **SME Awards 2009 for Best Brand in Services Management and Minister of Human Resource Award 2012**.

TRAINING PROGRAMME

- **FOURSIGHT** Certification
- **De Bono** Creativity Programs
- **Lego Serious Play** Training Methodology
- **Game Storming** Training Methodology
- **IRS Public Course** Series – IR4.0
- **HRDF** Train The Trainer
- **HRDF Evaluation** On Effectiveness Of Training (EET)

AWARDS

- Winner of **Human Resource Minister Award 2012**
- Awarded **The Brand Laureate SMEs Chapter Awards 2009**
- Awarded the Certificate Of Appreciation for Human Resources Development 2009/2007
- One of the active and recognised provider in Edward de Bono's Thinking Systems™ and the first in Malaysia
- The **Brand Laureate Best Personality Award in 2006 for Dr. Edward De Bono**

QUALIFICATION

Registered Training Provider with Pembangunan Sumber Manusia Berhad (PSMB) since 1997 - No.0281 ClassA;

- Approved HRDF TTT, EET, Master Trainer & TNA Consultant for PSMB
- Approved Training Partner for Certification Courses
- Approved Training Partner for SMETAP & PKS programms.

Registered as an Accredited Centre (Pusat Bertauliah) under JPK / DSD (L02279)

Registered with Ministry of Finance "Pendaftaran Kontraktor" – No.357 - 0002287070

Registered with Perbadanan Produktiviti Malaysia (MPC) – 42L-PLPS

Authorised Representative for FOURSIGHT Certification Tools of Thinking and Innovation

Facilitator for LEGO Serious Play Training Methodology

Authorised Representative of Edward de Bono's Thinking Systems™

Authorised Provider for Australia Certification Courses (i.e. Certificate IV, Diploma and Advanced Diploma Programmes) accredited by ASQA (Australia Skills Quality Authority).

A Centre for RPL (Recognition of Prior Learning)

The Instructor

MR AMIN IZADYSADR

Who
is an electronics prodigy
from Iran with extensive hands-on
design and research experience in the **Electronics field**. He started building his first electronics circuit
when he was 7 years old.

He is extremely well-versed with years of
experience in PCB Design with Altium, electrical wiring,
programming with PIC Basic Pro & Bascom, service and repair
of home appliances, car
audios, power supplies, portable amplifiers and many more
skills acquired through strong desire to learn, love for
knowledge, courage and strict
discipline in experimenting and R&D. He is certified in
PLC Automation S7 3000, AVR Microcontroller and Digital Circuit Design.

To learn more about him check out his recently-launched blog at
www.elisha.network

FICTRON INDUSTRIAL SUPPLIES SDN BHD & IRS TRAINING SDN BHD

Contact Us

INFORMATION

Please CLICK HERE to download the registration form & learn about the pricing. Kindly fill it up and fax / e-mail it to us.

You can register 2 weeks earlier prior to the Training Date to benefit from an earlybirds discount!

Liking our FACEBOOK PAGE will entitle you to 2% discount as well!

LOCATION

HQ:
5-6, Jalan USJ 9/5Q, Subang Business Centre, 47620 UEP Subang Jaya, Selangor, Malaysia

Selangor Office:
36, Jalan Puteri 5/12, Bandar Puteri, 47100, Puchong, Selangor.

Penang Office:
44A Jalan Besi, 11600 Green Lane, Penang, Malaysia.
+604-6192582
+604-6192583

EMAIL

sales.co@fictron.com
sales@fictron.com
training@fictron.com

SOCIAL MEDIA

FICTRON Facebook
FICTRON Twitter
FICTRON WeChat

FAX

+603 8023 7089

QR CODE

CONTACT NUMBER

+603-8023 9829
+603-8023 8639
+603-8023 7089

BUSINESS HOURS

Monday - Friday
9:00 AM - 6:00 PM
Saturday - Sunday Closed

***Closed on Public Holiday**

WEBSITE

https://www.fictron.com
https://www.fictron.net
https://www.fictron.biz