

# A short guide to creating clothing mods and have them play nice with clothing fitting.

## Starting up

You obviously want to model the clothing piece you're interested in. In the modding tools package you'll find, under the reference files, an FBX file containing a female reference mesh (and in future a male one as well).

This mesh doesn't include any blendshapes as you might have noticed, this is because we use clothing fitting and derive blendshapes deformations from that. So, you only care about modeling and rigging, blendshapes will be taken care of by us inside the game itself.

In the future we might even care about transposing clothing across different base meshes as well.

## Modeling tips

Use the included reference mesh as your own mannequin and fit the clothing over it as best as you can. Lock the editing on the reference mesh, you don't want to accidentally change it.

If you use blender or any other traditional modeling software, make sure to leave a few mm from the actual reference mesh in order to avoid z-fighting at medium distances in game.

If you use Marvelous Designer / Clo3D or any other garment simulator program, import the FBX as an avatar and let it auto generate a fitting mesh, it will probably work fine (tested in Marvelous Designer, works like a charm). Double check you units if you use MD.

If you use ZBrush or any other sculpting program for the base modeling: avoid subdividing the reference mesh and if you absolutely need to, take extra care in leaving extra space to avoid Z-fighting in game. Same as before, a few mm will make stuff easier to work with.

### **Warning**

Do not scale the reference mesh! It will cause problems inside the engine if you export your clothing piece in a different scale and it's not matching properly in-engine.

Also, do not mix up your units. If you work in cm in one tool, work in cm also in the others. Failing to do so will cause headaches and weird errors.

## Pre-Rigging

Try to roughly match the amount of polygons of your mesh to the one of the body if possible. it doesn't have to be "an extrusion of the base mesh" to work best but if the clothing zone you are covering has 2k tris and your clothing piece only has 200 things will be wonky. Try to keep the density equal.

### Information

LOD\_0 is extremely dense in terms of polygons. This is mainly supposed to be for the best rendering quality. In the close future we will supply different LOD meshes and LOD\_0 will be an optional hi-quality mesh switch on the game settings. Other meshes will have significantly less polygons to accommodate different levels of hardware capabilities.

### Note

In the future, when multiple LOD meshes will be available, you will have to provide separate meshes for every LOD level. A simple decimate operation might work for the higher number (lower detail) LODs but the lower level LODs will require some manual refinement as those will be seen relatively upclose depending on the end user graphics settings.

## Rigging and skinning

Use the same skeleton you got from the reference mesh. Do not add or remove bones. Of course you don't need to add vertex information for bones that are far away from your clothing piece.

### Note

For the best results, check a wide variety of poses and make sure your skinned clothing piece follows the reference mesh perfectly. For ensuring the best quality, try also moving bones 1 or 2 places down the chain to check if everything looks fine.

## Textures and UVs

You can use any number of materials and submeshes on your clothing mods, however for the best performance we recommend packing multiple variable colors in a 4-color splatmap, enabling you to colorize a single greyscale ambient occlusion/detail map with 4 different colors in 4 different zones, which you can change at runtime.

Try to avoid using uselessly high texture sizes. If your clothing piece is monochrome even a 8x8 texture map size is overkill. Optimize your texel sizes (the amount of pixels per unit square when UV map is projected on your mesh) to give detail where you need it.

### Warning

If you plan to have a clothing piece to support patterns, take extra care in aligning the UVs in a way that a pattern texture when applied will look correct.

## Importing/Exporting

Depending on the scale you used in your modeling software, make sure to have it translate to a 1 unit = 1 meter when importing in Unity. Afterwards, refer to [Mod Creator](#) for how to set it up in Unity and export the mod.

## What next?

Time to share your creation with the world. Don't forget to let us know in our discord server. We are eager to see what you guys will create.

*Have fun modding!*