This 3 day Workshop will provide a simple methodology to create and easily improve our concepts, using the best tools in Rhinoceros 5.0, Grasshopper and Autodesk Shape Modeling.

During this course, we will also review the automotive design and 3D modeling principles to implement them properly.

During this workshop we will learn how to build, edit, and evaluate geometry in a simplified manner. This will let you concentrate on the really important part of your creations, the design!

To have a structured workflow, the concept proposed for the Workshop will be the one rendered in this page.

Requirements:

-Medium Level Rhino skills
-Rhino 5 preinstalled. Additional plugins will be managed days before the Workshop

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Block 1 : "Let's prepare ourselves"

1.1   3D Modeling fundamentals

This part will cover a basic introduction to the 3D modeling fundamentals, necessary to create clean geometry. We will learn how to differentiate and understand the topology of 3D curves and surfaces.

The types of curves and surface connections will be explained in detail, we will also use all analyzing tools to evaluate them.

Other important part that we will show is the way to edit and connect the surfaces in a proper way.

Finally, we will classify the surface creation tools and understand which of them are the most convenient ones for our purposes.

1.2   Car Design principles

In this section we will overview the main aspects related to our design.

We will start by learning the automotive nomenclature, to define precisely the most important parts. We will evaluate the main architecture types and we will follow into the general proportions guide.

We will put attention to the limitations we have to respect, that is, interior passenger room and normative related to exterior parts.

This part has a big influence in our concepts, but properly handled will make it more credible and mature.

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Block 2 : " From Sketch to First Model! "

2.1 Setting Up our work session

We will practice a step by step methodology to accomplish our first 3D
Model. The initial sketches will be provided and we will aim for the
same car.

In this part we will implement our sketches into the scene, we will use
different ways of doing it and will decide the most convenient for us.

We will place all our geometry according to Standard established
coordinate system, needed for a future geometry exchange.

A short overview on units and tolerances will take place at this point.

2.2 Creating our first model

In this important part of the process we will define a simple division of
our concept, this will help us to build an easily editable shape.

A simple way of placing our character lines, and it's similitudes to the way
we sketch our ideas will be covered.

All this curves, together with the rest of external main elements will be
used to place the first surfaces that will define the main volume.

We will experience how to apply modifications to a minimum amount of
control points and produce a big transformation in the design intention.
The history record feature will play an important role here.

At this point, we will be able to place some of the parting lines of the
model as graphic features.

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2.3 Bringing our creation to a higher level

When our main volume fits the desired proportions and design intention, it's time to add extra refinement to our curves and bring the surface language that will make our model stand out.

We will organize all curves in a coherent manner with some simple rules. We will immediately see the difference!

Now it's the time to explore the ways to analyze and control our curves and surfaces to add more refinement and section complexity.

During this part we will also prepare the main graphic and cutting lines for the lamps, doors, bumpers… In a way that we still can keep editing our shape.

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Block 3 : "One step further"

3.1 Final Refinement

Once our design is finalized with the main elements correctly placed, we can proceed to perfectly finish all surfaces for the most perfect reflection properties.

The connections between surfaces will be also evaluated and edited when necessary, to have a seamless transition.

We will learn at this stage how to sculpt a surface to obtain certain elevation or depressions, like for example in the bonnet, air intakes, or fading crease lines.

At this point the Autodesk Shape Modeling Plugin will become a nice partner.

3.2 Detailing

For this final stage, we will create the details that will make our model look more realistic and complete, to create nicer renderings or animations.

We will practice a convenient way to build up the fillets, and soft corners.

At the same time, some simple tricks can be applied to glass and lamps to improve the visual appearance.

In the next part, we will be helped by some plugins to create more details…

3.3 Plugins

It's time to invite Grasshopper to help us in the creation of the front air intake pattern, this can be quite time consuming with a normal method… Grasshopper will prove to be an excellent partner for this task. We will get a basic understanding of the process and capabilities while creating this exercise.

Block 4 : "Questions and answers"

It´s time to bring everything together and make a resume of all what´s been seen.

All questions and doubts that we may have will be answered and explained.