

Advanced CFD Meshing using ANSA





Who are we?

Skill-Lync is an engineering e-learning platform based in Chennai. The brainchild of two engineers, we are at the forefront of re-shaping engineering education in India. In the winter of 2019, we became the first start-up from Chennai to be funded by Y-Combinator.

Today, close to 8000+ students from over 58 countries study at Skill-Lync. Over three years we have helped 280 engineers achieve their dream careers.

58+

Countries

8000+

Students

300+

Placements

30000+

Projects



About the program

ANSA is an advanced multidisciplinary pre-processing tool that provides all the necessary functionality for full-model build-up, from CAD data to ready-to-run solver input file, in a single integrated environment. This course purely focuses on pre-processing/modelling a component for CFD analysis. If you are someone who is interested in the CFD domain this course will help you to get into the industry as a CFD modeller/mesher. Anyone who enrolls in this course will be able to learn a CFD Preprocessing Tool which includes tasks such as geometry clean up, Geometry checks, 2D and 3D meshing operations, Wind tunnel establishments, etc. By learning how to use this tool you will be able to model/mesh any components that are required in the CFD domain. At the end of this course, you will be skilled in 2D (Surface meshing) and 3D (Volume meshing). There are several complex models in the course work that will help you in practising the techniques taught in this course. After completing this course you will be able to apply for various CFD roles within the automotive sector and other industries.

Reasons to select this course

- Designed by Skill-Lync with inputs from academicians and industry experts to ensure that students are trained in the skills expected in the industry.
- Students will be supported by Skill-Lync's dedicated team of support engineers, who will answer all your questions around the clock.
- Students will learn how to use the ANSA pre-processor and they will learn how to adapt the mesh for CFD applications.



Course Syllabus

Introduction to ANSA GUI and Tools

In this module, you will be introduced to the ANSA Software. You will learn the Graphical User Interface(GUI) of the ANSA tool. You will get to know about different solvers and types of analysis carried out using them. You will be introduced to basic tools that will help you with geometric cleanups and other deck setups in ANSA. The topics covered in this module are,

- Introduction to ANSA,
- ANSA GUI,
- Geometric Tools and Topology cleanup
- Different Tools used in TOPO deck

2D (Surface) meshing to a Pressure valve

In this module, you will be introduced to the Pressure valve model. You will get to know how to perform Surface Meshing to a Pressure valve model. The topics covered in this module are,

- PID creation and PID assignment,
- Different selection techniques and visibility tools,
- Basic Topology cleanup
- Basic tools used in Surface mesh

3D (Volume) meshing to Turbocharger

In this module, you will be introduced to the Turbocharger model. You will get to know how to perform Volumetric Meshing to a Turbocharger model. The topics covered in this module are,

- Geometry cleanup to define volumes.
- Various Geometry checks
- Surface meshing as per Quality Criteria
- Volumetric Meshing as per requirements



CFD meshing to BMW M6 Model inside Wind tunnel

In this module, you will be introduced to the BMW M6 model. You will get to know how to perform CFD Meshing to a BMW M6 model. The topics covered in this module are,

- Advanced Topology cleanup to define volumes.
- Variable Surface meshing part by part
- Solving quality failed elements as per Quality criteria
- Symmetry operation for surface and mesh elements
- Wind Tunnel Creation
- CFD Meshing for Wind tunnel

Surface wrap to an Automotive assembly

In this module, you will be introduced to three different automotive models: Engine, Transmission, Gearbox. You will get to know how to perform Surface wrap to an automotive assembly for outer flow CFD Analysis. The topics covered in this module are,

- Geometry cleanups for a surface wrap.
- Merging of different models in one GUI.
- Surface wrapping for an Assembly.

Industry-oriented projects

CFD meshing to Tesla Cybertruck Model inside Wind tunnel

You will be provided with the model of a Tesla Cybertruck. You have to perform Topology cleanup as per volume requirements and meshing the whole model by achieving all the mentioned quality criteria parameters.



Sliders and Ejection System/ Mold Design Tutorial 2

In the fifth theory session, we will be looking at the topic of sliders and ejection systems. The topics that will be covered are:

- Need for sliders and their working.
- 2 general types of sliders - sliding split type molds and the angular lift pin type molds.
- Methods of actuating the sliders such as finger cam, dog leg, cam track, spring and the hydraulic actuation
- Concept of slider locking
- Various types of ejector systems such as pin, sleeve, stripper and blade ejector systems.

In the SOLIDWORKS session, we will be creating a mold for the outer cover of a disposable camera. The steps we will follow are mentioned below:

- Creating parting lines, shut-off surface, parting surface, and mold blocks for the model.
- Creating ejector pins for the mold.
- Creating inserts for the mold.

Gates and Runners / Mold Design Tutorial 3 - Part 1

In the sixth week theory session we will be learning about runners and gates. The various topics covered are as follows:

- Types of gates such as sprue, edge, tab, overlap, fan, disk, ring, spoke, film, pin, submarine and cashew gates.
- Runner diameter calculation
- Types of runners
- Runner configurations
- Why engravings are used in cavity

Then in the SOLIDWORKS session, we will be creating a mold for a door bezel model. The topics that will be covered are as follows:

- Creating the parting lines, shut-off surfaces and parting surfaces of 3D profile for the model.
- How to work in assemblies and how to arrange files in a specific format.
- How to align the sprue of the mold with the origin of the assembly.
- How to select proper dimensions for the mold blocks.
- Creating mold blocks for door bezel.



Mold Design Tutorial 3 - Part 2

In the seventh week, we will continue working on the door bezel model from the previous session and learn the following topics:

- Locating undercuts in the model and understanding how the use of sliders will help in solving the undercut issue.
- Creating slider split
- How to assign proper dimensions to the slider
- Editing the core cavity blocks according to the shape of the slider.
- Creating bolts, washers and locking mechanism for the sliders.

Mold Design Tutorial 4 - Part 1

In the eighth week, we will start creating a mold for a CPU fan case model and we will learn the following topics:

- Complex parting line selection that can reduce the number of sliders required for the model.
- How to provide correct matching drafts for the model.
- Then we will create the core-cavity surfaces for the model. After that, we will align the sprue location, select dimensions and create the mold blocks for the CPU fan case in assembly. We will also see how to add reliefs for the core-cavity blocks.

Mold Design Tutorial 4 - Part 2

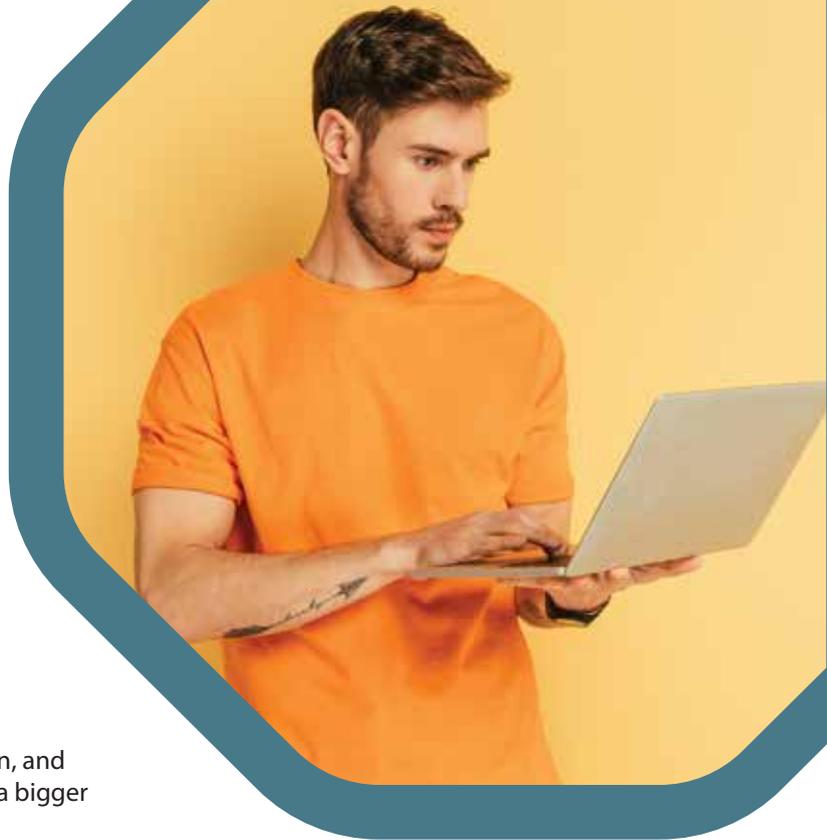
In the ninth week, we will continue working on the CPU fan case model and we will learn the following topics:

- Locating undercuts in the model
- Creating a slider split for the undercuts.
- Assigning proper dimensions for the sliders.
- Providing reliefs for the sliders.
- Creating inserts for the model.

Mold Design tutorial 5 - Part 2

In the eleventh week, we will continue working on the plastic knob model and we will learn the following topics:

- Creating multiple inserts for the model
- Creating holes for fixing the inserts.
- Locating undercuts and creating a slider split for it
- Complex slider creation
- Assigning proper dimensions for the slider.



Who should take this course?

- Students of Mechanical and Automotive Engineering
- Professionals who are working in the quality, production, and manufacturing domains and looking for a transition to a bigger responsibility
- This course will provide a deep understanding into the pre-processing a given sheet metal or plastic component
- You will have the confidence to clean & mesh any kind of model at the end of the course
- This course opens the gate to the world of FEA meshing techniques and cleaning a geometry before sending it to analysis

Software Covered

ANSA

ANSA is a CAE tool for FEA and CFD analysis widely used in the automotive industry. It was developed by BETA CAE systems.

Basic

2 Months Access

₹ 7000

Enroll Now

Per month for 3 months

- Access Duration : 2 months
- Mode of Delivery : Online
- Project Portfolio : Available
- Certification : Available
- Email Support : Available
- Whatsapp Support : Available

Pro

4 Months Access

₹ 10000

Enroll Now

Per month for 3 months

- Access Duration : 2 months
- Mode of Delivery : Online
- Project Portfolio : Available
- Certification : Available
- Individual Video Support : 4 month
- Group Video Support : Available
- Email Support : Available
- Whatsapp Support : Available
- Telephone Support : Available
- Add-ons Industry Projects : 1

Premium

Lifetime Access

₹ 15000

Enroll Now

Per month for 3 months

- Access Duration : 2 months
- Mode of Delivery : Online
- Project Portfolio : Available
- Certification : Available
- Individual Video Support : 12/month
- Group Video Support : 12/month
- Email Support : Available
- Whatsapp Support : Available
- Telephone Support : Available
- Add-ons Industry Projects : 2
- Dedicated Support Engineer : Available

Contact Details

 info@skill-lync.com

 +91 8939850851

 BAID Hi-Tech Park 129B,
2nd & 3rd Floor, Valmiki Nagar,
East Coast Road,
Thiruvanmiyur, Chennai - 600041.

 <https://www.youtube.com/user/edxengine>

 [skill_lync](https://www.instagram.com/skill_lync)

 <https://www.linkedin.com/school/skill-lync/>

SKILL  **LYNC**