# LESSON GUIDE // SESSION 8
## Importing and Tracing Images in Vectric Environment

**LEARNING OBJECTIVES:**
- Students will be able to import images into Vectric Aspire.
- Students will be able to use the trace bitmap tool to convert images into vector paths.
- Students will be able to clean up and edit traced vectors.
- Students will be able to prepare traced vectors for CNC machining.

**MATERIALS:**
- Computers with Vectric Aspire/VCarve installed
- Sample images (e.g., logos, line art, photographs)
- CNC machine (if available for demonstration)

**PROCEDURE:**

**1. Introduction (10 minutes)**

Briefly introduce Vectric Aspire and its capabilities.
Explain the concept of vector graphics and how they differ from raster images.
Discuss the importance of image quality and resolution for tracing.

**2. Importing Images (15 minutes)**
- Open Vectric Aspire.
- Demonstrate how to import an image:
  - File > Import > Bitmap
  - Select the desired image file.
  - Adjust the image size and position on the workspace.

**3. Tracing Images (20 minutes)**
- Explain the Trace Bitmap tool:
  - Access the tool from the Tool Bar.
  - Adjust the trace settings (threshold, line thickness, etc.) to optimize the tracing process.
- Demonstrate how to trace different types of images (line art, photographs, etc.).

**4. Cleaning Up Traced Vectors (20 minutes)**

- Explain the importance of cleaning up traced vectors:
  - Remove unnecessary nodes and lines.
  - Smooth out rough edges.
  - Close open paths.
- Demonstrate how to use the Node Edit tool to modify vector paths.

**5. Preparing for CNC Machining (15 minutes)**

- Explain the concept of toolpaths and how they are generated from vector paths.
- Demonstrate how to set up toolpaths for different machining operations (ie. engraving, cutting).
- Discuss the importance of optimizing toolpaths for efficient and accurate machining.

**6. Practice Activity (30 minutes)**

- Assign students a project, such as creating a custom sign or engraving a photo.
- Provide guidance and assistance as needed.
- Encourage students to experiment with different tracing techniques and toolpath settings.

**7. Conclusion (5 minutes)**

- Review the key concepts covered in the lesson.
- Discuss potential applications of Vectric Aspire in various fields
- (ie. woodworking, metalworking, sign making).
- Answer any questions from students.

**ASSESSMENT:**

- Observe students' work during the practice activity.
- Evaluate the quality of their traced vectors and generated toolpaths.
- Assess their ability to troubleshoot and solve problems.

**ADDITIONAL TIPS:**

- Provide clear and concise instructions.
- Use visual aids (e.g., screencasts, diagrams) to enhance understanding.
- Encourage students to ask questions and experiment with different techniques.
- Offer additional resources and tutorials for further learning.

By following this lesson plan, students will gain a solid foundation in importing and tracing images in Vectric Aspire, preparing them for more advanced CNC projects.