PCB Printing

Version 1

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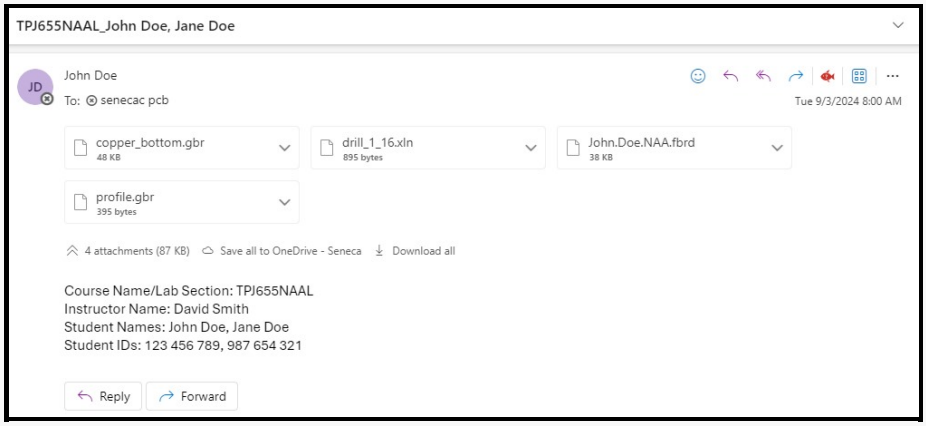
SEMET PCB Lab - Printing Guidelines

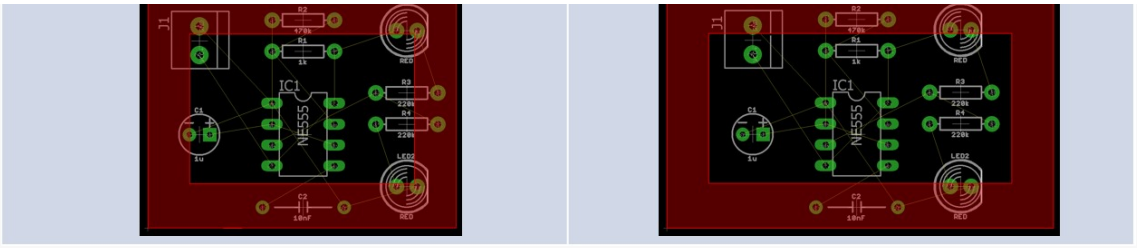
- Students must attach their CAM files **individually** and send it to senecac.pcb@senecapolytechnic.ca. **Please note that ZIP attachments are not allowed on Seneca's email system. OneDrive links are not accepted. Do not compress files using 7Zip.**
- Emails are only accepted from the MySeneca email address.
- Students need to send the following: **bottom layer, top layer (if applicable), outline and drill. Include the board** file as well. **The extension changes depending on the software.**
- When sending an email to the Seneca PCB Lab, follow the following email template:
  - Email Subject: Course Name/Lab Section, Student Name(s)
  - Email Body:
    - Course Name/Lab Section
    - Instructor Name
    - Student Name(s)
    - Student ID(s)

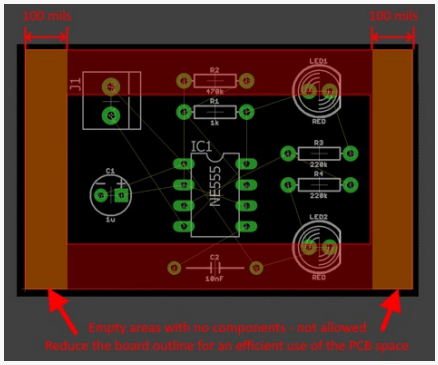
A sample Email subject and body for 2 students working on a project is shown below:



- The PCB Lab can't print text information contained in the design. Do not include text on the bottom or top layer. Projects with text in either layer will be returned to the student.
- Students must use the PCB footprint efficiently. The board outline must be no more than 100 mils from any outer component (see pictures below). Projects not meeting this requirement will be returned to the student. In the picture below, the red border represents 100 mils.

Correct	Incorrect
	



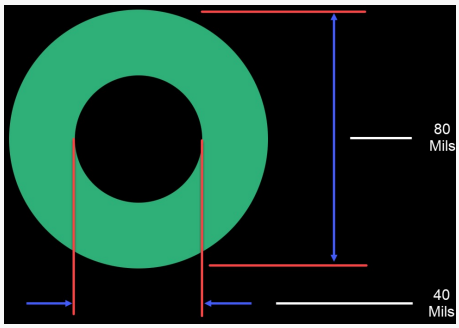


- Every student project will be inspected for design errors. A design rule checking (DRC) process will run for each project to determine if the board meets the constraints set by the PCB machine. If DRC fails, the project will be returned to the student.

The following guidelines will prevent DRC failure:

- Trace Vias minimum diameter: 20 mils.
- Pad Stack (Annular Ring) minimum value: drill hole value + 40 mils.

  For the example below, a 40 mils drill hole will need a Pad Stack of 80 mils.



- Clearance minimum value: 14 mils.
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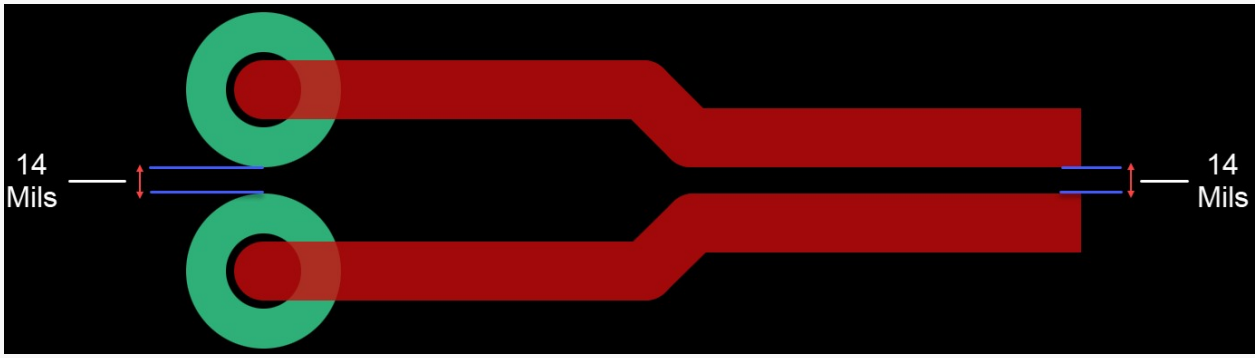

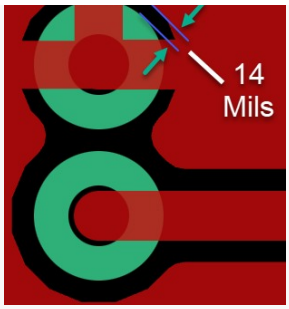

Trace Width:

- Minimum: 18 mils.
- Recommended: 30 mils.
- Maximum: 180 mils.

- Projects must meet the following drill bit guidelines:

Size (mm)	Size (mils)
0.50	19.7
0.60	23.6
0.70	27.6
0.80	31.5
0.90	35.4
1.00	39.4
1.10	43.3
1.20	47.2
1.30	51.2
1.40	55.1
1.50	59.1

Drill holes that are smaller than 1.5 mm (59.1 mils) are rounded up to the closest drill bit size. Drill holes bigger than 1.5 mm are drilled to the specified diameter.

Design guidelines per course:

Course	Board Outline (mils)	Layers	Other Requirements
CAD266	2000x2000 max	Single	
CAD366	3000x3000 max	Single/Double	4 Mounting holes, 5.08mm screw terminals, 9-position D-Sub Plug
COM455	2000x3000 max	Single	
DGS266	3000x2000 max	Single	
ECP455 - Assignment	1500x1500 max	Single	
ECP455 - Project	3000x2000 max	Single	4 Mounting holes, 5.08mm Screw Terminal
ECR255	1000x1000 max	Single	
ECR353	2000x2000 max	Single/Double	
ELD255	3000x2000 max	Single	
ETD555	2000x2000 max	Single/Double	
HSI255	2000x2000 max	Single	
HSI266	2000x2000 max	Single	
HSI355	3000x2000 max	Single/Double	
TPJ452	N/A	Single/Double	4 Mounting holes
TPJ653	N/A	Single/Double	4 Mounting holes, 5.08mm Screw Terminal
TPJ655	N/A	Single/Double	4 Mounting holes

TRN553	1500x1000 max	Double	Surface mount components only
WCM555	2000x2000 max	Single/Double	

- Once the project is printed, the students will receive an email from the Seneca PCB Lab for pick up. PCB pick ups are available from either room A4059 or A4074. Have your Seneca photo ID (virtual Seneca OneCard) ready for pick up. Students cannot pick up PCBs on behalf of someone else, except for your project partner, who must be disclosed on the email request. **Any questions about PCB design or Software must be discussed with your instructor. We cannot offer advice on PCB designs.**
- Students can only print one project PCB at a time (per course). If they want to make a revised board, then the original board must be returned when picking up the revised board (even if there are components soldered onto it).
- Only PCBs designed using Fusion or Eagle are supported. Converted projects from other software applications are not accepted.
- If the board file or any CAM files are missing, the project will be returned to the student.
- Every student project will be compared for cheating and plagiarism. If an issue is found, the students involved will undergo the Seneca Academic Integrity Policy.
- Projects are printed on a first come, first served basis. The lead time is 5 business days for Single-Sided projects and 7 business days for Double-Sided projects, starting from when the request is approved for manufacturing.