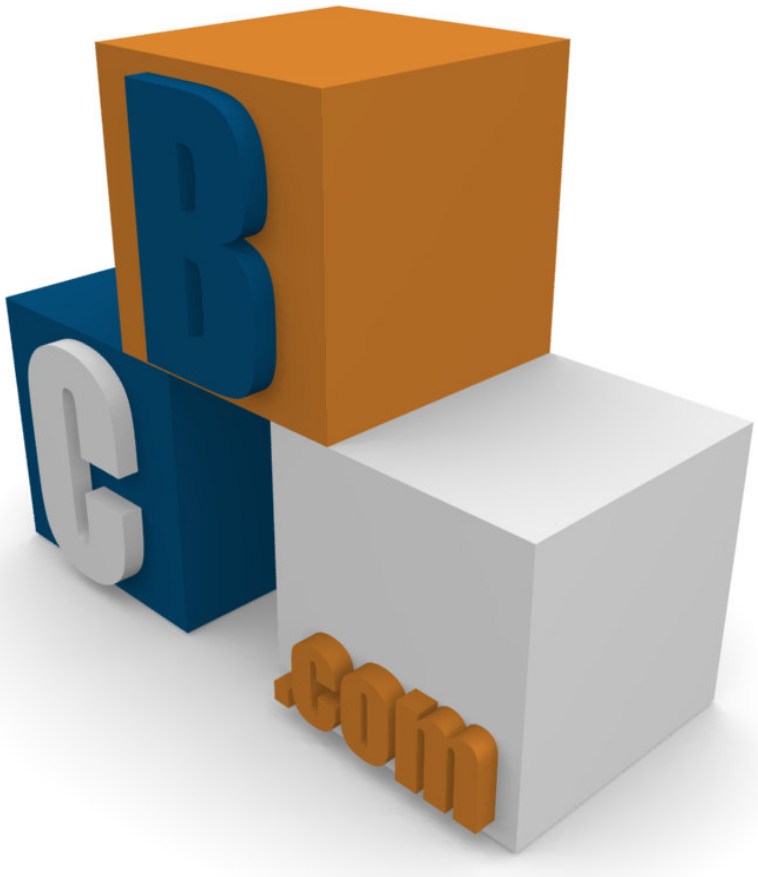
BlenderCourse

for Blender v2.42a

Basics

Bas van Dijk

v0.2.2 – November 2006



Preface

BlenderCourse teaches you about 3D modelling and provides you short tutorials about a specific subject. The main thought is: Just do it! During different courses you learn various techniques. If necessary there is a small instruction, but in my opinion you learn best when doing the exercise by yourself.

BlenderCourse is intended for everyone who can use a computer. This means you understand terms as "double click" and "tab-key".

You do not need any 3D-modelling knowledge; the terms used will be explained during the different courses.

If you see an error or something is not clear, I want to ask you to contact me through feedback@blendercourse.com. More Blender Course material can be found at http://www.blendercourse.com.

I would like to thank Erik van der Kouwe for correcting this document.

Have fun with Blender Course!

Bas van Dijk

Wijdewormer, the Netherlands, November 2006

Introduction

During these lessons we are using the 3D modelling tool Blender 3D, but what is this for kind of tool? With Blender you can create 2D- and 3D-images and it is possible to make animations/movies.

The "Appendix 4 – Blender gallery" is a small showcase about the possibilities of Blender.

Before you can start with a lesson you first have to read small a piece of text which describes the techniques of the lesson. At the end of every lesson is an image of "The challenge". The idea is that you can reproduce the image by using the techniques learned during the lesson. The last two chapters do not have a challenge because these are about animation.

All Blender files are provided with this BlenderCourse. You can find these in the "Course Material" folder.

This document is using several symbols. Below is the explanation of these symbols:

- An arrow (➔) means instruction. This means you have to follow the step after it.

  Example: ➔ Click with the right mouse button on the object.

- A text between < and > means a key on the keyboard.

  Example: Press <Enter> to confirm the operation.

- A combination of more than one key will be written with the plus sign (+).

  Example: Press <Alt> + <F4> to exit the program.

- A button on the screen will be written between [and].

  Example: Click at [OK] to close the window.

- If there is an arrow (→) between two words, this means a click sequence in a menu.

  Example: Choose File → Save

- A new technique or additional information will be written inside a grey box.

  Example:

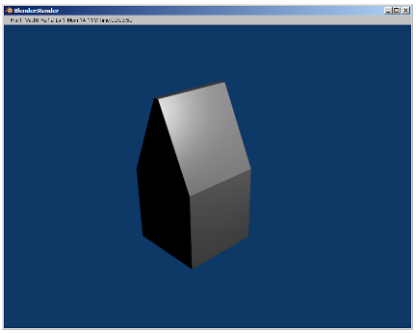
  This is how this technique works.

Index

Results per Course

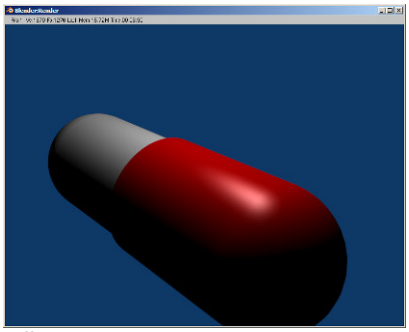
Below are all the results from the different exercises in this BlenderCourse.

Course 1 – Mesh en vertex editing I



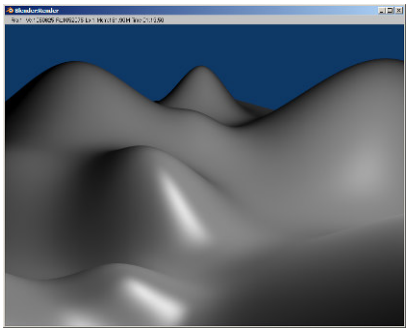
House

Course 2 – Mesh en vertex editing II



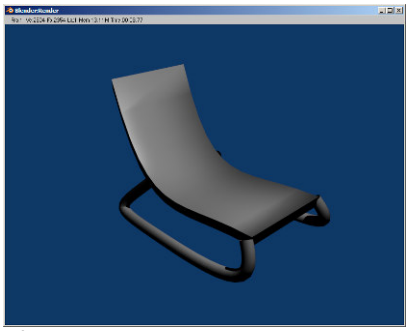
Pill

Course 3 – Render options en Proportional Editing



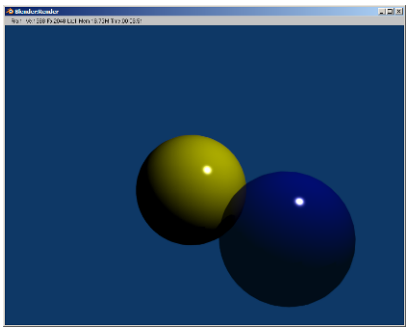
Mountain scenery

Course 4 – Curves

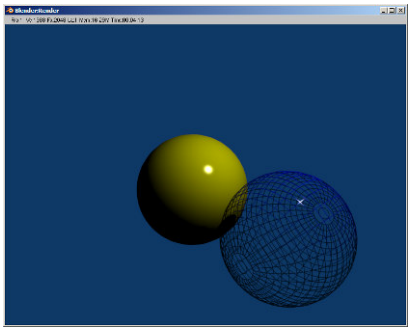


Chair

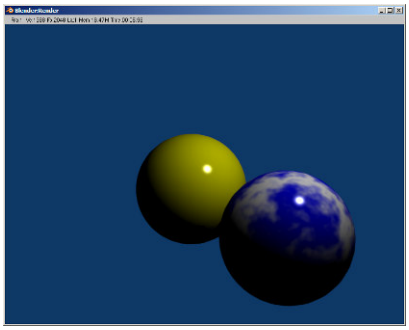
Course 5 – Materials en light



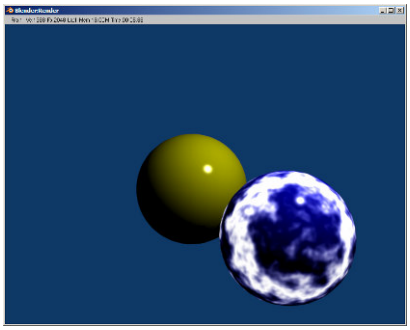
Transparent spheres



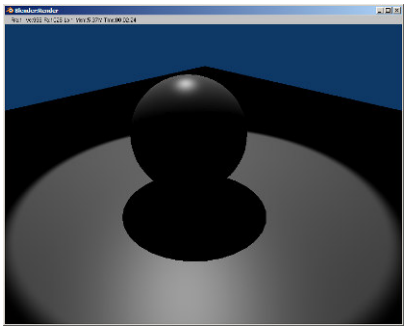
Wireframe



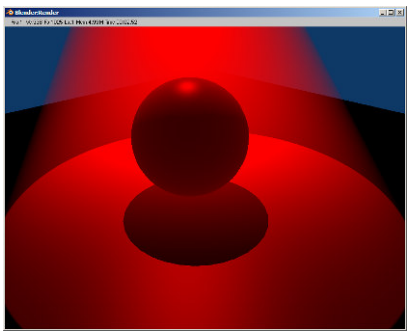
Marble texture



Emitting Marble texture



Spotlight



Red Halo

Course 1 – Mesh en vertex editing I

For all lessons in BlenderCourse it is assumed that you have installed Blender (Appendix 1 – The installation of Blender) and configured according to "Appendix 2 – Configure Blender". If have not done this already please do so.

Meshes and vertices

A 3D-object, like a cube, sphere or cylinder is called a **mesh** (figure 1). This cube consists of eight points. One of these points is called a **vertex** (plural vertices) they are red marked in figure 2.

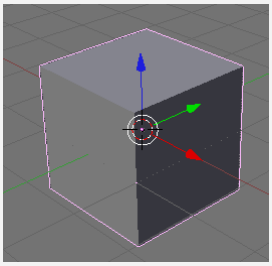


figure 1

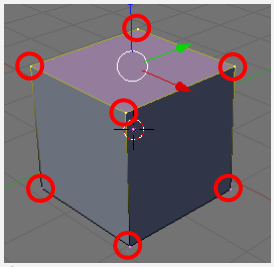


figure 2

In case of the cube four vertices make a face. Each face has a minimum of three vertices.

Views and axis

In 3D space we are using three axis: X-, Y- and Z-axis. In the bottom left of each view (marked red in figure 3) is shown in which direction these axis are pointing. Figure three is a screenshot of the front-view. Here you can see that the Z-axis is the vertical one and the X-axis the horizontal one.

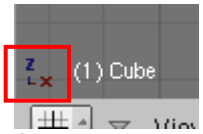


figure 3

Rendering

In Blender we are working with some kind of wireframe (figure 4). This wireframe is not the actual result of your design (figure 5). The wireframe needs to be "translated" into an image, this process is called rendering. During this process the CPU calculates things like light, shadow, reflections etc.

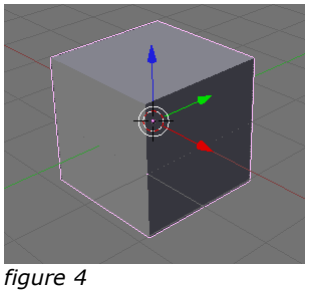


figure 4

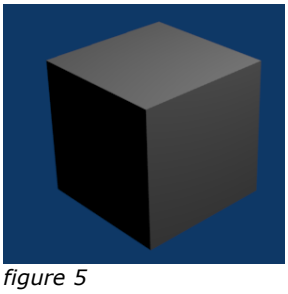


figure 5

A house

During this lesson we are going to build a simple house as shown in figure 19. There is a image below (figure 6) to remind you about the names of the different views.

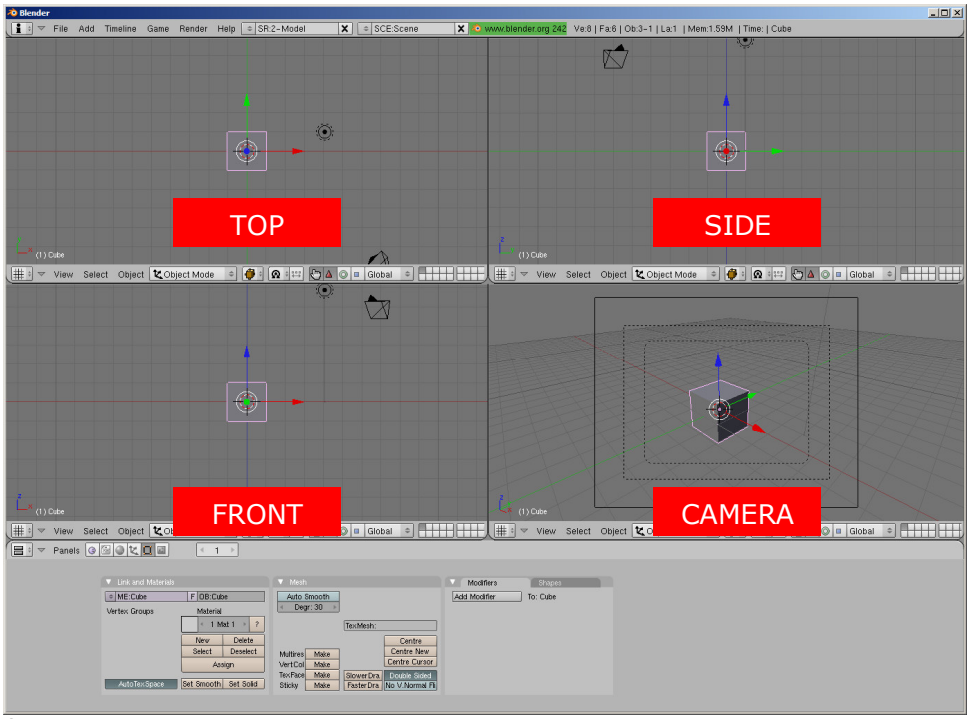


figure 6

➔ Start Blender.

➔ Move with your mouse cursor to the centre of the cube in the "Front View" and click with your right mouse button to select.

In the bottom left of the view you can see which object you have selected (marked in red in figure 7).

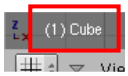


figure 7

The horizontal line in the Front View is the 0-line. The cube is located half below this 0-line. The next steps show you how to move the cube upwards.

➔ Move with the mouse cursor to the centre in the Front View and press <G> (move), you can now move the cube (move the mouse around and see what the result is in the other views).

➔ Press <Esc> to cancel the movement; the cube is placed back to its original location.

You can see moving a cube around is not easy. You can define the axis where the object needs to move along. In order to do this press <G> and the letter of the axis which you like to lock (<X>, <Y> or <Z>).

If you hold down <Ctrl> during the movement you make sure the object moves along the grid.

➔ Move back with your cursor in the centre of the cube in the Front View and press <G> for move and <Z> to lock the Z-axis.

You can now see the axis which you have locked, in this case the light blue Z-axis (figure 8).

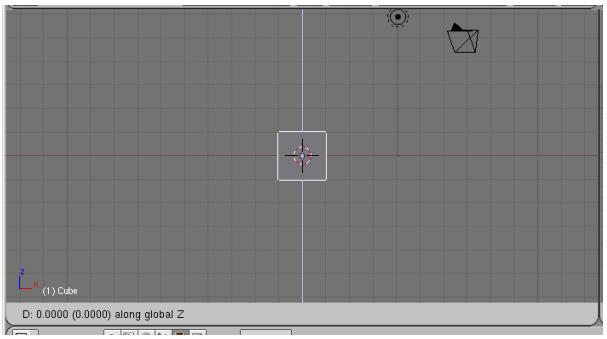


figure 8

➔ Now hold <Ctrl> down while moving the cube upwards till it is on the 0-line.

➔ Click with your left mouse button or press <Enter> to confirm the movement.

If everything worked out well you screen should look like figure 9.

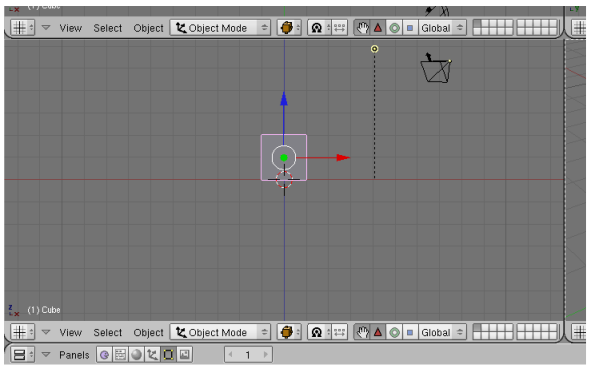


figure 9

This cube is the basis of our house, we only need the roof. In order to build the roof we need another cube on top. To achieve this we are about to duplicate the old one.

➔ Select in the Front View the cube (move cursor to the centre of the cube and press the right mouse button).

➔ Press <Shift> + <D> (duplicate object).

You can now move the duplicated cube freely around.

➔ Press <Z> to lock the Z-axis.

➔ Hold down <Ctrl> and move the cube till it is on top of the first one.

➔ Click with the left mouse button or press <Enter> to confirm the movement.

If everything worked out well you now have two cubes as shown in figure 10.

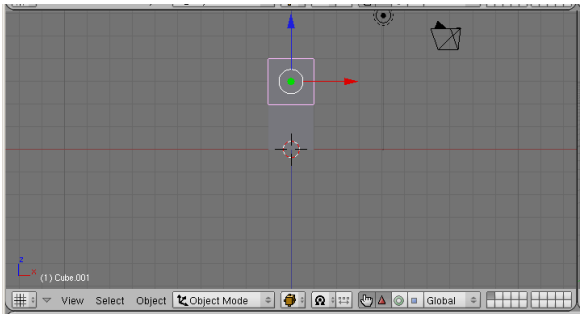


figure 10

The cubes fall almost out of sight. If you use the scroll wheel (<Scrl>) when holding <Ctrl>, <Alt> of <Shift> you can change this. This only applies to the view in which you are currently working.

<Alt>	+ <Scrl>	= Zoom view in and out
<Ctrl>	+ <Scrl>	= Move view horizontal
<Shift>	+ <Scrl>	= Move view vertical

➔ Move your cursor in the Front View and hold <Shift> while moving the scroll wheel downwards till the cubes are in the middle of your view (figure 11).

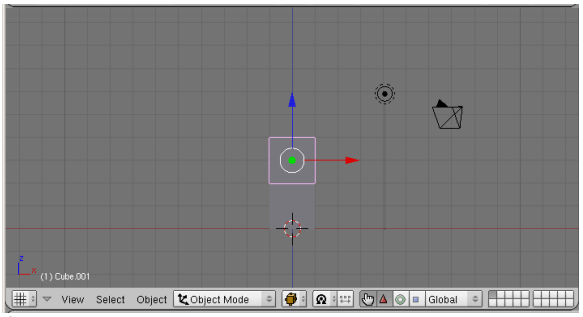


figure 11

Blender uses two different modes: **Object Mode** and **Edit Mode**. In Object Mode you are working with the object as a whole. In Edit Mode you can edit the object per vertex or muliple vertices.

You can switch between these modes by pressing <Tab>.

➔ In the Front View select the top cube.

➔ Press <Tab> for switching into Edit Mode.

You have now switched into Edit Mode. You can know this because of all the visible vertices and the text "Edit Mode" in the view menu bar (red marked figure 12).

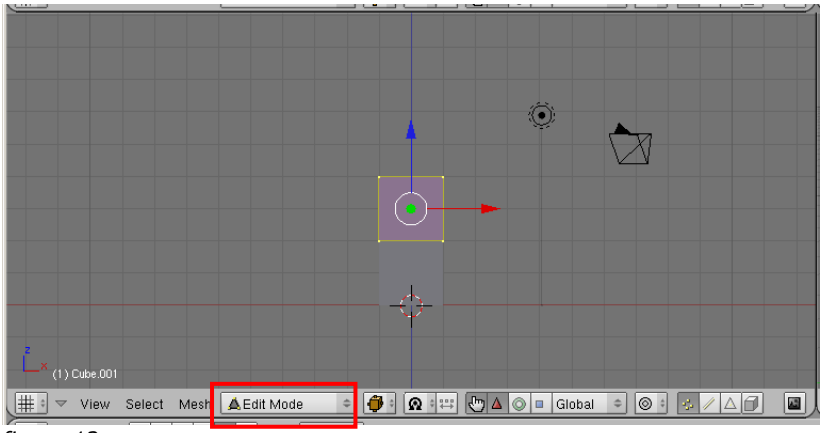


figure 12

In the next steps we are going to make the roof sharp.

- ➔ Press <A> to deselect all vertices.
- ➔ Press <B> for block selection and drag a rectangle around the topmost two vertices (figure 13).

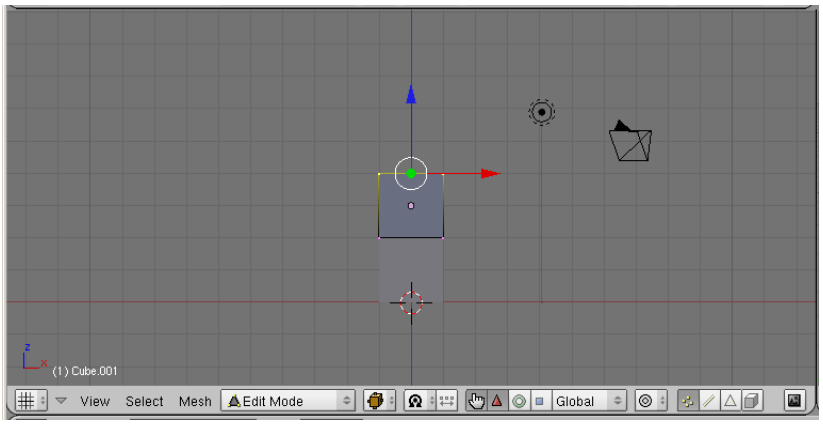


figure 13

You can scale objects by pressing <S>, to rotate you can press <R>. Also with these operations you can use <X>, <Y> and <Z> to lock the axes.

- ➔ Move your cursor in a corner of the Top View (top left) and press <S> followed by <X> to lock the X-axis. If we did not lock on the X-axis we would have a pyramid.
- ➔ Move your cursor to the centre of the view till the roof is getting sharp.
- ➔ Confirm your operation by pressing the left mouse button or press <Enter>.

If everything worked out well, you now have a house with a sharp roof just as (figure 14).

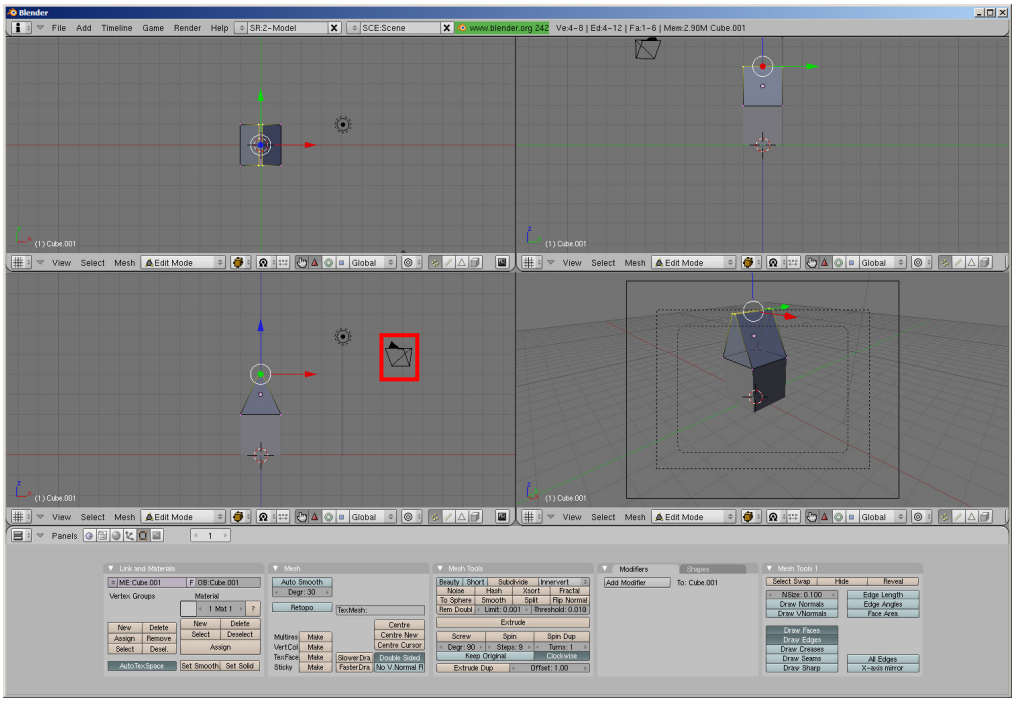


figure 14

As you can see the house falls partly out of the camera view (bottom right). We are going to correct this.

➔ Press <Tab> to switch back to Object Mode.

➔ Select (with the right mouse button) the camera in the Front View (marked red in figure 14). Its colour changes to purple.

➔ Press <G> followed by <Z> and move the camera upwards till the whole house shows up in the Camera View.

➔ Confirm your movement by pressing the left mouse button or press <Enter>.

You screen should now look like figure 15.

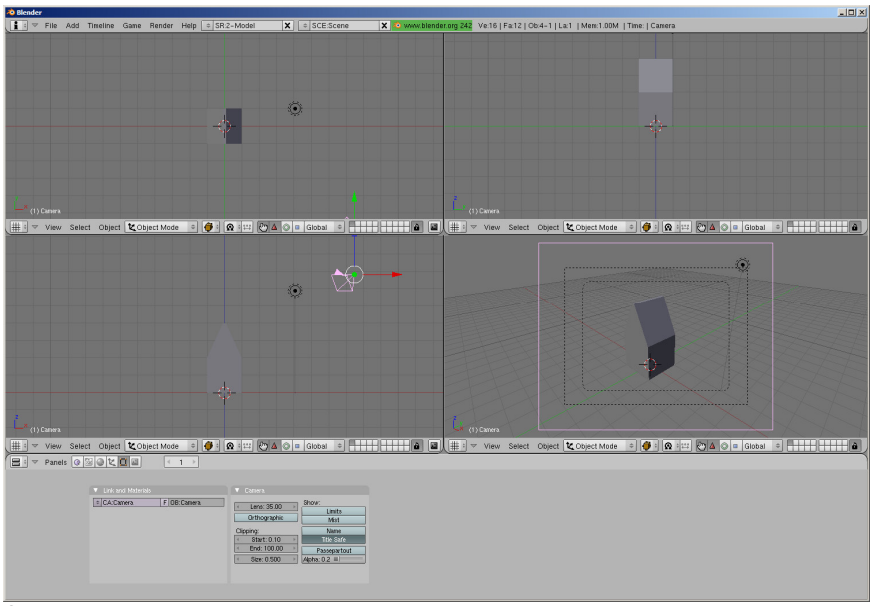


figure 15

It is time to save our work.

In Blender you can save by pressing <Ctrl> + <W> or choose File → Save. The first time Blender prompts you for a filename, every next time your file is overwritten automatically.

➔ Move you cursor in the Front View and press <Ctrl> + <W>.

The Front View changes into a save dialog (figure 16).

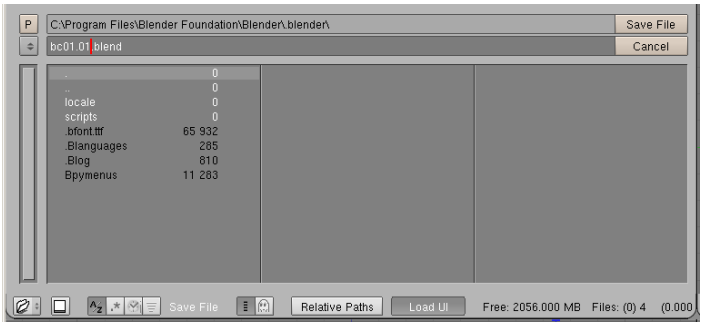


figure 16

➔ Change untitled.blend into bc01.01.blend and press <Enter>.

With the button marked in figure 17, you can change the drive letter.

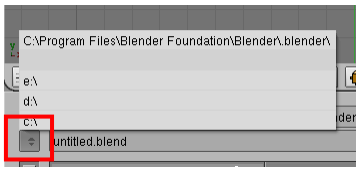


figure 17

➔ Browse to the folder in which you like to save your file and press [Save File].

Your file is saved; you can see this in the window title of Blender (figure 18). This is the filename in which your file is saved.

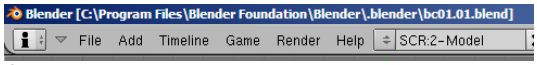


figure 18

Finally we are about to "render" our house. As described earlier, this operation transforms our wireframe into the final image.

➔ Press <F10> to open the Render Panel (figure 19).

figure 19

➔ Press [Render] or <F12> to start the rendering process.

A window appears, which shows the rendering process (figure 20).

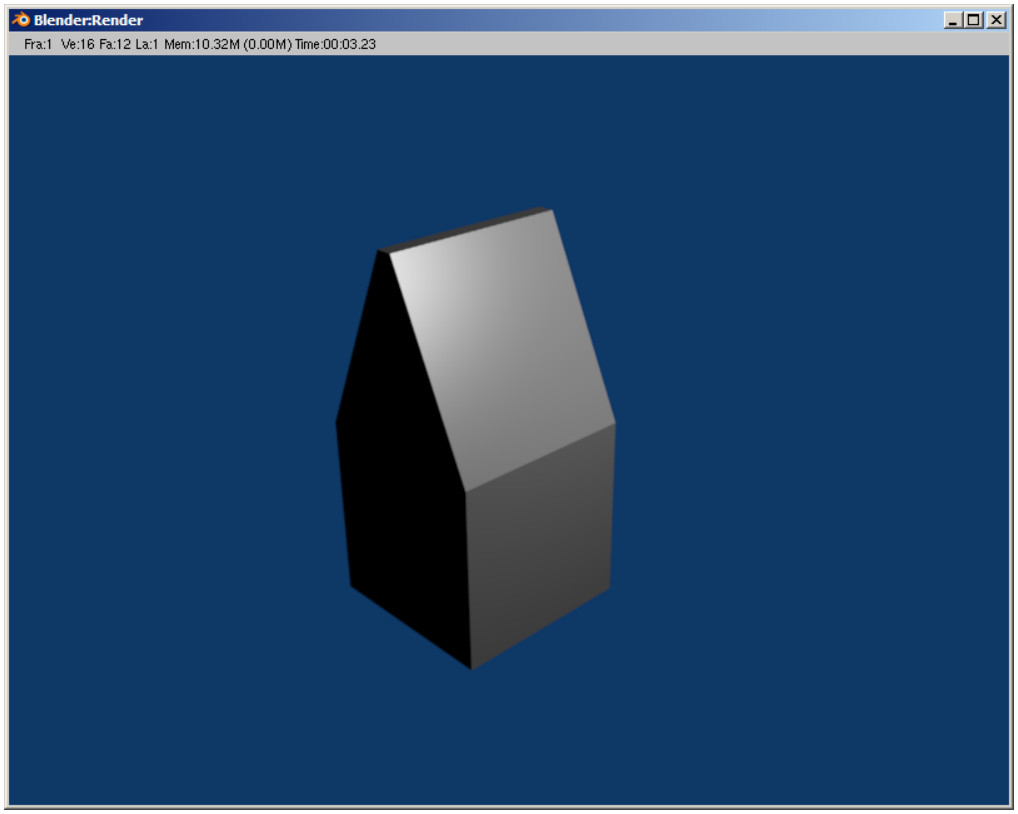


figure 20

The challenge

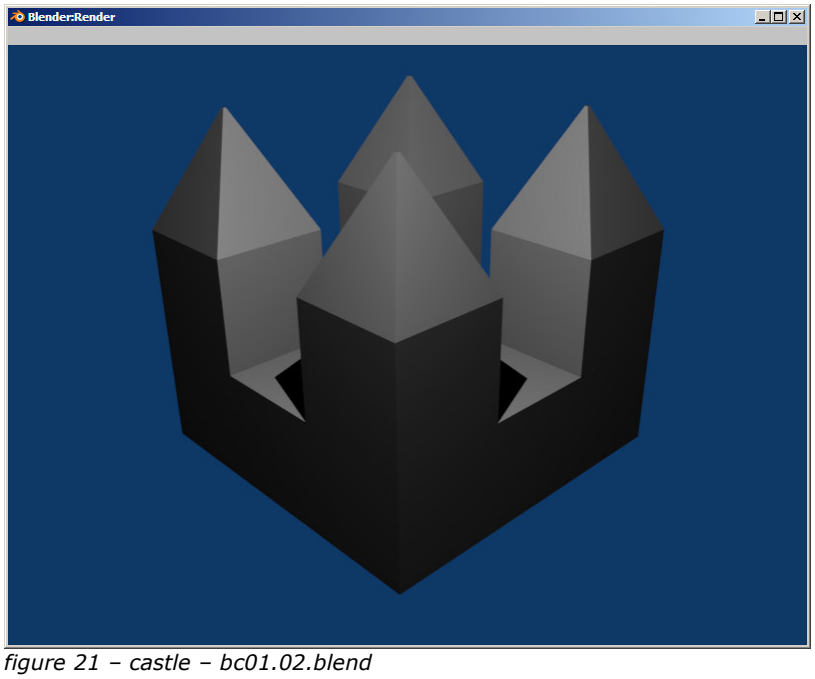


figure 21 – castle – bc01.02.blend

Skills from this course

- Moving, rotating and scaling objects
- Locking axis
- Editing vertices of an object
- Duplicating objects
- Saving files
- Rendering scenes

Course 2 – Mesh and vertex editing II

In this course we are continuing with editing meshes and also learn some Blender meshes.

Basic meshes

Before you start drawing your 3D-model, you need to check of which basic meshes your object consists. In the previous assignment our basic mesh was the "cube".

Blender contains the following basic meshes: Plane, Cube, Circle, UVSphere, Icosphere, Cylinder, Tube, Cone, Grid and Monkey.

Figure 1 shows all the rendarable meshes. A circle for example is not visible when rendering.

The mesh Monkey is the mascotte of Blender and is named Suzanna. You can use this mesh as a ready-to-use mesh.

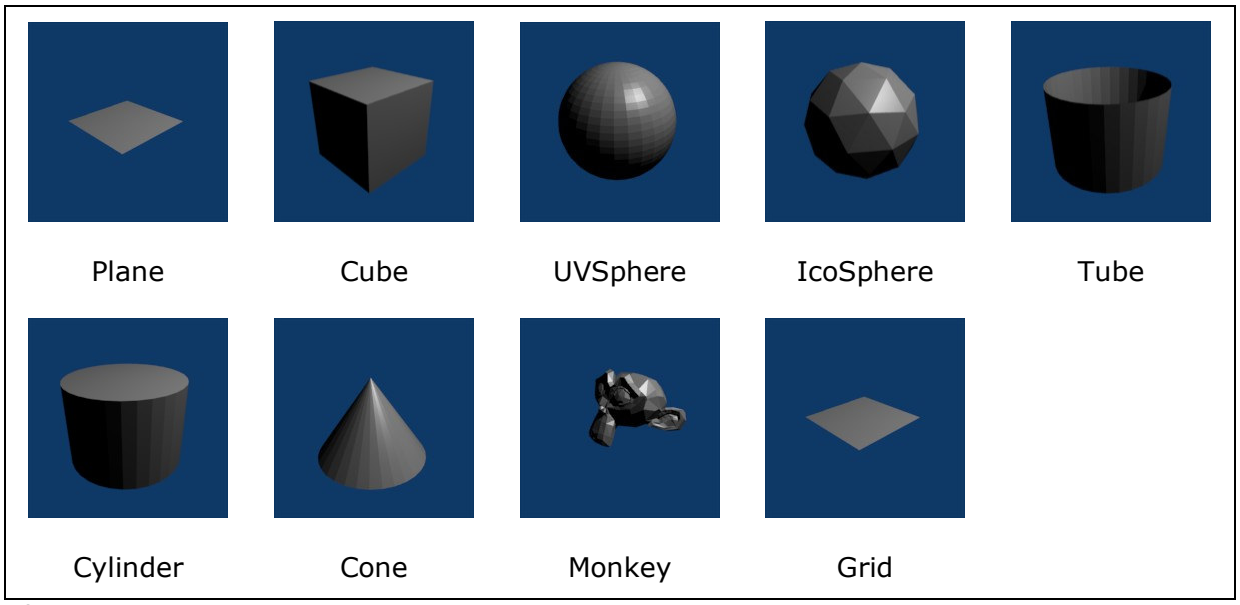


figure 1

Pill

In this chapter we are about to make a pill (figure 2).

figure 2

The First question we can ask ourselves could be: which basic meshes are we going to use for making this pill? The most logical answer would be a Cylinder with two UVSpheres on the end. Instead we are going to use only one mesh: the UVSphere.

➔ Start Blender.

➔ Choose File → New (figure 3).

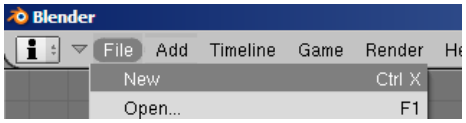


figure 3

➔ Click with the right mouse button on the cube to select.

➔ Press <X> to delete the cube.

A menu appears (figure 4).

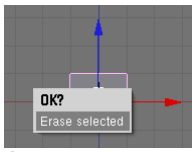


figure 4

➔ Choose [Erase Selected].

The cube is deleted now.

➔ Move the mouse cursor to the centre of the Top View.

➔ Press <Spacebar>.

A menu appears.

➔ Choose Add → Mesh → UVsphere (figure 5).

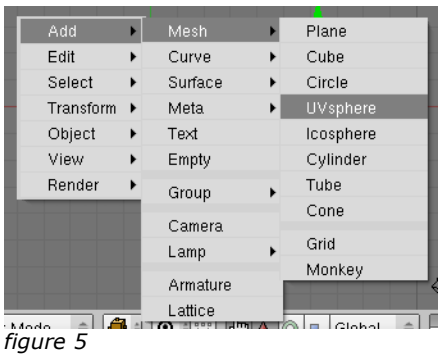


figure 5

A prompt appears asking you the number of segments and rings.

➔ Press <Enter> twice to confirm the standard number of segments and rings.

You have now added a sphere to your scene (figure 6). We are now going to make a half of the pill.

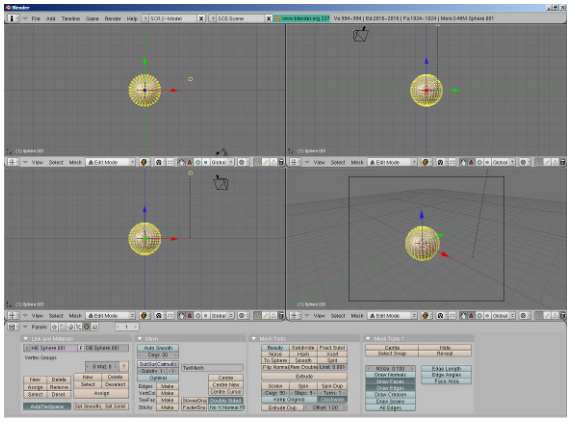


figure 6

You have been switched into Edit Mode automatically and can see the yellow vertices of the sphere.

Working in just a quarter of the screen is sometimes not practical. You can maximize a view by moving your cursor into a view and press <Ctrl> + <↑>. With <Ctrl> + <↓> you are switch back.

➔ Maximize your Front View by pressing <Ctrl> + <↑>.

The Front View is maximized now (figure 7).

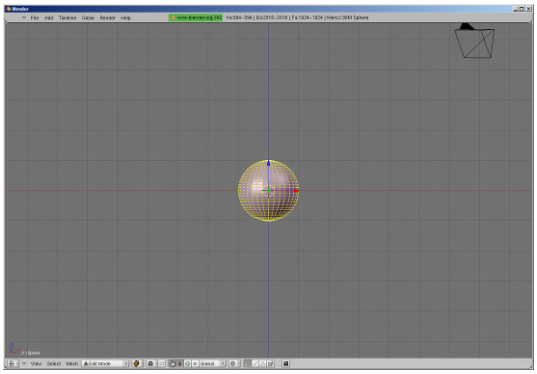


figure 7

➔ Move your cursor to the centre of the Front View (bottom left) and Zoom in (Scrollwheel up) till the sphere takes about 25% of the view. (figure 8).

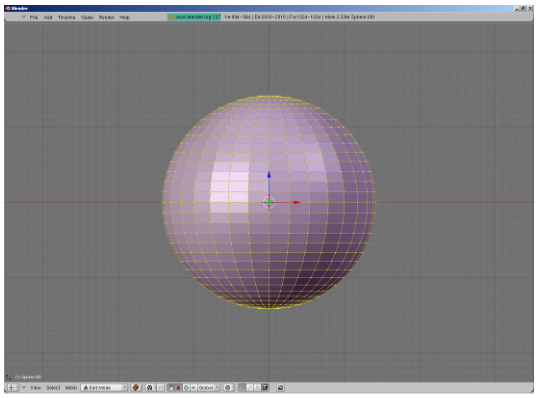


figure 8

➔ Click on the brown box icon in the view menu bar and choose [Wireframe] (figure 9).

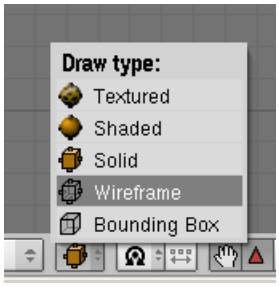


figure 9

In order to select multiple vertices we are using **Block Select**. You use block select by pressing <B> while in Edit Mode. If you hold down your left mouse button, you can drag a rectangle around the vertices. All vertices in this rectangle will be selected (yellow coloured are the selected ones).

In Edit Mode you can press <A> to select or deselect all vertices.

➔ Press <A> to deselect all vertices.

➔ Press <B> and drag a rectangle around all the vertices right from the centre-line (figure 10).

⚠ Do not select the centre line itself, only the vertices on the right side of it!

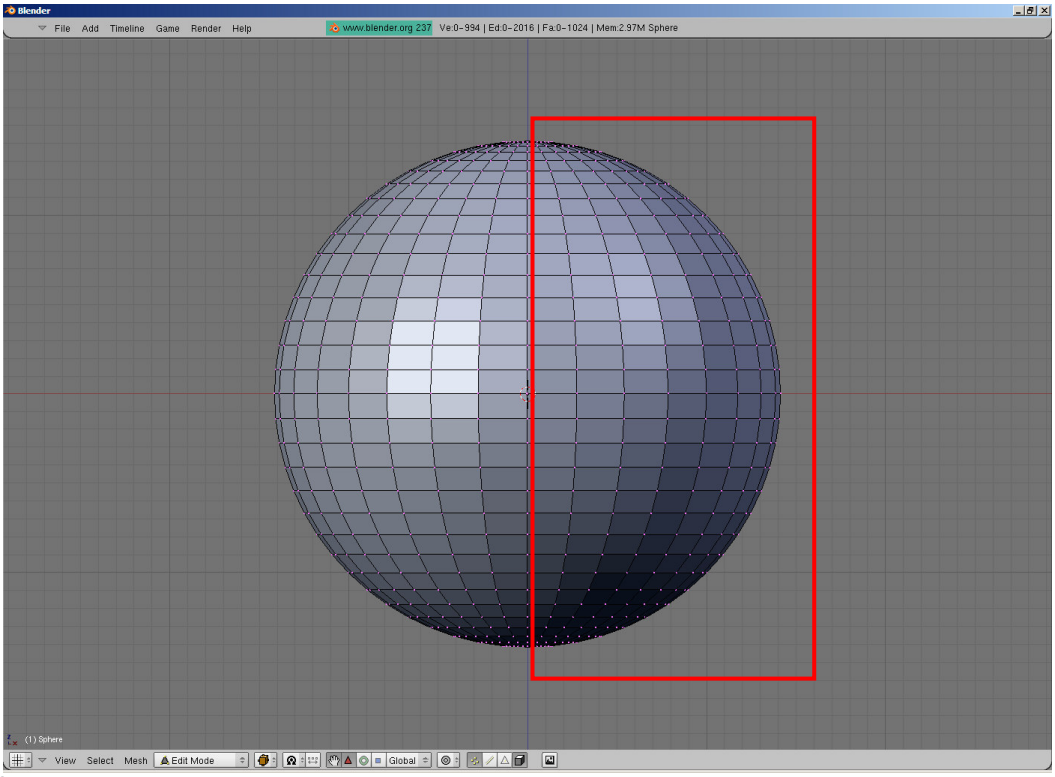


figure 10

This should be the result after your selection (figure 11).

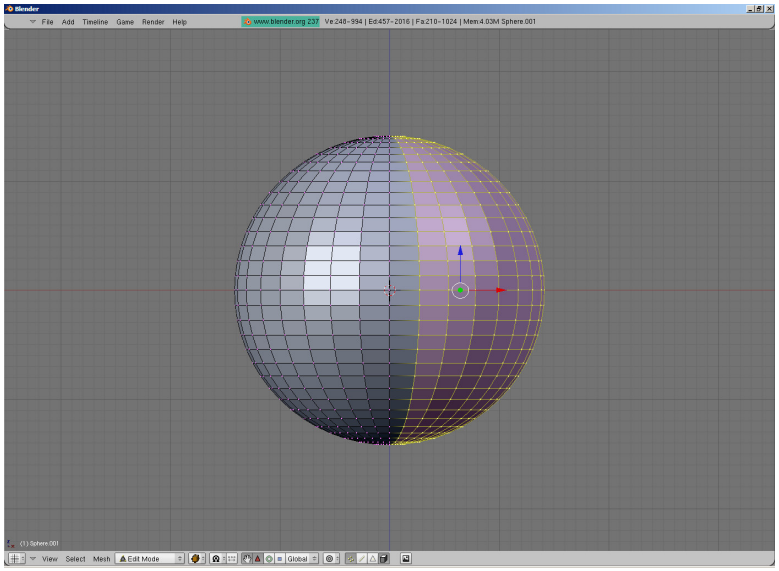


figure 11

➔ Press <X>.

A menu appears (figure 12).

figure 12

➔ Choose [Vertices].

You are now seeing half a sphere (figure 13).

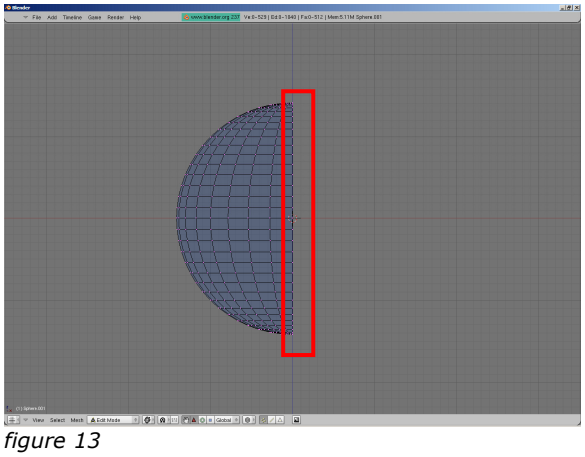


figure 13

➔ Press <Ctrl> + <↓> to see all view again. We continue working in the Front View.

➔ Select with <B> de rightmost row of vertices (marked red in figure 13).

➔ Press <E> for Extrude.

A menu appears (figure 14 or figure 15).

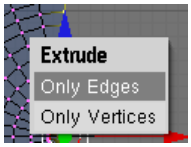


figure 14

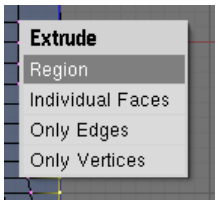


figure 15

➔ Choose [Only Edges] or [Region].

➔ Press <X> to lock the X-axis.

➔ Move the mouse to the right.

In the bottom left of the view is displayed how for the "pill" is stretched (figure 16).

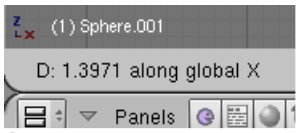


figure 16

This number consists of a lot of decimals. To adjust till 3.0000 is quite hard.

➔ Press <ESC> to cancel the Extrude operation.

➔ Press again <E> → [Region].

➔ Press <3>.

The bottom left of the view menu bar shows 3 (figure 17).

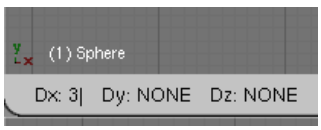


figure 17

➔ Press <Enter> to accept the Extrude operation. You are now have half a pill (figure 18).

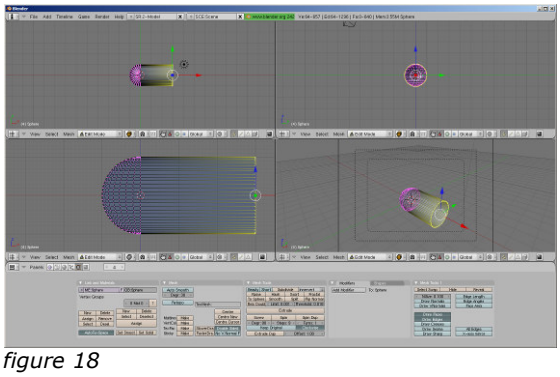


figure 18

In the Camera View (bottom left) you can see the pill is still hollow (figure 19).

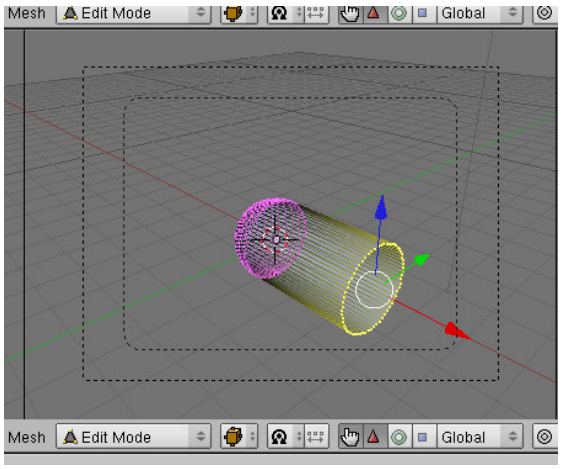


figure 19

➔ Click in the view menu bar of Front View (bottom left) at [Mesh].

A menu appears (figure 20).

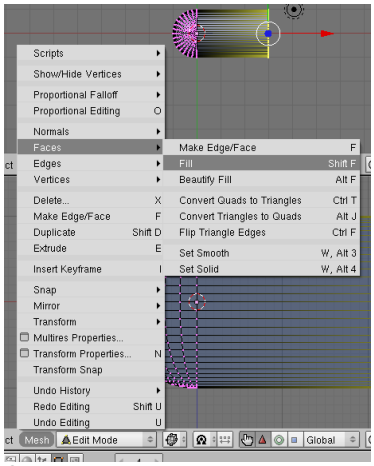


figure 19

➔ Choose Faces → Fill (<Shift> + <F>).

The Camera View (bottom right) shows a "closed" pill now (figure 21).

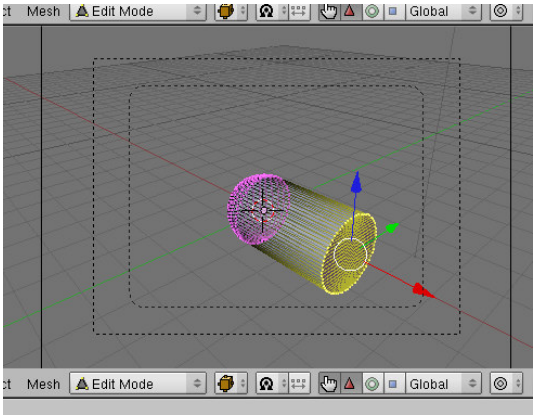


figure 21

➔ Save your work as bc02.01.blend (<Ctrl> + <W>).

The left part of our pill is ready, now we are continuing with the right part.

➔ Use <Ctrl> + Scrollwheel in the Front View for moving the pill to the left side of the screen (figure 22).

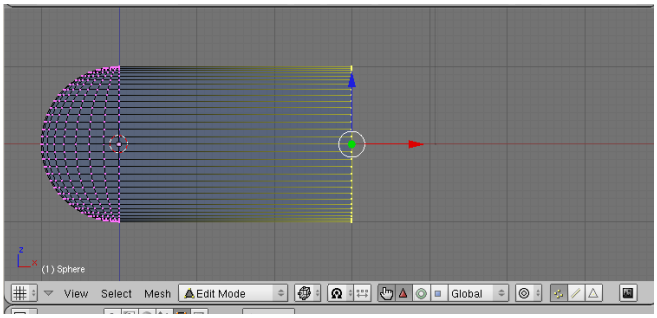


figure 22

➔ Press <Tab> for Object Mode.

➔ Press <Shift> + <D> to duplicate the mesh.

➔ Press <Enter> to confirm the duplication.

The pill is now duplicated, but the duplications are still on top of each other.

➔ Press <R> for rotate.

➔ Type <1> <8> <0> to rotate the half pill 180 degrees and press <Enter>.

In the Front View there are two half pills over each other (figure 23).

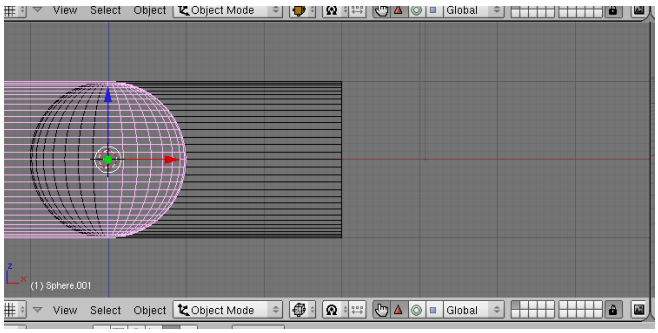


figure 23

➔ Press <G> to move the mesh.

➔ Type <6> and press <Enter>.

The meshes are now tight together (figure 24).

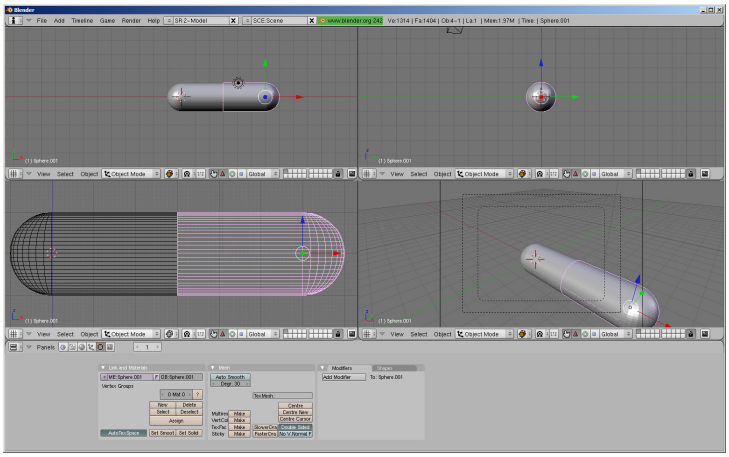


figure 24

Figure 25 shows the red part of the pill is slightly bigger than the white part. We can achieve this by using the scale method.

figure 25

➔ Select the right part of the pill.

➔ Press in the Side View (top right) <S> for scale.

➔ Type <1> <.> <1> and press<Enter>.

The Front View (bottom left) shows the right part bigger than the left one (figure 26). Because of the scaling the two parts overlap each other.

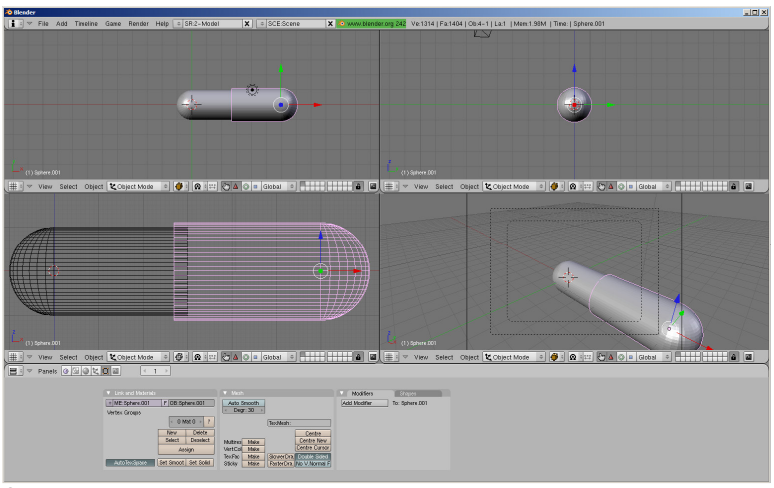


figure 26

➔ Press <G> for move.

➔ Press <X> to lock the X-axis.

➔ Type <0> <.> <3> and press <Enter>.

Materials

Blender uses **materials**. A material describes properties of a meterial such as color, reflection, softness and structure. Course 5 describes materials in more detail.

➔ Select the right part of the capsule.

➔ Press <F5>.

The Material Panel appears (figure 27).

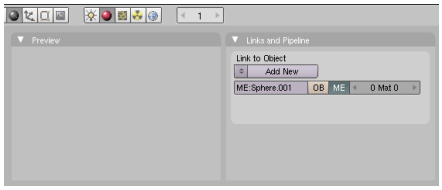


figure 27

➔ Click at [Add New] to add a new material.

You have now added a new material. New Panels appear (figure 28).

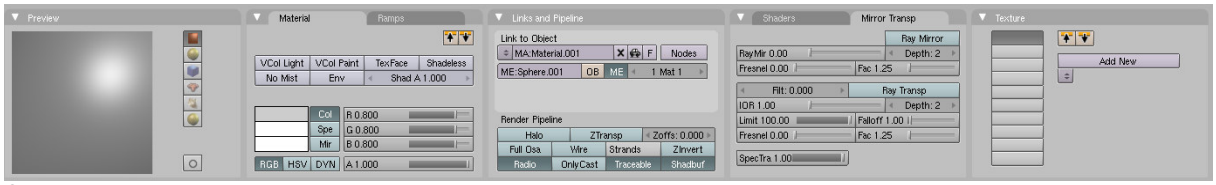


figure 28

The materials preview is shown in the Preview Panel. The color of this object is grey. The name is "Material.001".

➔ Click in the textbox which shows the name (marked red in figure 29) and change Material.001 into Red.

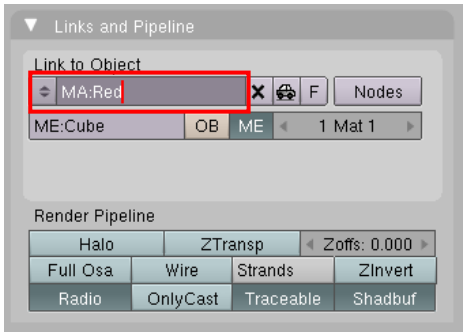


figure 29

Each colour consists of three primitive colours: red, green, blue.

- Drag the silders (marked red in figure 30) according to the following values: R at 1.0, G at 0.0 and B at 0.0.

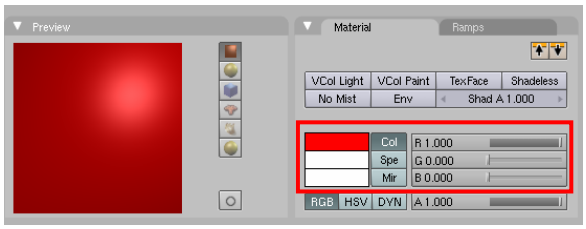


figure 30

- Now select the left part of the pill and make a material called "White" with the values: R at 1.0, G at 1.0 and B at 1.0.

- Select in the Top View (top left) the camera (marked red in figure 31). The Camera View is shown in the bottom left view.

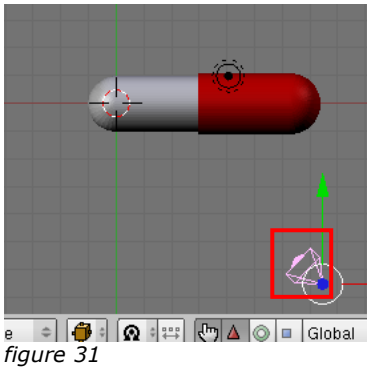


figure 31

- Press <G> to move the camera.

- Move the camera in a so the whole pill is displayed in the Camera View.

- Save your work (<F2>) as bc02.02.blend

- Press <F12> to render your model. If everything worked out fine the image should look like figure 32.

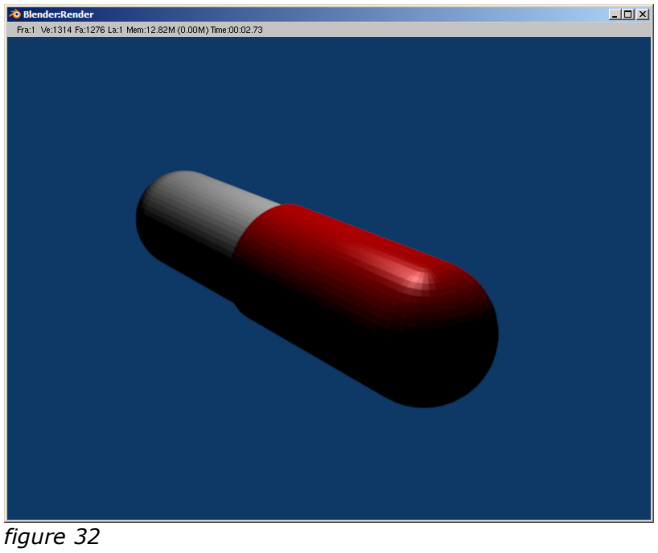


figure 32

Everything looks serrated. Blender has a technique called **smoothing**. This makes your object smoother. The "smoother" your object, the longer it takes to render.

➔ Select the red part of the pill and press <F9> (Editing Panel).

Two Panels appear.

➔ Click [Set Smooth] (figure 33), this makes the mesh look smooth.

➔ Click [Auto Smooth] (figure 33), to autoset the smooth settings.

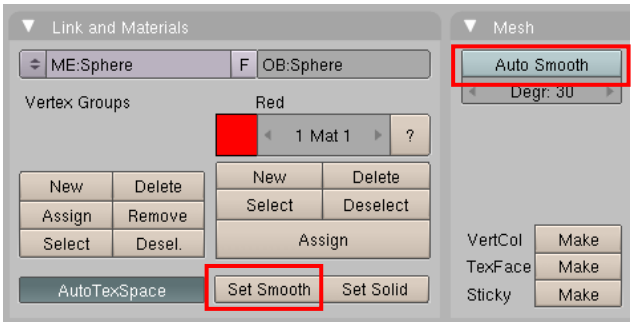


figure 33

➔ Press <F12> to render.

You can see the red part is a lot smoother than the white part (figure 34).

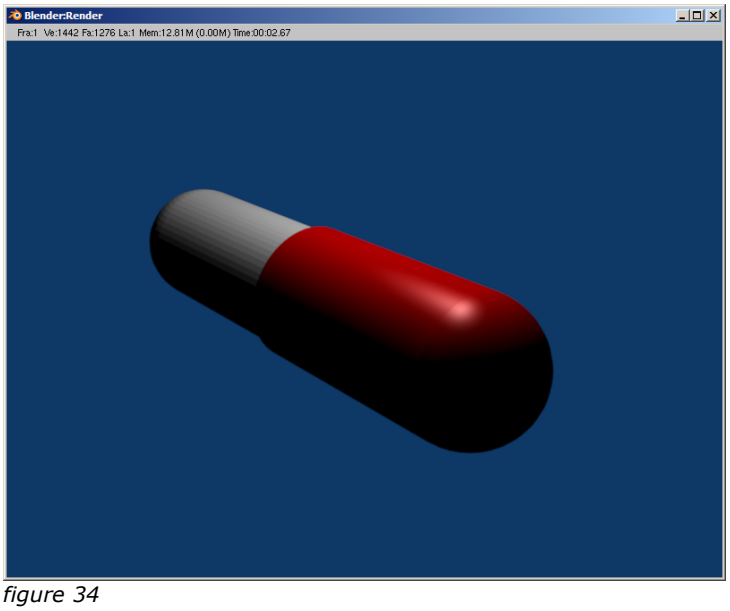


figure 34

➔ Select the white part.

➔ Make this part also smooth in the same way as we did with the red part.

➔ Press <F12>.

Your pill should look smooth now (figure 35).

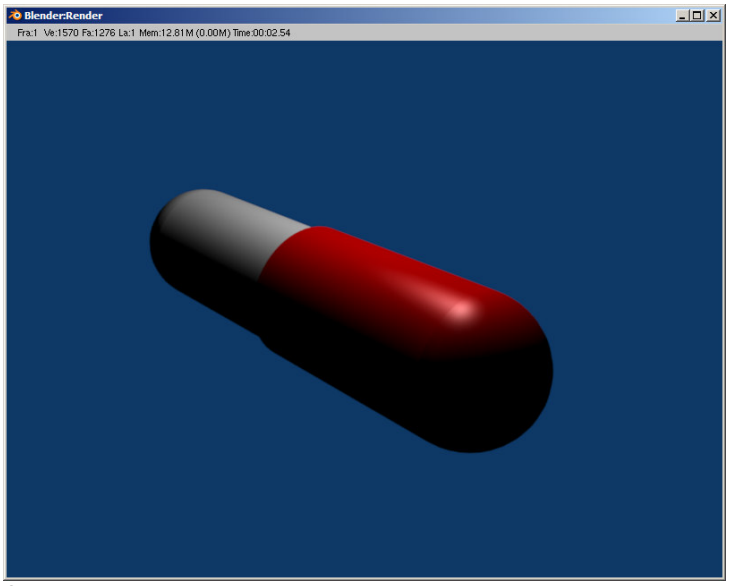


figure 35

➔ Save your work (<F2>) as bc02.03.blend

The challenge

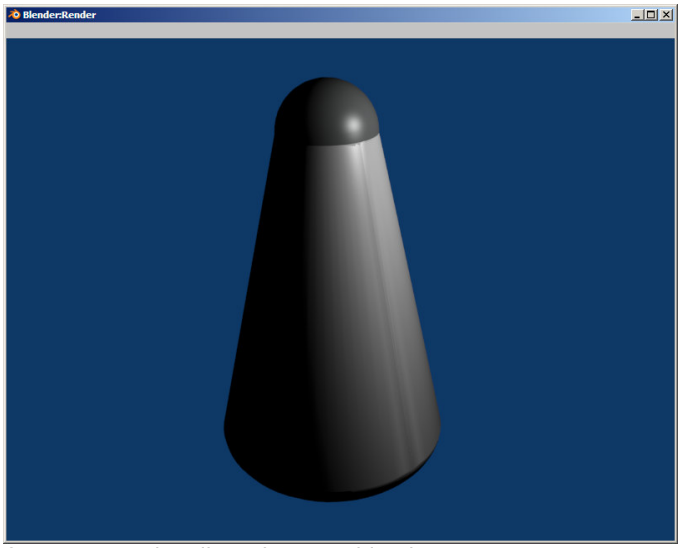


figure 36 – salt cellar – bc02.04.blend

Skills from this course

- Recognising basic meshes
- Vertex editing
- "Smooth" objects
- Entering coordinates manually
- Naming and recognising Materials
- Changing the Material color

Appendix 1: The installation of Blender

This appendix provides a step by step guide about the Blender installation progress.

- ➔ Browse to http://blender3d.org/cms/Blender.31.0.html.
- ➔ Click under heading "2.42a" on a mirror near you (marked red in figure 1).

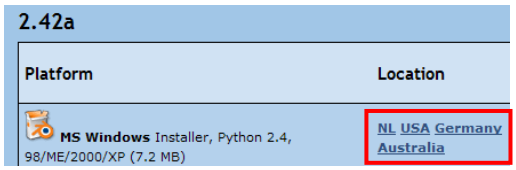


figure 1

A window appears (figure 2).

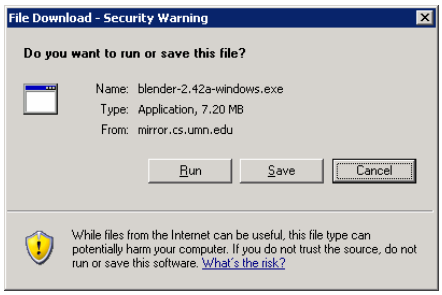


figure 2

- ➔ Choose [Run].
- ➔ The installer is now being downloaded (figure 3).

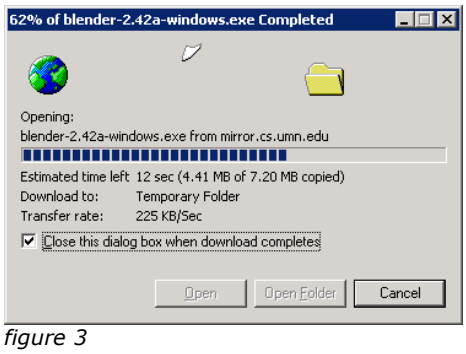


figure 3

When the file is downloaded successfully a security warning appears (figure 4).

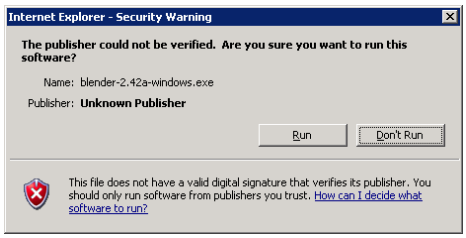


figure 4

- ➔ Choose [Run].

The installation process starts.

➔ Click on [Next >] (figure 5).

figure 5

➔ Click on [I Agree] (figure 6).

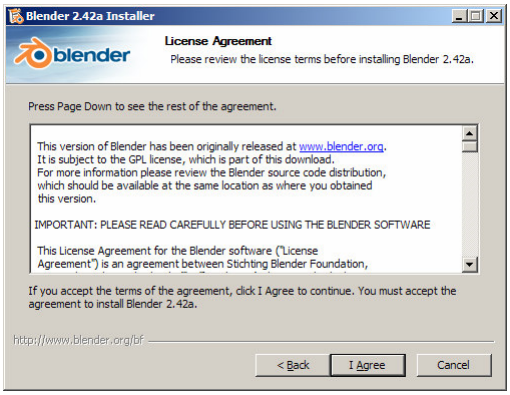


figure 6

➔ Click on [Next >] (figure 7).

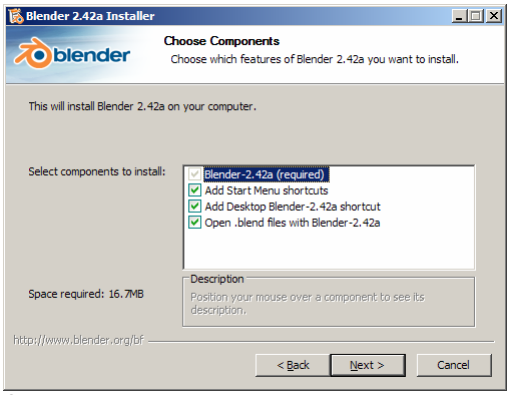


figure 7

If necessary you can pick the folder in which Blender needs to be installed. If you do not know what to do just leave the default location.

➔ Click on [Next >] (figure 8).

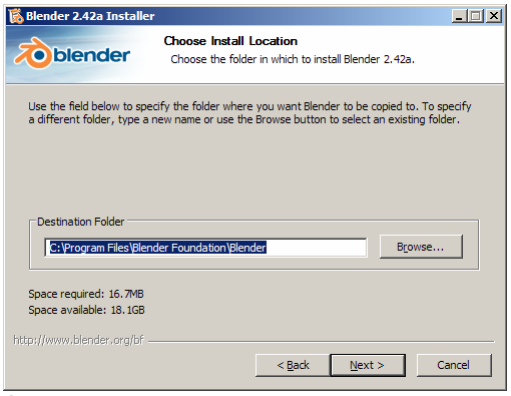


figure 8

➔ Click on [Install] (figure 9).

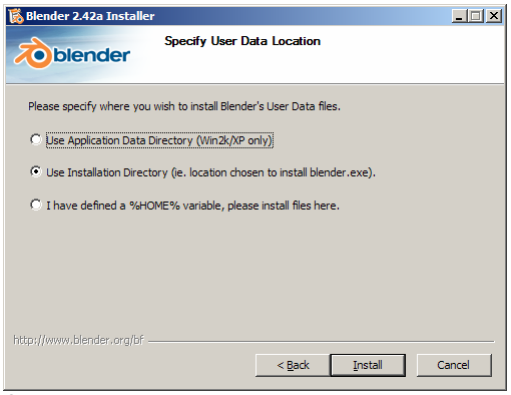


figure 9

File files are now being copied to the harddisk (figure 10).

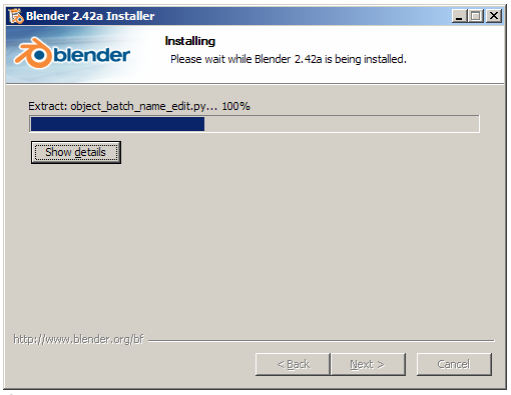


figure 10

➔ Click on [Finish] to start Blender (figure 11).

figure 11

Blender will be started for the first time (figure 12).

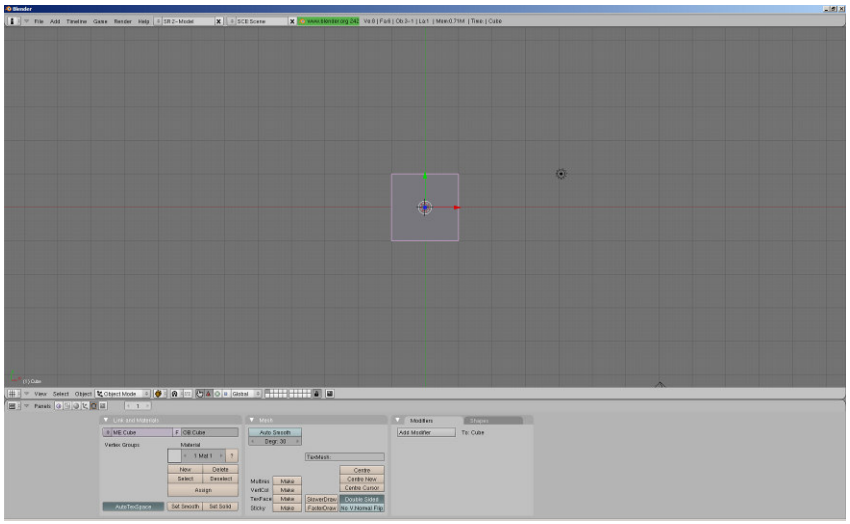


figure 12

The installation is finished. To follow the lessons of BlenderCourse some settings need to be adjusted. These are described in “Appendix 2 – Configure Blender”.

Appendix 2: Configure Blender

This appendix helps you to configure Blender in a way you can work with comfortably. If after these steps, you do not get it, you can use the "B.blend" file from this course file. Copy this file in the subfolder ".blender" of your Blender installation folder (e.g. C:\Program Files\Blender Foundation\Blender). But I still recommend you to follow the steps below to get familiar with the Blender environment.

When starting Blender you can see our screen consisting of three parts: menu bar, a window with a centred square and a window with some buttons. These windows are called "Panels".

The square is the top view of a cube. For easy 3D modelling we like to have multiple views. These views are: front-view, top-view, side-view and camera-view.

The next steps will guide you into how to create these views.

- ➔ Click with the right mouse button on the border between the panel containing the cube and the bottom panel (red spot in figure 1).

A menu appears (figure 1).

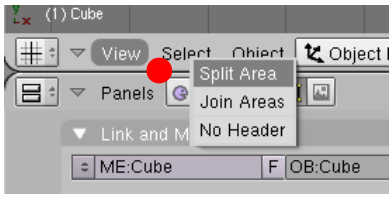


figure 1

- ➔ Click with the left mouse button on [Split Area].
- ➔ Move with the cursor to the centre of the cube. You see a vertical line following your cursor (figure 2).
- ➔ Click with the left mouse button as soon as the line intersects with the centre of the cube.

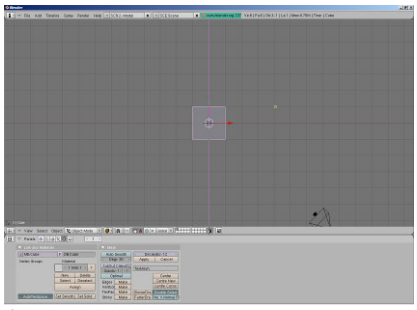


figure 2

Now you are having two views next to each other. Both views show the top-view of the cube (figure 3).

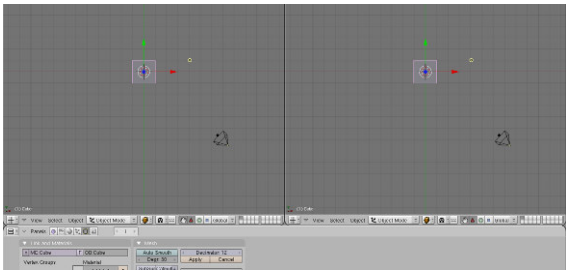


figure 3

Right now we have two views, but initially we want to have four. To make four views we have to split up each view again.

➔ Click with your right mouse button on the border between both views (red spot in figure 4).

Another menu appears (figure 4).

➔ Click with your left mouse button on [Split Area].

figure 4

Again there is a line which splits the views.

➔ Move your mouse cursor to the centre of the right view.

➔ Click with your left mouse button to confirm the split-up.

Now you have three views each representing the cube's top-view (figure 5).

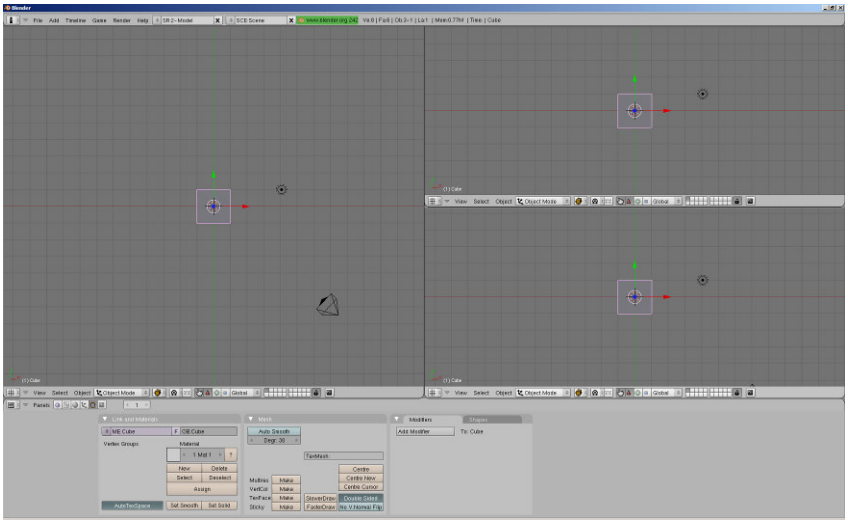


figure 5

➔ Click with your right mouse button on the vertical border in the centre of your screen (red spot in figure 6).

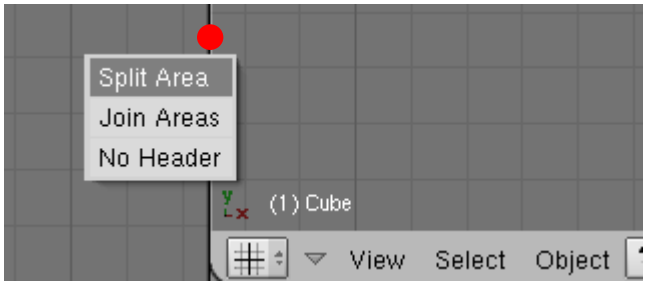


figure 6

➔ Choose [Split Area].

➔ Move your mouse cursor to the centre of the left view.

➔ Click with the left mouse button to confirm.

If everything worked out well you have four views (figure 7).

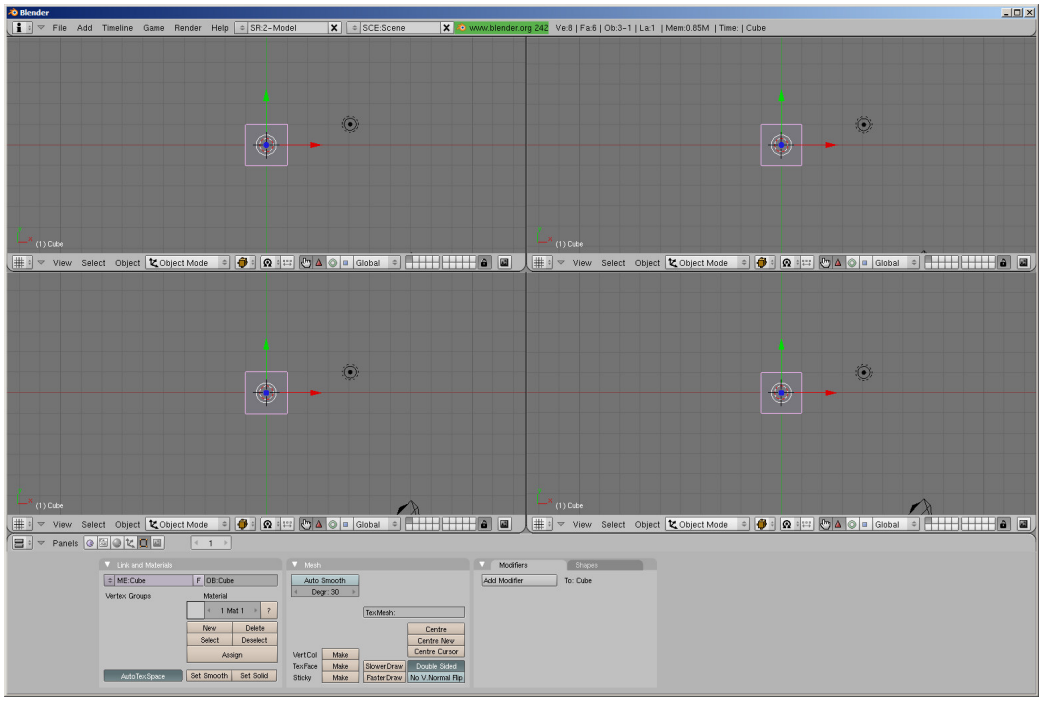


figure 7

All the four views are top-views now, in the next steps we are about to change this.

There is a menu bar located under each view (figure 8). With this menu you can adjust several settings for this view.

figure 8

➔ Click in the menu bar of the bottom left view on [View] (marked red in figure 8).

A menu appears (figure 9).

➔ Click on [Front].

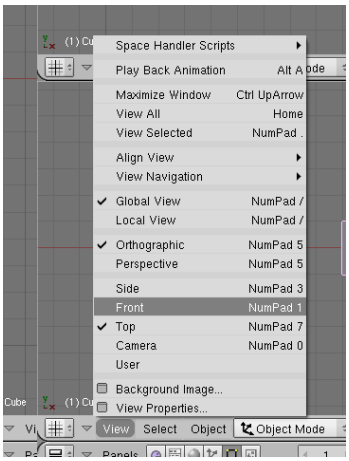


figure 9

The view has been changed from top-view into front-view (figure 10).

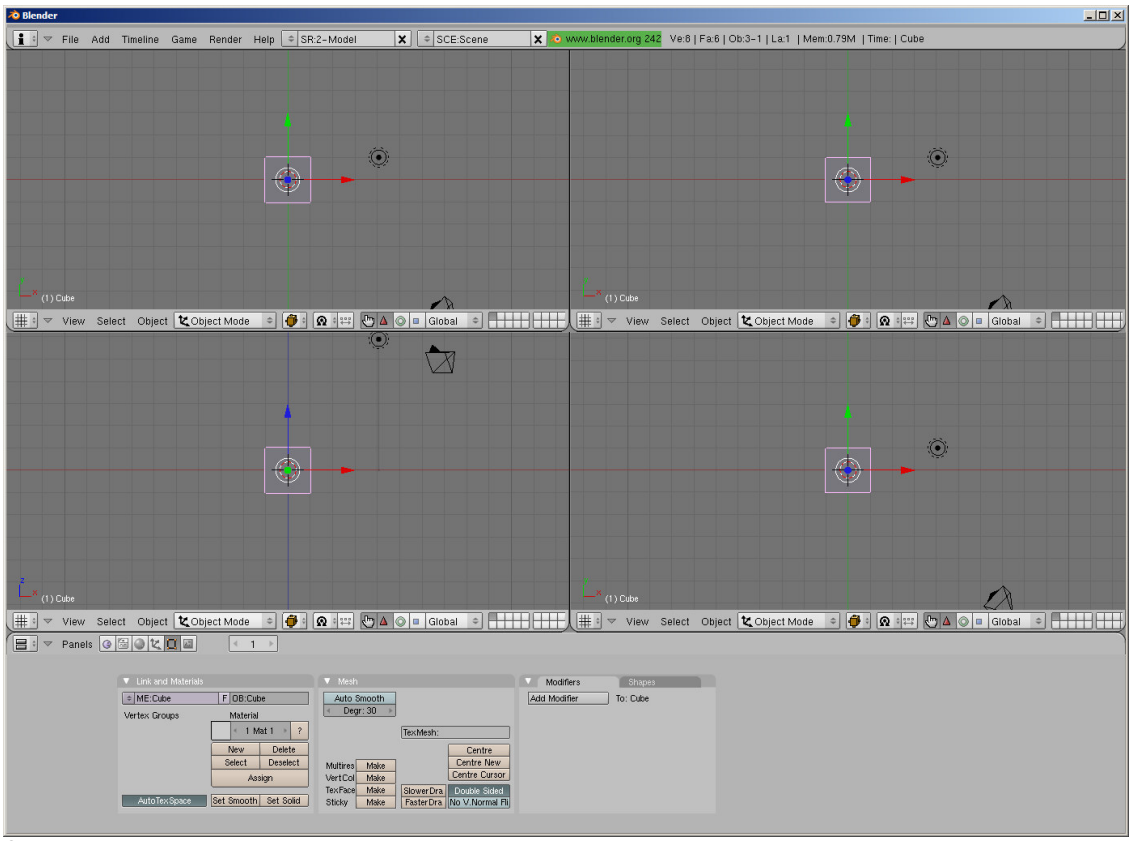


figure 10

➔ Now click on [View] in the menu bar of the top right view and choose [Side] (figure 11).

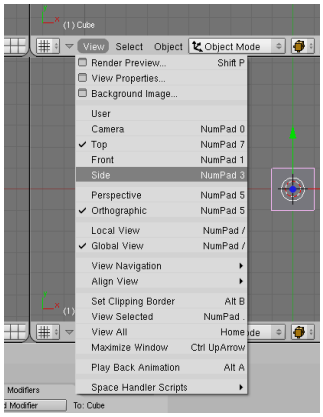


figure 11

Your screen should look like figure 12.

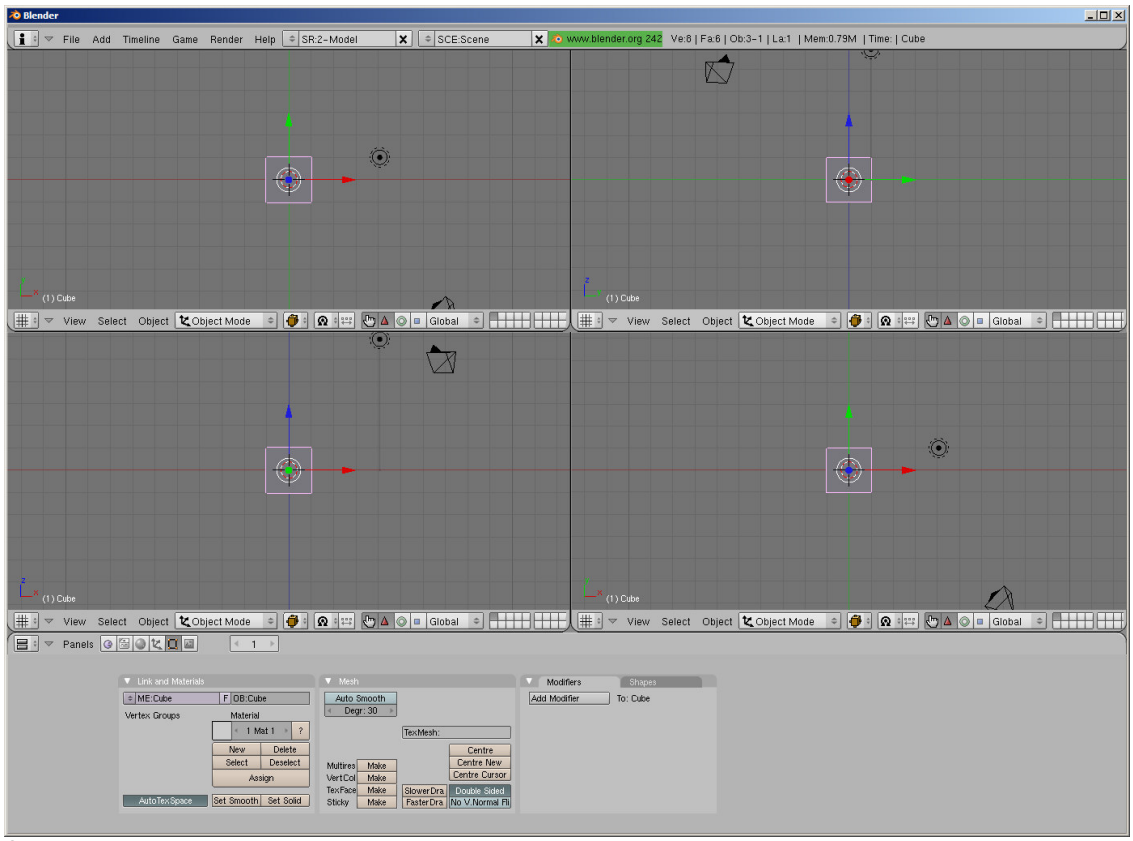


figure 12

We are now going to adjust the bottom right view.

➔ Click on [View] in the menu bar of the bottom right view and choose [Camera] (figure 13).

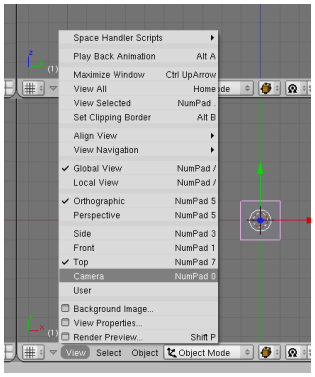


figure 13

All views are now properly adjusted. The top left view does not need any adjustment since it is already displaying the top-view. Your screen should look like figure 14 (the names of the views are displayed in the red boxes).

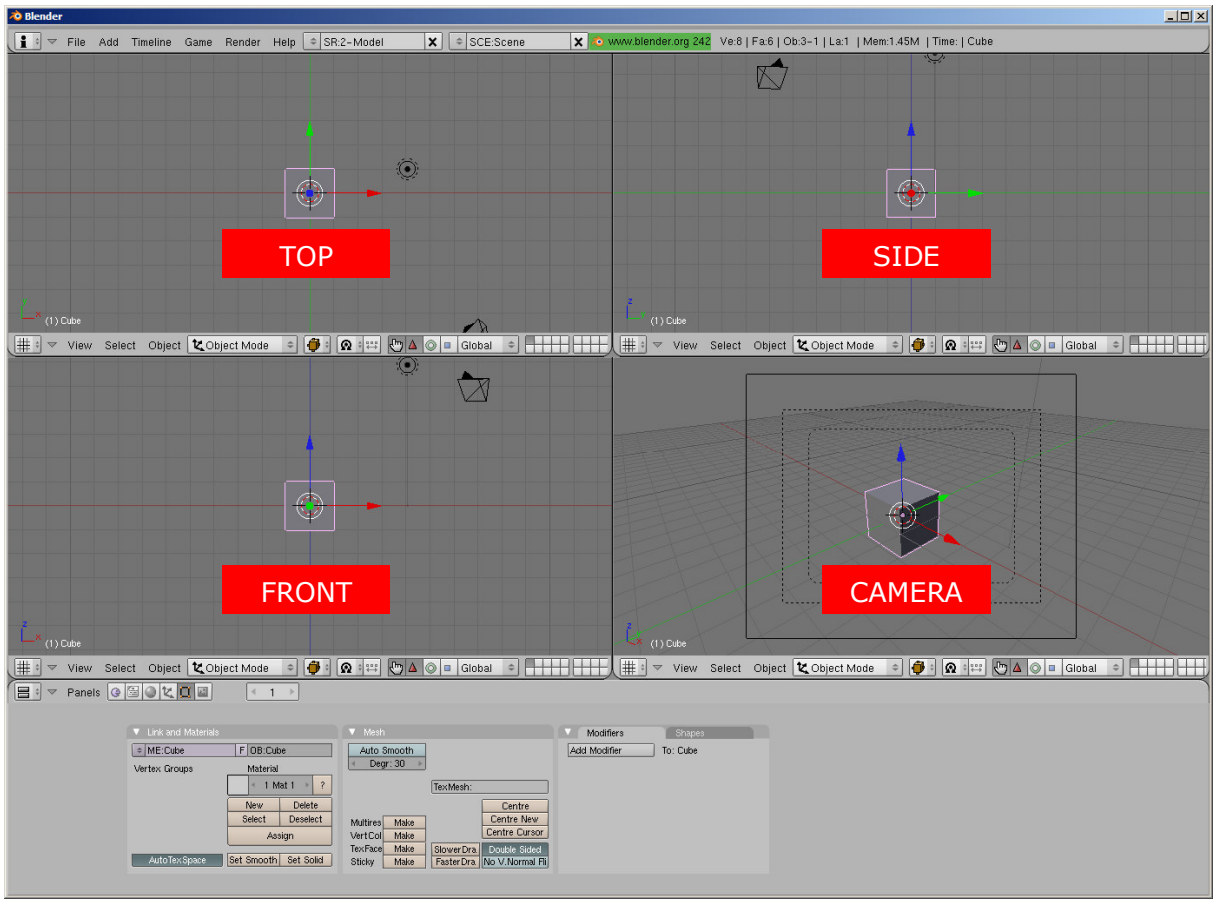


figure 14

Because we do not want to do previous instructions every time we start Blender we are going to save them as default.

➔ Click on [File] which is located on the top left of your screen and choose [Save Default Settings] (figure 15).

You do not get any message about this saving.

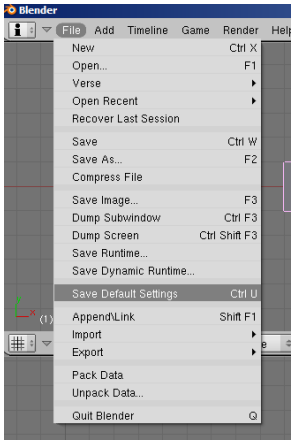


figure 15

The settings are now saved as the standard settings for each new scene.

Appendix 3: Key overview

Object Mode

<G> → <X>	Move over X-axis
<G> → <Y>	Move over Y-axis
<G> → <Z>	Move over Z-axis

<S> → <X>	Scale on X-axis
<S> → <Y>	Scale on Y-axis
<S> → <Z>	Scale on Z-axis

<R> → <X>	Rotate over X-axis
<R> → <Y>	Rotate over Y-axis
<R> → <Z>	Rotate over Z-axis

<Ctrl> + <↑>	Maximise view
<Ctrl> + <↓>	Back to previous size

<Alt> + <C>	Convert object type
<Alt> + <A>	Playback Animation

<Ctrl> + <W>	Save
<Ctrl> + <O>	Open last used file
<F1>	Open
<F2>	Save as
<F3>	Save render
<F5>	Shading Panel
<F6>	Texture Panel
<F9>	Editing Panel
<F11>	Show latest render
<F12>	Render scene

<Alt> + <Scrl>	Zoom view in and out
<Ctrl>+ <Scrl>	Move view horizontal
<Shift> + <Scrl>	Move view vertical

<Q>	Quit Blender
<X>	Delete
<N>	Transform Properties
<I>	Insert Keyframe

Edit Mode

<A>	Select or deselect all vertices
<B>	Block selection
<E>	Extrude
<O>	Proportional Editing
<Shift> + <F>	Face Fill

Appendix 4: Blender gallery

Richie

SpeedTiti

SpeedTiti

Malefico Andauer

Zoltan Miklosi

Bas van Dijk

More images can be found at http://blender3d.org/cms/Images.151.0.html.

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