

Learning Module Outline

Learning Objectives	
<i>Student Learning Objectives for this module</i>	<p>Upon completion of this module, you will be able to:</p> <ul style="list-style-type: none"> • Design and conduct an experiment, and write a laboratory report • Reach conclusions about the physical world using experimental design processes • Develop a research project report using supporting media • Create a spreadsheet using Excel/Calc to make charts and graphs • Demonstrate the basic principles of experimental design by collecting and analyzing data • Record your processes and data in a science log • Conduct data analysis and reporting using the SPSS software • Use PowerPoint/Impress to presenting your data findings

National Educational Technology Standards (NETS)	
<i>Standards</i>	<ul style="list-style-type: none"> • Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works • Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity • Select and apply technology tools for research, information analysis, problem- solving, and decision-making in content learning

Learning Resources	
<i>Required Resources</i>	<ul style="list-style-type: none"> • Science log book • Physics text book • Microsoft office (Excel and PowerPoint) • Open office (Calc and Impress); http://www.openoffice.org/ • SPSS software
<i>Additional Resources</i>	<ul style="list-style-type: none"> • Assessment Rubric • Digital camera (use of cell phone is accepted) • Internet Resource site; http://probesight.concord.org/

Faculty-created Online Learning Activities	
<i>Self-assessment and Learning Activities to be created by the faculty</i>	<ul style="list-style-type: none"> • Flash cards • Glossary (comprise of text and images) • Fill-in-the-blank • Practice Questions • Fact Cards • Matching • Crosswords • Challenge • Quiz • Pick a Letter

Learning Activities	
<i>Activities for this module to master the basics</i>	<ul style="list-style-type: none"> • Complete the online learning activities • Engage in a lab experiment using experimental design techniques • Use Excel/Impress to record your data findings for a science log • Using digital cameras to capture your processes and data • Install SPSS and insert data from your lab experiment for data analysis • Learn basic features of PowerPoint and Impress • Develop your Presentation using PowerPoint or Impress template

Self/Peer Assessment	
<i>Opportunities for students to check their progress and receive feedback</i>	<ul style="list-style-type: none"> • Use a Wiki to develop their lab report (add scanned graphs and images): See Lab rubric • Use a blog to provide text and online resources found to support your topics • Journal for reflection on each lab experiment and processes observed • Participate in a Discussion board on experimental design processes • Develop a group glossary on key physics terminologies

Graded Assessment	
<i>Evidence to proceed</i>	<ul style="list-style-type: none"> • Upload final Lab report assignments • Presentation of your findings • Participation in discussion board explanations of the experiments • Complete assigned tests • Completed Wiki

Group and Individual Assessment Rubric

Plunging Into Physics

Group Assessment Rubric

Student:	Group:	Class Period:	
Score	3	2	1
Experimental Design	The question is worthy and can be answered by the experiment. Plan shows effective and reliable data collection procedures.	The question is worthy. The experimental design is generally strong, but links between question and plan are unclear.	The question and experimental design do not match. Additional support is needed to plan project.
Conducting the Experiment	Sufficient and accurate data is collected. Data is well organized. Tables or charts made interpretation clear.	Data is accurate, but more data would improve interpretation. Tables and charts are appropriate.	Data may be inaccurate or limited, making interpretation difficult. Tables and charts are needed.
Analysis	Logical conclusions are based on the data and connect to the scientific principles being studied.	Data analysis may be generally accurate, but does not make strong connections to scientific principles.	Analysis is flawed or does not lead to conclusions.
Presentation	Science concepts are expressed well. Presentation is well organized and effective. Multimedia supports presentation.	Science concepts are presented, but not in depth. Presentation is generally organized and effective. Multimedia supports the presentation, but may distract from the message to a degree.	Concepts are not presented in an effective or organized manner. Multimedia does not support the message.
References	References are complete and properly cited.	References are complete, citations may need work.	References are incomplete or poorly cited.

Group Score: _____ / 15

Individual Assessment Rubric

Student:		Class Period	
Score	5	3	1
Participation	Cooperative team member who shows leadership. Contributes significantly to group effort. Uses time and materials properly.	Cooperative team member. Contributes to group effort. Uses time and materials properly, may need reminders.	Does not contribute fully to team effort, or distracts partners. Problems with time and materials management interfere with group's progress.

Rate yourself on a scale from 1 to 5 on the level of participation in the project, with 1 being the least involved to 5 being a major contributor of ideas and effort.

1
2
3
4
5

Participation Score + Self Evaluation = Total Individual Score _____/10

Reference:

http://www.intel.com/corporate/education/emea/eng/ireland/elem_sec/tools_resources/plans/plunging/plunging.htm