

What's the point of PC/CP300?

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What is the purpose of the labs?
How do the labs teach this process?
Where do I get the lab information?

Why are we here?
Modular design

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Why are we here?

- PC/CP120 labs taught the basics of *building and debugging* digital circuits.

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- It also introduced *analog circuit simulation*.

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- PC/CP300 will teach how to *design and build circuits* that interact with the real world.

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It also introduced *analog circuit simulation*.
- PC/CP300 will teach how to *design and build circuits* that interact with the real world.

As embedded systems become more universal, circuits which involve logic and which interact with the real world are everywhere.

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What's special about circuits that interact with the real world?

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What's special about circuits that interact with the real world?

- How do you get *input* from the real world?

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- How do you get *input* from the real world?
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- How do you get *input* from the real world?
- How do you provide *output* to the real world?
- How do *adjust* voltages, etc. to match the real world?

These issues apply whether you're in the digital world, the analog world, or some combination of both.

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- Designing complex circuits is difficult.

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- Designing complex circuits is difficult.
Building them up from smaller **modules** is essential.

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Building them up from smaller **modules** is essential.

Several different approaches will be used to develop your abilities to think and work in modular terms.

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Learning Objectives

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Learning Objectives

There are 3 types of learning objectives:

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Learning Objectives

There are 3 types of learning objectives:

- 1 Conceptual

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Learning Objectives

There are 3 types of learning objectives:

- 1 Conceptual
understanding certain ideas

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Learning Objectives

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- ① Conceptual
understanding certain ideas
- ② Practical

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understanding certain ideas
- 2 Practical
applying knowledge to specific “real-world” tasks

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- 3 Communication

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presenting information and results in formats which are typical in professional settings

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Different types of learning objectives lead to different types of assessments.

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Conceptual Learning Objectives

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Conceptual Learning Objectives

Important ideas to grasp include:

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Conceptual Learning Objectives

Important ideas to grasp include:

- 1 Identifying common operational amplifier circuits and explaining their operation

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Conceptual Learning Objectives

Important ideas to grasp include:

- 1 Identifying common operational amplifier circuits and explaining their operation
- 2 Suggesting alternative ways to solve data acquisition and control problems

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Conceptual Learning Objectives

Important ideas to grasp include:

- 1 Identifying common operational amplifier circuits and explaining their operation
- 2 Suggesting alternative ways to solve data acquisition and control problems

These will partly be assessed using quizzes.

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Practical Learning Objectives

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Tasks to become familiar with include:

- 1 Reading data sheets for electronic components to determine how to use them

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Tasks to become familiar with include:

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Practical Learning Objectives

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- 4 Simulating circuits to demonstrate predicted operation to aid in design

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These will partly be assessed using lab demonstrations and the lab project.

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Communication Learning Objectives

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Communication Learning Objectives

Professional forms of communication include:

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Communication Learning Objectives

Professional forms of communication include:

- 1 Creating block diagrams for circuits and sub-circuits to explain complex circuit designs

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Communication Learning Objectives

Professional forms of communication include:

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- *Lab Demonstrations* -

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- *Lab Demonstrations* -
these show that you've *completed and understood* specific tasks

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these show that you have *internalized the important concepts*

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The *lectures* will prepare you for the labs.

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- Book- or coil-bound notebook

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 - Bring it to **every** lab and lecture
 - Record all data and observations in the lab
 - Create a summary in the notebook *after* the lab

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 - Bring it to **every** lab and lecture
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 - Photocopy and hand in the summary as required.

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- Book- or coil-bound notebook
 - Bring it to **every** lab and lecture
 - Record all data and observations in the lab
 - Create a summary in the notebook *after* the lab
 - Photocopy and hand in the summary as required.

The lab notebook can be used for quizzes and lab tests, so it's to your benefit to keep the notebook organized and use it well.

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What are *Pre-lab requirements*?

- Usually they involve looking up information that will be used in the lab.

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The background information will prepare you to get through the lab as efficiently as possible.

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- Summary (usually handed in)

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- One or two other questions (sometimes)

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questions which you should be able to answer if you
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circuit to be demonstrated and kept for future use

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- Building blocks (sometimes)
circuit to be demonstrated and kept for future use
- Simulations (sometimes)
allows testing circuit performance with different parameters easily

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Where do I get the course information?

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- The website -

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denethor.wlu.ca/pc300

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Everything for the course is there.

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There is a lot of stuff on the webpage, so spend some time to become familiar with how it is laid out.