

Honors Independent Research Project (IRP)

Why do I have to do this?

- According to the NC Department of Public Instruction (NCDPI), **“All students who choose an honors science course will be expected to complete more independent in-depth scientific investigations and to report on them using a more formal scientific laboratory report format. Students who choose an honors science course will be expected to read and present orally and in writing recent scientific finding.”** (2004 Science Support Documents, p. 82)

How will I be graded?

- This project will be worth 50% of the final six-weeks average. Therefore it is worth 12.5% of the entire course grade. In addition to that since it is required to complete as an honors course according to NCDPI (see above), any student not completing a satisfactory (>70%) project will **NOT** receive honors credit for the course, although they will be expected to finish the course completing all of the requirements that become an honors science course. In the end that means you'll get a GPA on the standard weight (4.0) instead of the honors weight (5.0).

What do I have to do?

- Pick a project that fits into the criteria to be listed later.
- Research this project.
- Do YOUR own experiment involving this project.
- Produce a written and visual documentation and summation of your research.
- Present your finding to your classmates. (Possibly)

When will it be due?

- Your project will be separated into small manageable sections.
- Each section will have a due date.
- I will review those sections and grade them independently and make comments on things that need to be done to improved.
- All of the independent sections should be corrected as I comment on them and be included in your rough draft. I'll comment on your rough draft and hand it back to you.
- You'll turn in your final draft at the due date listed below.

What are some miscellaneous requirements?

- The entire project must be typed or computer generated. NOTHING can be handwritten unless the teacher gives prior approval. Projects that are not typed will receive a grade of a zero (0).
- Your project may not be a project that was done for a prior teacher unless you obtain prior teacher approval.
- NO LATE projects are to be accepted. You must meet your deadlines.
- Only the FINAL Draft will count as 50% of the last six weeks grade. All other assignments will either count as tests or quizzes during their appropriate six-weeks.
- You are required to provide all materials for your project. Please keep this in mind when you are picking your project.
- All work should be kept in your IRP folder given to you when the project was assigned. Work that was completed and commented on should be kept in this folder. Part of the final grade depends on keeping the documentation of your work.
- **All parts must be in correct scientific language. Third person passive voice. NO first person unless strictly told to on specific sections.**

Requirements and Timeline

***Topic Selection

Due: 9/19 9:50m

Grade: Quiz

What are some general requirements?

- **Only** part that may be submitted handwritten.
- Pick a topic that deals with something that you enjoy.
- Topic must deal with chemistry.
- Topic must be of a high school caliber and approved by the teacher.
- Adapting experiments that have already been done or found on the Internet is allowable, but be very careful to make the experiment your own.
- NO two students may have the same topic as another honors student. Topics will be assigned on a first come, first serve basis.
- Once a topic has been selected, the student may not change their topic. Therefore make sure you've thought through the general requirements you are going to have to do for your project to make sure it is feasible for you to undertake.
- Take into consideration the timescale that will be needed to complete the project and choose accordingly.

How do I pick my topic?

- Choose a broad topic that you are interested in and start to narrow it down to something that is testable.
- <http://www.sciencebuddies.com/> is a website with some very helpful information that you can use to guide yourself during this project.
- Your project must only test one variable and be specific.
- If you are having troubles finding a topic or narrowing down your topic use the Topic Wizard on the Science Buddies website. This can be found on the above website.

What will I be graded on?

- Topic fits the requirements that have been set above. The teacher has the final say on an individual topic.
- Identification of the independent (manipulated) variable, dependent (responding) variable, and all of the controls in the experiment.
- Only test ONE variable.
- A list of materials needed to complete the project. Think long and hard since once the project is approved you must provide all of these materials. Sometimes ordering is required for materials and receiving orders take time. Not having the supplies is NOT an excuse.
- A "working" hypothesis for your topic to give an idea of what you might want to test from your initial thoughts.

*****Purpose & Literature Search**

Due: 10/3 9:50 am

Grade: Test

What will I be graded on?

- **Problem/Question**
 - This is a question that you should develop from your topic. It will be the question that you are going to answer during your research.
- **Rationale**
 - Why did you choose this experiment?
 - This is the **ONLY** section in which you can use first person.
 - Go beyond the obvious that you had to do this for a grade or you were forced to do this.
 - I want to see the connection to why you're interested in researching your project.
- **Literature Search**
 - Here you should gather information from outside sources about your topic. There is information out there about the ideas that you're trying to answer and these should guide your experiment.
 - This should detail the background chemistry behind your project.
 - Should include at minimum 4 sources that deal with their topic. Keep in mind good projects will have more than 4 sources.
 - Sources should be reported in correct MLA format. You may use the citation maker available on JM's website to do this.
 - Sources should be referenced in your background frequently and by the use of parenthetical documentation.
 - WIKIPEDIA is **NOT** a source, nor is any encyclopedia. It is merely a guide to direct your research. Information from wikipedia must have been found somewhere else to be included there.
- **Hypothesis**
 - This hypothesis by now should be your **FINAL** hypothesis. Use your literature search to develop your hypothesis.
 - Must be in an If... then... format!!!
 - Must be testable and only test one variable.
 - **NOTE:** In the end you might find out that your hypothesis is wrong. This is totally fine if this is the case. You will simply take care of this when you discuss your results.
- **References**
 - At least 4 sources correctly listed in MLA format.
 - All 4 sources parenthetically documented frequently in the paper.

What are some miscellaneous requirements?

- Must be typed.
- All parts in the third person passive voice unless specifically stated.
- The 5 major sections listed above in **bold** must be labeled in your paper. Your paper should be one continuous document with clearly labeled section.
- Times New Roman/Arial or an equivalent readable font, 12 point, 1" margins.

Helpful TIPS

- Record all sources as you find them. Sometimes it is hard to go back and find information that you've found on the Internet.
- Be careful to avoid plagiarism. At any point during this project plagiarism will result in a grade for the assignment of a zero (0). Plagiarism of any size is still considered plagiarism in my book!!!
- Make sure you're using reputable Internet sites and are getting correct information. At any time if you believe the website might not be reputable simple bring the website to me and ask me.

***Materials & Procedure

Due: 10/10 9:50 am

Grade: Quiz

What will I be graded on?

- **Materials**
 - Bulleted list of any and all relevant materials with quantities that were used during the experiment.
- **Procedure**
 - Numbered list of the steps that you took or will take during the experimentation process.
 - No step is too small.
 - Only list what you WILL do.
 - This will be changed as you physically do the experiment, but you should have a guide to follow as you perform the experiment.
 - While doing the experiment take careful notes on what you actually did so that you can record this in your final written procedure.
 - There should be photographs included to validate the procedure of your experiment. No clipart or online photographs will be accepted!!!
 - Think and make sure to include any safety precautions that need to be followed while completing this experiment.

What are some miscellaneous requirements?

- Must be typed.
- All parts in the third person passive voice unless specifically stated.
- The 2 major sections listed above in **bold** must be labeled in your paper. Your paper should be one continuous document with clearly labeled section.
- Times New Roman/Arial or an equivalent readable font, 12 point, 1" margins.
- Must list materials in a bulleted list and list the procedure in a numbered list.

Helpful TIPS.

- As figuring out the experiment actually think it through in your head or possibly do a trial run to try to work out some of the kinks in your experiment.
- Be detailed in both parts.

*****Rough Draft IRP**
Due: 11/7 9:50 am
Grade: Test

What should I include?

- Be sure to include the sections that have already been turned in for the **Purpose, Literature Search, Materials and Procedure**.
- You should have made any appropriate corrections to these sections that I have already graded so that I may look at them to give you more advice and tips
- Also include the following listed below.
- You will be graded on the sections listed above as well as the sections I will list below.

What will I be graded on?

- **All corrected sections listed above.**
- **Results**
 - This is where you present your data and evidence of your experiment. There is no need to comment on your data, but simply state it.
 - You should include your data in a neatly organized data table. Your data table should make sense and be easy to read. Some experiments might be easier to use multiple labeled tables to present your data.
 - Tables must be labeled as to what the data is showing.
 - Any relevant calculations, if any should be included after your data has been presented. NOTE: Not all experiments will need calculations but most will.
 - Graphs. Everything should be able to be graphed. If you can't graph your topic you probably shouldn't have done it and you probably didn't really do a true experiment.
 - Graphs should have titles, labeled axis, and appropriate scales. They should also be computer generated.
 - I have an easy graphical program that can create your graphs in a few minutes and I don't mind showing you how to use it and make a great professional graph.
 - If possibly, copy and paste your graph seamlessly in your paper. If not refer to your graph as Figure 1, 2, 3, ... and refer back to that when you wish to talk about a specific graph.
 - A model, video, or physical evidence of your experiment must be included in addition to your pictorial evidence.
- **Discussion**
 - This is where you discuss what your data means or what your data showed.

- DO NOT simply restate what you've just said in your results section.
- You should discover relationships and similarities amongst your data.
- You should explain any and all mathematical relationship that your data might show if applicable.
- You should reference back to your literature and background research to drive home points that were made that you hoped to find when you did your experiment.
- You should critically think about your project and note any errors that were made both purposefully and by mistake.
- You should critically think about things that happened during your project that you could improve upon or do further research on in the future.
- Be specific in your improvements and errors.
- **Conclusion**
 - Briefly summarize the results and/or relationships that you found in your experiment.
- **Acknowledgements/References**
 - This is the final thing to include in your rough draft.
 - Acknowledgements are for any people or agencies that actually helped you complete your project. For example if Wal-Mart donated supplies to you, you should list them in the acknowledgements section.
 - References are the correct MLA citations for the minimum of 4 references that you have. These should also be cited throughout your paper where they were actually used.
 - Most references will be used in the literature search, although they are appropriate to use in the procedure as well as the discussion as well and sometimes the conclusion.
 - Even though this section was included in your Purpose and Research sections it should technically be at the end of your paper now.
 - Good papers will have more than 4 sources to pull from.
- **Journal**
 - This should be kept from day one and be a log of when you worked on your experiment (date and time) and what you did on those dates. This is supposed to be handwritten in a small notebook and turned in with your project.

What are some miscellaneous requirements?

- Must be typed.
- All parts in the third person passive voice unless specifically stated.
- The 10 or 11 (depends on if you do or do not have acknowledgements) major sections listed above in **bold** must be labeled in your paper. Your paper should be one continuous document with clearly labeled section.
- Times New Roman/Arial or an equivalent readable font, 12 point, 1" margins.

*****Final Draft IRP**

Due: 11/25 9:50 am

Grade: (50% of last six-weeks grade, 12.5% of final grade)

What will I be graded on?

- Your grade for this assignment will be graded solely on the supplied rubric.
- NO late work accepted for any reason!!!
- You should simply have to make any appropriate corrections that were suggested to make on your rough draft for this section.
- Rough drafts will not be graded the same way as the final draft, please note this!!!

What should I include in my presentation?

- If so assigned a presentation should last between 3 and 5 minutes.
- It should quickly summarize what your question, hypothesis, experiment and results were.
- You should have your video, model or physical evidence to show your colleagues.
- Attentiveness to other projects will also affect your grade.
- Please note this is an optional addition that will be decided upon by the teacher as the semester ends depending on time requirements of the class.

I understand that this project is worth half (50%) of the final six-weeks average (12.5% of the overall average) and that if I do not turn in a satisfactory project that I will NOT receive honors credit for this course on my transcript.

Signed _____ Date _____

I understand that _____ (student's name) has this honors research project and that it is worth half (50%) of the final six-weeks average (12.5% of the overall average) and that if they do not turn in a satisfactory project that he/she will NOT receive honors credit for this course on their transcript. I will help _____ (student's name) to do the best on their project that they can.

Signed _____ Date _____