Introduction to Adobe Illustrator CC

Workshop Contents
- What is Adobe Illustrator?
- What are vector graphics?
- Why use vector graphics?
- Interface: Tools | Control Panel | Object Controls | Application Frame
- Basic Tools: Selection | Pen | Type | Line Segment | Shape | Rotate | Scale
- Styling: Stroke and Fill | Opacity | Gradients | Stroke Width | Stroke Style
- Advanced Tools: Layers | Alignment | Pathfinder | Trace Bitmap
- Exporting your work
- Resources, Notes, Troubleshooting

What is Adobe Illustrator?
Adobe Illustrator is Adobe’s premier vector graphics editor. Vector graphics are used in print, illustration, web design, and much much more! Illustrator has a versatile range of real-life applications. Although it was one of the first of its kind—originally released in 1987–today there are many alternatives available including Sketch, Artboard, Inkscape, and Xara.

What are vector graphics?
Computers can store images in two different ways, as rasters or as vectors.
- A raster image (aka a “bitmap” image) is a grid of pixels (tiny squares), where each pixel has a specific color/brightness/opacity. Functioning as a mosaic, the grid creates an image when viewed from a distance. Raster images can be edited with applications like Adobe Photoshop, which use multiple grids on top of one another in the form of “layers.” .JPG, .GIF, .PNG, .TIFF, etc. are all raster image files.
- A vector image, on the other hand, is a text file that stores the coordinates of points in space. These points can be linked together to form lines and shapes, and further style information like stroke/color/opacity can be specified. Put simply, vector graphics are a complex set of instructions for drawing an image that are interpreted by the computer. .EPS, .SVG, .AI, etc. are all vector image files.
Why use vector graphics?

Some instance where you’ll definitely want to use vector graphics:

- **You want to print a giant poster of your image.**
  - Because they aren’t static grids, vector graphics can be scaled infinitely larger or smaller, meaning you can print them at any size without risking any loss in quality.

- **You might change your mind about some details later.**
  - Once again, because vectors are “smart” data, you can go in and easily change the color of a line or shape later on, something that would take a long time in photoshop with potentially sloppy results.

- **You want to reuse elements of your design.**
  - Because vector images are comprised of smaller parts, you can easily take some of the icons and shapes that you’ve created and edit/reuse them in another design.

- **You want to tell a robot how to do something.**
  - Vector files are routinely used for CNC routers, laser cutters, embroidery machines, and many more applications where robots need to follow a set of 2-dimensional coordinates.

Interface

- **Tools:** To the left you should see the toolbar featuring a variety of icons, each of which is a particular tool.

- **Object Controls:** To the right you should see another panel of icons. Each of these gives you access to control a particular facet of an object (color, stroke, appearance, etc.)

- **Control Panel:** Across the top is the control panel, which changes based on the type of object you have selected or the tool you are using. When you have an object selected, it essentially acts as a truncated version of the Object Controls to the right.

- **Application Frame:** This refers to the actual middle space where your open documents are kept in a tabbed interface. Each tab will display the filename, the percentage zoom, the color mode, and the display mode.

- **Advanced Interface**
  - **Rulers:** Clicking View>Rulers>Show Rulers will display a ruler down the left side and a ruler across the top. By clicking on a ruler and dragging into the document, you can position a guide, VERY useful for when you are trying to align compositional elements.

  - **Display Modes**
    - **Preview:** This is the default display mode in Illustrator. It approximates how the image will look in print or as a raster but it is not exact (type may look slightly off as a result). You can enter Preview mode by clicking View>Preview.
- **Outline**: This mode displays everything as only an outline, all the same width, without any styling whatsoever. Outline mode is very useful for when you are working with complex shapes because it shows you the real “data” underneath your drawing. It is also useful for very big documents with many objects, because it requires less processing power. You can access Outline mode through View>Outline.

- **Artboards**: If you create a new document by going to File>New… and clicking “OK”, you should be presented with a white page in the middle of the screen. This is an Artboard. You can think of it like a piece of paper that you can draw on. Documents can contain multiple artboards, and they can be resized at will. By default, it will give you an 8.5x11” artboard, but you can change this in the New Document dialogue window.

### Basic Tools

- **Selectors**
  - **Selection Tool**: The selection tool is the **black cursor** that is used for selecting any line or shape. By clicking on an object and dragging it you can reposition it on the artboard.
  - **Direct Selection Tool**: The direct selection tool is the **white cursor** that is used for selecting nodes, handles, members of groups, etc.

- **Pen Tool**: The pen tool resembles the end of a fountain pen and is used to draw lines (known as **paths**) by plotting a series of points (known as **nodes**). This is one of the most useful tools in Illustrator, though it can also be the most difficult to master.
  - Clicking once will create a single node, clicking again will create a second node (and therefore a straight line between the two nodes).
  - Clicking and dragging, you can pull out **“handles”** from a node which control how acute or obtuse a curve is. A node with no handles will create a sharp angle.
  - By connecting the beginning of a line to the end of a line you can create a discreet, “closed” shape.
  - Keep in mind that you can later return to a path and move nodes and handles with the **Direct Selection Tool**. In fact, it’s usually best to draw a general shape first and then fine tune it.

- **Type Tool**: The type tool is used for adding text to a drawing and works essentially the same as the type tool in Photoshop and most other drawing applications.
  - **Note that to actually rotate type (and not the text area itself), you will need to use the rotation tool!**

- **Line Segment**: The line segment tool draws only a straight line. Simply click and drag.

- **Shape Tools**: The default is the **Rectangle Tool**, but click and hold to reveal all the other shapes you can make. Clicking and dragging a shape tool will make a shape in its most recent configuration to whatever size you drag.
However, by just clicking you will be presented with a dialogue where you can enter exact specifications for a shape.

- **Rotate/Reflect/Scale Tools**: Once you’ve selected an object with the Selection Tool you can use these to alter the objects position and shape by clicking and dragging. The rotate tool will rotate an object, the reflect tool will flip an object, the scale tool will enlarge or shrink an object, and the shear tool skews an object along the horizontal or vertical axis.

- **Eyedropper Tool**: This works the same as the eyedropper tool you may know from Photoshop or almost any other graphical editing application. You simply click on a shape and it will select that color. If you select an object and then use the eyedropper tool on an object of a different color, it will change your selected object to be that color.

- **Artboard Tool**: With this tool selected, you can resize the existing artboards the same way you would resize any other objects. You can also create a new artboard by clicking and dragging.

**Note**: Whenever a tool has a little white triangle in the bottom right corner, that means that you can click and hold for it to reveal more sub-tools.

**Styling**

- **Stroke**: For a line, this refers to the appearance of the line itself, for a shape, “stroke” is the outline around it.
- **Fill**: A shape’s “fill” is the color of the shape itself.
- **Opacity**: Opacity refers to how opaque or transparent something is.
- **Gradients**: A gradient is a transition between two or more colors.
- **Stroke Width**: The thickness of a line.
- **Stroke Style**: The variation of a line’s thickness. These can be used to give a more natural feel to a line.
- **Character**: Used for typography, the character settings give you complete control over how a typeface behaves, including kerning, tracking, horizontal scale, vertical scale, rotation, etc. You can even highlight a single letter and adjust the settings for it individually.

**Advanced Tools**

- **Layers**: Layers are a useful way of organizing the different parts of your drawing, however, keep in mind that they are not as predictable as they are in Photoshop. For instance, groups are treated as single objects so they must exist on a single layer, so if you group objects from multiple layers, they will all get pulled onto one.
- **Alignment**: One of the most useful tools in Illustrator, the alignment options let you arrange objects linearly. First you must select multiple
objects (either by holding shift and using the selection tool to click on each one or by clicking and dragging over them), simply click the appropriate alignment icon.

- **Pathfinder:** Another hidden gem, the pathfinder tool lets you combine objects or use objects to cut into other objects in various ways. **Note: to use a shape to cut into another shape the former must be above the latter.**

- **Image Trace:** The trace bitmap tool uses an algorithm to analyse a raster image and “trace” a vector on top of it. It can be used with varying degrees of success, but keep in mind that it uses a lot of processing power and in most cases it is not a “quick fix.” It’s best used with very simple, high-contrast images. **Note: After you’ve traced a bitmap you will need to click “expand” in the Control Panel and then Ungroup the tracing in order to manipulate the shapes generated.**

### Exporting Your Work

In order to share your finished product online, you’ll need to convert it into a raster image.

1. Click **File>Export**
2. Choose file name, location, and file type (PNG is recommended for optimum quality)
3. Click **“Export”**, then choose resolution (72dpi for web, 300dpi for print) and whether you want the background to be transparent or not (it won’t matter for print, but it will matter for web).

Alternatively, you can also go to **File>Save for Web**, which will present you with roughly the same options in a slightly more robust interface.

### Resources, Notes, Troubleshooting

- **Weigle Information Commons** staff are here to help you! Please don't hesitate to contact the WIC Desk (215-746-2660) or the Media Lab (215-746-2661), or email us at wic1@pobox.upenn.edu. We can meet with you by appointment or walk-in.

- Our subscription to **Lynda.com** is a great way to explore many of these tools (and more) in depth.

- **Book a group study room** in the Weigle Information Commons (Rooms 116-120 are best). Or, **rent equipment** from the Vitale Digital Media Lab.