Cameras in Maya

Introduction
Maya has three default camera types, accessible from Create – Cameras. These are Camera, Camera and Aim, Camera, Aim and Up.

We won’t deal with the Stereo Camera or its rig in this handout.

Camera’s very straightforward and quite suitable for a static scene, though it is more difficult to work with than the other two when it comes to animation. These are its main controls (the first tab is the same list of attributes you get for any object; change the name and, possibly, the icon scale here):

First, the camera name – although you’re better naming it in the first tab as this name can be independent of the other and that may be confusing. Under the Camera Attributes second tab, the first thing to notice is the drop-down list of controls. Here you can change it to either of the other two types of camera, so there’s no need to use either of those options.
Note the **Angle of View** and **Focal Length** controls next. These are inter-related, as the angle of view is a function of the focal length. Some people prefer to use the first, however, so Maya gives you that option. However only the Focal Length can be animated (by right clicking on the value and setting a key). Note that you should avoid using a camera with a very small angle, less than five degrees, as Autodesk advises it may produce depth-fighting artifacts in the renders. They suggest using an Orthographic camera for a similar look (toggle this option with the Alt+P shortcut). An Orthographic camera is similar to a scanner, in that it has an infinite focal length and produces images that are like architects’ elevations, without distortion.

**Camera scale** basically multiplies the focal length without changing the angle of view and works as a kind of non-physical dollying in or out.

**Clip planes** define the range of distances from the camera that will be rendered. If you have a large (or very small) scene and find not everything appearing then one of these values may be the reason. Again, these values can be animated.

The **Frustum Display Controls** just show or hide the shortened pyramid wireframe that shows the camera’s angle of view as well as the near and far clip planes.

The **Film Back** controls are where things start to get complicated. This is where you can define professional output formats along with the size of your camera aperture (for depth of field effects). We will not be covering these in CMPM25; just use simple HD (1920x1080) or half HD (960x540) resolutions.

There’s one more control that’s worth looking at in this basic guide and that’s the **Depth of Field** rollout under Film Back. Use Edit – Duplicate Special to make an array of items like this one, then adjust the depth of field settings to get a result like this to focus on one out of the many objects. Remember that you’ll need a large aperture for this, around 1-2 inches. Small apertures give a large depth of field, but in that case – as rendering engines naturally show everything in sharp focus – just turn off the Depth of Field option.

There is more detail on this in the Depth of Field handout (in preparation).
Finally, to change the camera view in the 3D Window, just right click on the first icon in the window menu bar to get a drop-down list like the one on the left.

For a list of camera terms, go to
https://users.soe.ucsc.edu/~yonge/02_PDF_guides/010_CameraTerms.pdf

Chris Yonge  20181019