Revision Design and Technology ..G8

2018-2019

Semester (1)

Learning outcomes of Unit 1

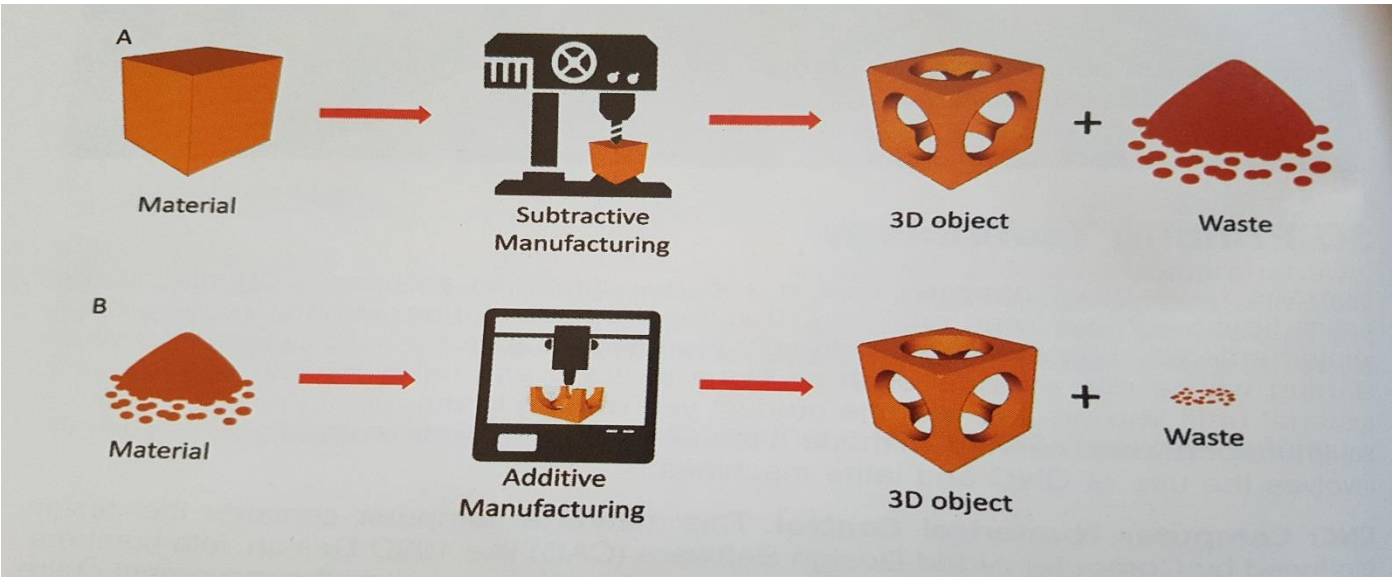
- Demonstrate an understanding of 3D printing.
- Compare the advantages and disadvantages of 3D printing.
- Recognize the different hardware and software used for 3D printing.
- Examine different 3D printing devices and the purpose of each devices.

Your Teacher : Ghaida Ameen.

Definitions:

- **Additive Manufacturing process:** a process that adds material layer by layer to create an object, like the **3D printing process**
- **Subtractive Manufacturing process:** the removal of the unnecessary material until you have the product you want.

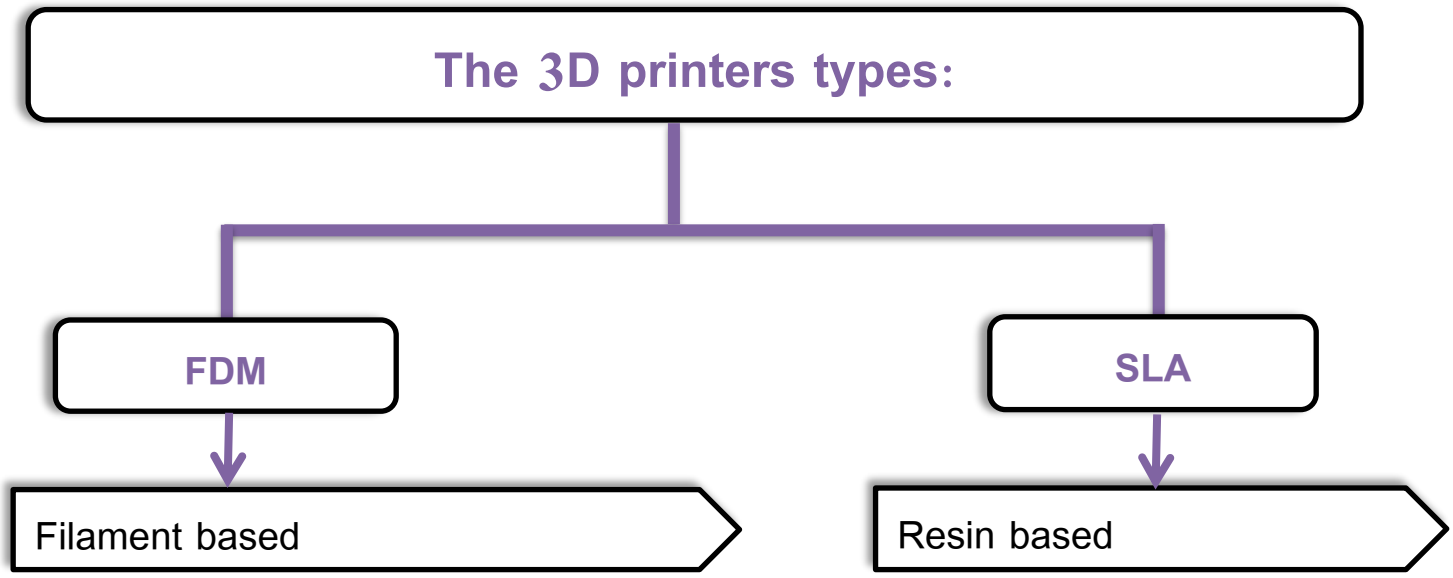
You can see the difference between them in the following picture:



3D printing: a process of printing physical objects using 3D modelling software and a 3D printer.

CAD: **(Computer Aided Design)** the design that created on the computer using the 3D modelling programs for the object.

CNC: a computer converts the design produced by CAD software into numbers that controls the 3D printing.



Filament material types:

PLA (the most common type of 3D printing materials used in FDM)	ABS
Thermoplastic: plastic that melts and become moldable after heating	**Thermoplastic:** need higher temperature for melting
Tough	**Tougher** than PLA
Biodegradable and **eco-friendly**	**Not Biodegradable** and **NOT Eco-friendly**
Made from **renewable** resource such as vegetable waste, corn or sugar cane.	Made from **Petroleum**
Used in **day-to-day** items	Used in **manufacturing**

Parts of FDM printers:

Filament:	The material that used to produce the printed object (usually plastic), and the filament is fed to the Extruder.
Extruder:	The mechanical system that forces the filament in to heated nozzle at a controlled rate.
Heated Nozzle:	It is extremely hot, it is the tool that melt the plastic, the plastic is heated to between $180 - 220$ degrees Celsius depending on the plastic type, the temperature set by the 3D printing software.
Print bed/Build platform:	The surface where the layers of plastic are extruded to produce the final printed object.
Motors:	The part that allow the heated nozzle to move in the X,Y and Z positions.

Notice : **All the activities in Chapter 1 very important**

Done By teacher: **Ghaida Ameen**

Good lock my beautiful girls

Love you All