

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

What's the point of these labs?

Terry Sturtevant

Wilfrid Laurier University

August 25, 2015

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

Why are we here?

Why are we here?

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

Why are we here?

Why are we here?

- Because my timetable says so

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

Why are we here?

Why are we here?

- Because my timetable says so
- So I spend less time on Facebook

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

Why are we here?

Why are we here?

- Because my timetable says so
- So I spend less time on Facebook
- To get 25% of my physics mark

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

Why are we here?

Why are we here?

- Because my timetable says so
- So I spend less time on Facebook
- To get 25% of my physics mark
- To go over some physics that was covered in class

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

Why are we here?

Why are we here?

- Because my timetable says so
- So I spend less time on Facebook
- To get 25% of my physics mark
- To go over some physics that was covered in class
- To learn some physics that *wasn't* covered in class

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

Why are we here?

Why are we here?

- Because my timetable says so
- So I spend less time on Facebook
- To get 25% of my physics mark
- To go over some physics that was covered in class
- To learn some physics that *wasn't* covered in class

None of the above

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

Why are we here?

- Lectures teach physics *principles*

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

Why are we here?

- Lectures teach physics *principles*
Labs teach you the *process of science research*

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

Why are we here?

- Lectures teach physics *principles*
Labs teach you the *process of science research*
This process is not specific to this course;

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

Why are we here?

- Lectures teach physics *principles*
Labs teach you the *process of science research*
**This process is not specific to this course;
it isn't even specific to physics**

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

Why are we here?

- Lectures teach physics *principles*
Labs teach you the *process of science research*
**This process is not specific to this course;
it isn't even specific to physics**

Most students won't go into research careers,

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

Why are we here?

- Lectures teach physics *principles*
Labs teach you the *process of science research*
**This process is not specific to this course;
it isn't even specific to physics**

Most students won't go into research careers, **but everyone should understand how to solve problems scientifically.**

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

Why are we here?

What will I remember after I leave university?

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -
only those you use regularly

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -
only those you use regularly
- Principles -

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -
only those you use regularly
- Principles -
a few

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -
only those you use regularly
- Principles -
a few

But the *process* of scientific research should stick with you

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

Why are we here?

What will I remember after I leave university?

- Facts and Formulas -
only those you use regularly
- Principles -
a few

But the *process* of scientific research should stick with you **once you understand it.**

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

① Conceptual

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- 1 Conceptual
understanding certain ideas

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- ① Conceptual
understanding certain ideas
- ② Practical

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- ① Conceptual
understanding certain ideas
- ② Practical
applying knowledge to specific “real-world” tasks

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- ① Conceptual
understanding certain ideas
- ② Practical
applying knowledge to specific “real-world” tasks
- ③ Communication

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- ① Conceptual
understanding certain ideas
- ② Practical
applying knowledge to specific “real-world” tasks
- ③ Communication
presenting information and results in formats which are typical in professional settings

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Learning Objectives

There are 3 types of learning objectives:

- ① Conceptual
understanding certain ideas
- ② Practical
applying knowledge to specific “real-world” tasks
- ③ Communication
presenting information and results in formats which are typical in professional settings

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

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

Important ideas to grasp include:

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

Important ideas to grasp include:

- 1 uncertainties in measurement

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

Important ideas to grasp include:

- ① uncertainties in measurement
- ② error propagation, uncertainties in final results, and agreement of quantities

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

Important ideas to grasp include:

- ① uncertainties in measurement
- ② error propagation, uncertainties in final results, and agreement of quantities
- ③ basic statistical analysis of repeated measurements, including uncertainty in the average

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Conceptual Learning Objectives

Important ideas to grasp include:

- ① uncertainties in measurement
- ② error propagation, uncertainties in final results, and agreement of quantities
- ③ basic statistical analysis of repeated measurements, including uncertainty in the average
- ④ how to improve experiments based on uncertainty analysis

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

Tasks to become familiar with include:

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

Tasks to become familiar with include:

- ① determining precision measure of various instruments

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

Tasks to become familiar with include:

- ① determining precision measure of various instruments
- ② identifying experimental factors which introduce uncertainty into measurements

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

Tasks to become familiar with include:

- ① determining precision measure of various instruments
- ② identifying experimental factors which introduce uncertainty into measurements
- ③ calculating uncertainties in quantities derived from measurements

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Practical Learning Objectives

Tasks to become familiar with include:

- ① determining precision measure of various instruments
- ② identifying experimental factors which introduce uncertainty into measurements
- ③ calculating uncertainties in quantities derived from measurements
- ④ comparing quantities based on their uncertainties

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Communication Learning Objectives

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Communication Learning Objectives

Professional forms of communication include:

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Communication Learning Objectives

Professional forms of communication include:

- ① answering questions arising from the lab based on evidence from the lab

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Communication Learning Objectives

Professional forms of communication include:

- ① answering questions arising from the lab based on evidence from the lab
- ② **writing a scientific report**

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

Learning Objectives

How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

Communication Learning Objectives

Professional forms of communication include:

- ① answering questions arising from the lab based on evidence from the lab
- ② **writing a scientific report**

The lab report is the single component of the lab with the highest weight in the final lab grade.

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

Learning Objectives

How will I learn this process?

What happens each week?

What is the most important lab requirement?

How do I survive the lab report?

How will I learn this process?

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

Learning Objectives

How will I learn this process?

What happens each week?

What is the most important lab requirement?

How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process

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

Learning Objectives

How will I learn this process?

What happens each week?

What is the most important lab requirement?

How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -
the finished report will illustrate the entire research process
and how it leads to answering the research question(s).

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -
the finished report will illustrate the entire research process
and how it leads to answering the research question(s).
- Lab *test* -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -
the finished report will illustrate the entire research process and how it leads to answering the research question(s).
- Lab *test* -
a final written test will examine your grasp of concepts and calculations.

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -
the finished report will illustrate the entire research process and how it leads to answering the research question(s).
- Lab *test* -
a final written test will examine your grasp of concepts and calculations.

The *specific* experiment isn't that important;

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How will I learn this process?

- Lab *exercises* -
these show individual steps of the process
- Lab *experiment* -
this will give you an example of a research question to answer
- Lab *report* -
the finished report will illustrate the entire research process and how it leads to answering the research question(s).
- Lab *test* -
a final written test will examine your grasp of concepts and calculations.

The *specific* experiment isn't that important; **its value is to illustrate the process.**

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

Learning Objectives
How will I learn this process?

What happens each week?

What is the most important lab requirement?
How do I survive the lab report?

What happens each week?

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual
OR

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual

OR

Read alternative document

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual

OR

Read alternative document

OR

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual

OR

Read alternative document

OR

Watch screencast (video) of alternative document

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual
OR
Read alternative document
OR
Watch screencast (video) of alternative document
- Do quiz on MyLearningSpace to show that you’ve understood theory

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual
OR
Read alternative document
OR
Watch screencast (video) of alternative document
- Do quiz on MyLearningSpace to show that you’ve understood theory
- Pre-lab **tasks** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual
OR
Read alternative document
OR
Watch screencast (video) of alternative document
- Do quiz on MyLearningSpace to show that you’ve understood theory
- Pre-lab **tasks** -
things which have to be done *before* the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (before the lab)

Before the lab

- Read “*Theory*” section of lab manual

OR

Read alternative document

OR

Watch screencast (video) of alternative document

- Do quiz on MyLearningSpace to show that you’ve understood theory
- Pre-lab **tasks** -
things which have to be done *before* the lab

These ensure that you are *prepared* for the lab.

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

- In-lab **tasks** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

- In-lab **tasks** -
things which have to be done *during* the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

- In-lab **tasks** -
things which have to be done *during* the lab
- In-lab **questions** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

- In-lab **tasks** -
things which have to be done *during* the lab
- In-lab **questions** -
questions which have to be answered *during* the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (during the lab)

During the lab

- In-lab **tasks** -
things which have to be done *during* the lab
- In-lab **questions** -
questions which have to be answered *during* the lab

These have to be completed *while you have the equipment in front of you.*

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

- Post-lab **tasks** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

- Post-lab **tasks** -
things which can be completed *after* the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

- Post-lab **tasks** -
things which can be completed *after* the lab
- Post-lab **questions** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

- Post-lab **tasks** -
things which can be completed *after* the lab
- Post-lab **questions** -
questions which can be answered *after* the lab

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What happens each week? (after the lab)

After the lab

- Post-lab **tasks** -
things which can be completed *after* the lab
- Post-lab **questions** -
questions which can be answered *after* the lab

These often require *further analysis* which can be done outside the lab.

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What is the most important lab requirement?

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What is the most important lab requirement?

- The **lab report** -

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What is the most important lab requirement?

- The **lab report** -
it's worth *at least* 40% of your lab grade

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What is the most important lab requirement?

- The **lab report** -
it's worth *at least* 40% of your lab grade
it's worth *at most* **60%** of your lab grade

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

What is the most important lab requirement?

- The **lab report** -
it's worth *at least* 40% of your lab grade
it's worth *at most* **60%** of your lab grade

That's right; 60%!

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

- It won't be due until the 4th lab.

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

- It won't be due until the 4th lab.
- *If you're not happy with the mark, you can resubmit it at your last lab period.*

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

- It won't be due until the 4th lab.
- *If you're not happy with the mark, you can resubmit it at your last lab period.*

There will be feedback on it which can help you improve it.

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

- It won't be due until the 4th lab.
- *If you're not happy with the mark, you can resubmit it at your last lab period.*
There will be feedback on it which can help you improve it.
- *The better your mark on the final lab report, the more it will count toward your final lab grade.*

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

Learning Objectives
How will I learn this process?
What happens each week?
What is the most important lab requirement?
How do I survive the lab report?

How do I survive the lab report?

- It won't be due until the 4th lab.
- *If you're not happy with the mark, you can resubmit it at your last lab period.*
There will be feedback on it which can help you improve it.
- *The better your mark on the final lab report, the more it will count toward your final lab grade.*

Since the lab report puts together all that you've learned in the process, it can replace lower marks on exercises which you got while learning the process.

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

Where do I get the lab information?

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

Where do I get the lab information?

- The website -

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

Where do I get the lab information?

- The website -
denethor.wlu.ca/pc141

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

Where do I get the lab information?

- The website -
denethor.wlu.ca/pc141
Everything for the labs is there.

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

Where do I get the lab information?

- The website -

denethor.wlu.ca/pc141

Everything for the labs is there.

Bookmark the page for your lab section, since different lab sections are on different schedules.

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

Where do I get the lab information?

- The website -

denethor.wlu.ca/pc141

Everything for the labs is there.

Bookmark the page for your lab section, since different lab sections are on different schedules.

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

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

What about laptops in the lab?

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

What about laptops in the lab?

- Do I need a laptop?

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

What about laptops in the lab?

- Do I need a laptop?

No

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

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

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

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

- Can I use a laptop?

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

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

- Can I use a laptop?

Yes

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

- Can I use a laptop?

Yes

You can save trees and possibly time.

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

- Can I use a laptop?

Yes

You can save trees and possibly time.

Wireless access in the labs means that the website and thus everything needed for the labs is available if you're using a laptop.

What about laptops in the lab?

- Do I need a laptop?

No

All of the software we use is available in the computer labs and/or has free alternatives.

- Can I use a laptop?

Yes

You can save trees and possibly time.

Wireless access in the labs means that the website and thus everything needed for the labs is available if you're using a laptop. Windows, Mac, and Linux should all be fine.