**AICE/AP Environmental Management Research Guidelines**

**What are the requirements for my paper?**
1500-2000 word report divided into five sections based on “the method.”

* Introduction: expresses the topic as a problem or hypothesis, provides background knowledge
* Methodology: what you did (detailed!) and why you did it. Justify your science!
* Results and analysis: the bulk of the paper. What were your findings? Express condensed data, never raw measurements, and analyze them as appropriate.
	+ Explain in detail, making sure to use charts, graphs, diagrams, figures, and statistics.
* Conclusion: draws together results. How are your findings **significant?** What do the results potentially mean for environmental management?
* Evaluation: How did your research go? What did you do wrong? What might you change? Don’t be too negative!

In addition, you must provide the following:

* Organized notebook or folder of everything you did to complete this project. This can be a spiral notebook, a composition book, a folder with brads and pages punched in, a binder… Whatever helps keep you organized! Include planning stages, any contacts you made, **ALL** rough drafts with comments, and pictures of your work.
* At least two photographs of you conducting your research. You must be physically in at least one of these pictures. You may email these to Ms. Paxson or turn in hard copies.
* Both the research folder and photographs are due with the final draft of your paper on April 1, 2014.

**Timeline of Completion:**

* September 12, 2014: Initial topic/question/hypothesis due (25 points)
* October 3, 2014: Proposal Rough Draft due (25 points)
* October 17, 2014: Proposal Final Draft Due (50 points)
* February 6, 2015: First draft of paper due in class for editing (50 points)
* February 20, 2015: Second draft due electronically to Ms. Paxson (50 points)
* April 1, 2013: Final draft of paper hard copy and supplemental materials due (100 points)

**AICE Environmental Management: Guidelines for Independent Research (Coursework)**

*As you prepare the drafts of your independent research report, use the following guidelines to make sure you are presenting your research in an organized fashion.*

***General Format:***

**Title:** Should be descriptive and scientific. Nothing cute!

**Candidate Number:** Your CIE Number

**Author:** Your Name

**Introduction:** Explain the reasons for carrying out the work, outline the essential background and clearly state the nature of the hypothesis. Keep it to the point and make sure your introduction directly relates to the hypothesis you have tested. Clearly state your thesis by the end of your introduction. This is a good place to establish a clear connection between your project and Environmental Management. Citations for research should be in the format (author year) in the body of your text. *Refer to skill C1, (a) and (b) in the Assessment Criteria for Coursework form.*

**Methodology:** Describe the plan you used to collect data to test your hypothesis. Provide sufficient details of the techniques employed to enable the work to be repeated. Clearly explain your methods and be sure that you clearly tie your methods to your hypothesis. If appropriate include a diagram, map or photo and description of your study site. *Refer to skill C1, (c) and (d) in the Assessment Criteria for Coursework form.*

**Results and Analysis:** Present the data you have collected after you have analyzed it. DO NOT include tables of raw data. DO include tables of summarized data, results of statistical analyses, photos, diagrams, graphs and charts. Label tables with numbers “Table 1.” Charts, diagrams, graphs and photos should be labeled as figures and numbered separately from tables “Fig. 1”

Any table or figure you include in your report must be referenced in the text of your results. State the results and draw attention in the text to important details shown in tables and figures. If you have nothing to say about it, it should not be in your paper! The results section is where you say what you saw, or what you found, do not interpret your data yet. According to CIE, this should form the main part of your study. *Refer to skill C2 in the Assessment Criteria for Coursework form.*

**Conclusion:** What conclusions can you draw from your data? Was your hypothesis supported or not? Don’t be afraid to admit your hypothesis was not supported. The data are what they are. It is your job to interpret your results to explain what those data actually mean. Use your knowledge of environmental and management principles to explain trends and patterns in your results. *Refer to skill C3, (a) and (b) in the Assessment Criteria for Coursework form.*

**Evaluation:** Reflect on the successes and shortcomings of your study. If you were giving advise to someone replicating your study what would you recommend? Don’t just focus on the negative. Outline what parts of your study were most effective, but also discuss any limitations of your methodology, or things you would do differently in the future. Be careful that this section remains upbeat. The last thing you want is to end on a sour note with an evaluation that reads like a list of excuses. *Refer to skill C1, (c) in the Assessment Criteria for Coursework form.*

**Citations:** Use the format provided on the reverse of this page (from the journal Ecology).

***Other Considerations:*** Write in the past tense. You are reporting on research that you have already done. Avoid long, complex sentences. Keep your paper readable by using short sentences mixed in with longer ones. Keep it concise, simple and to the point, and above all stay within your 1500-2000 word limit!

**Citation formats from the journal, Ecology**

# **Journal article**

One author

Last name, First initial. Second initial. Date. Title. Journal title **volume number**:pages.

**Example:**

Abrams, P. A. 1987. The functional responses of adaptive consumers of two resources. Theoretical Population Biology **32**:262-288.

## Two or more authors

Last name, First initial. Second initial., First initial. Second initial. Last name, and First initial. Second initial. Last name. Date. Title. Journal title **volume number**:pages.

**Example:**

Hjalten, J., K. Danell, and P. Lundberg. 1993. Herbivore avoidance by association: vole and hare utilization of woody plants. Oikos **68**:125-131.

## Chapter in a book

Last name, First initial. Second initial., First initial. Second initial. Last name, and First initial. Second initial. Date. Chapter title. Pages *in* First initial. Second initial. Last name and First initial. Second initial. Last name. Book title. Publisher name, City of publication, State of publication, Country of publication.

**Example:**

Abrams, P. A., B. A. Menge, and G. G. Mittelbach. 1995. The role of indirect effects in food webs. Pages 371-395 *in* G. Polis and K. O. Winemiller, editors. Food webs: integration of patterns and dynamics. Chapman and Hall, New York, New York, USA.

## Book

Last name, First initial. Second initial., First initial. Last name, and First initial. Second initial. Last name. Date. Book title. Publisher, City of publication, State of publication, Country of publication.

**Example:**

Drake, J. A., F. DiCastri, and R. H. Groves. 1989. Biological invasions: a global perspectives. Wiley, New York, New York, USA.

### Government document

Last name, First initial. Second initial., First initial. Second initial. Last name, and First initial. Last name. Document title. Report number. Government agency, Agency division, City of publication, State of publication, Country of publication.

**Example:**

Maschinski, J., H. D. Hammond, and L. Holter, editors. Southwestern rare and endangered plants: proceedings of the second conference. General Technical Report RM-GTR-283. U. S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado, USA.

**Web Page**

Author, Institution, Company, or Organization Responsible for the Web Page (if available).  (Year, Month Day web page was last updated). Title or description of page. Retrieved Month Day, Year you visited the web site, from: URL (address of web site)

Author:  Sometimes the person or group responsible for the web page is hard to determine, but it’s important that you figure it out.  Check the top and bottom of the web page.  Then check the top and bottom of the home page.  Then look for a link like “About.”  A library staff person would be happy to help you discover who the author is.

**Example:**

LD Online.  (2006). Speech and language milestone chart. Retrieved April 11, 2006, from:       http://www.ldonline.org/ld\_indepth/speech-language/lda\_milestones.html