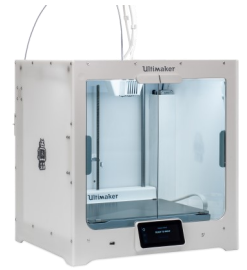# 3d PRINTING
Instructor : Kenny Duray

Course Agenda

- Introduction to the printers
- examples of Printed items
- how to submit designs for print
- TinkerCAD
    - Tour
    - Lessons
    - design
- Questions and additional practice

2600 Harnish Drive
Algonquin, IL 60102
847-458-6060
www.aapld.org

Mon-Thur: 9am - 9pm
Fri: 9am - 6pm
Sat: 9am - 5pm
Sun: 12pm – 5pm

3D Printing:

3D printers create prints by building up melted layers of PLA (Polylactic Acid: A biodegradable thermoplastic) filament that is pulled from a spool.

Available colors include: **Black, White, Red, Blue, Yellow, Green, Purple, Orange, Grey, Peach, Dark Blue, Pink, & Clear**.

Dimensions of print can be as big as:

Ultimaker S5	330mm wide (13 inches)
	240mm deep (9.5 inches)
	300mm tall (11 inches)
Ultimaker 3	215mm wide (8.5 inches)
	215mm deep (8.5 inches)
	300mm tall (11 inches)

3D printing allows you to create high-resolution models, functioning prototypes, visual aids, real world products, art, and more!

Creating a print:

CAD (Computer Aided Design): Software that allows the user to create 2D and 3D designs on a computer (such as Tinkercad)

Complications in 3D designs when printing include:

A complicated design. **Keep it simple!** **(Be careful of what you find online)**

Any portion of a model that extends out without support, such as overhangs on a house or hollow builds

Limited size, designs must fit on the printer's build platform

After the print is complete you can:

Sand it smooth with sandpaper 80 grit up to 500 grit. (Be sure to wear a mask and goggles. Safety first!)

Prime and paint using hobby primers and paints in a well-ventilated area

Submitting a design:

Download the design as a .STL file.

Visit www.aapld.org and click on the TECHNOLOGY tab then click on USE OUR 3D PRINTER, then click on PLEASE READ OUR 3D PRINTER POLICY

Read the policy and check the box and fill out the form on the next page

The design will be looked over to make sure it is not a weapon, copyrighted material, or a print that might pose a problem while printing.

You will receive an Email with the cost to print, reply back if you agree to pay or not.

Once completed you will be contacted by Email and you can pick up and pay for your project at the Customer Service Desk.

Tinkercad

www.Tinkercad.com

Tinkercad is an easy-to-use online tool for creating digital designs that are ready to be 3D printed into physical objects. Tinkercad works best on the internet browsers Chrome 10 or newer.
On-site lessons will show you how to use Tinkercad.

How to download your design to be printed:

When you're finished with your design click on the EXPORT button found at the top right. Choose if you would like to print the whole design or a selected shape. Then click on the **.STL** button to download. The .STL file is what you'll

IMPORT: Allows you to insert a design that you have created or downloaded from another site to then modify and make your own.
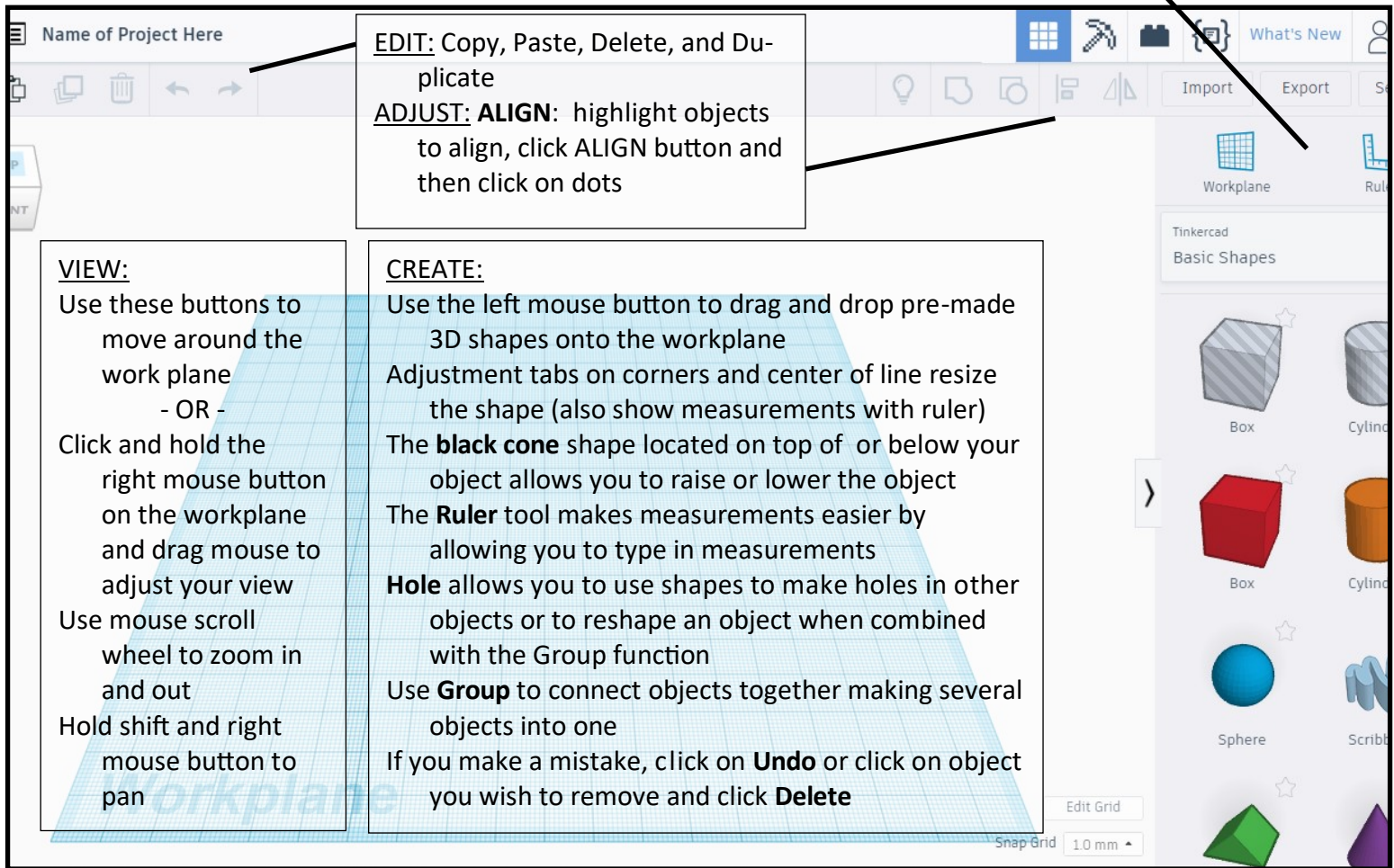
SHARE: Share and work on your project with a friend.

WORKPLANE: Drag the workplane on top of an object to create a new workplane to drag shapes onto.

RULER: Drag the ruler to a shape on the workplane and type measurements into boxes .

BASIC SHAPES: Here you'll find basic shapes, text, letters, numbers, symbols, and community shared shape creations, all of which can be dragged on to the workplane to create anything.

EDIT: Copy, Paste, Delete, and Duplicate

ADJUST: **ALIGN**: highlight objects to align, click ALIGN button and then click on dots

VIEW:
Use these buttons to move around the work plane
- OR -
Click and hold the right mouse button on the workplane and drag mouse to adjust your view
Use mouse scroll wheel to zoom in and out
Hold shift and right mouse button to pan

CREATE:
Use the left mouse button to drag and drop pre-made 3D shapes onto the workplane

Adjustment tabs on corners and center of line resize the shape (also show measurements with ruler)

The **black cone** shape located on top of or below your object allows you to raise or lower the object

The **Ruler** tool makes measurements easier by allowing you to type in measurements

Hole allows you to use shapes to make holes in other objects or to reshape an object when combined with the Group function

Use **Group** to connect objects together making several objects into one

If you make a mistake, click on **Undo** or click on object you wish to remove and click **Delete**

To learn more about our 3D printers, visit our MakerSpace and see some of the designs we have printed and all of the many colors of filament you can choose from.

You can also visit the Ultimaker website to find more information on the printers we have here in the library.
https://ultimaker.com/