Syllabus

Lac Courte Oreilles Ojibwe College

Summer 2020

**(updated 5/27/20)**

**Course Title:**  **Field Methods in Natural Resources**

**Course Number: SCI 293**

**Credits:** 2

**Course Schedule:** classes begin June 1st, 2020 (see schedule below)

**Instructors:** Michael Heim Dr. Deb Anderson

634-4790 EXT. #140 EXT. 125

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**Office Hours**: By appointment only.

**Textbook:** None Required.

Reference: *Pocket Guide to APA Style, 3rd Edition*. Robert Perrin. Publisher: Cengage. ISBN: 9780547201931

**Course Description:** This course incorporates survey techniques, correct identification of flora and fauna, research design methods, and implementation of natural science concepts into the student-based experiential learning of a natural resources field study.

**Prerequisites:**  ENG 108, CPS 101, SCI 101 or 102 or 111

**This course is required for:**

Associate of Applied Science-Agriculture and Natural Resources Management Degree.

**Course Specific Outcomes:**

1**.** Incorporate at least two field techniques/methods in their individualized research-based project.

**Assessment: Individualized research-based project presentation and paper**

2. Complete field methods research utilizing the scientific method.

**Assessment: Individualized research-based project presentation and paper**

3. Apply natural science concepts to Agriculture and Natural Resources issues and apply the scientific method.

**Assessment: Individualized research-based project presentation and paper**

4. Generate a presentation and research paper following the scientific methods on their research results and overall research experience.

**Assessment: Individualized research-based project presentation and paper**

**General Education Program Outcomes:**

*Students receiving an associate degree will:*

**Gen Ed 1 Communication:**

Students read, write, speak, and listen effectively to increase knowledge, to foster understanding, or to promote change in attitudes, values, beliefs, or behaviors.

**GEN ED 2 Mathematic Literacy:**

Students demonstrate a strong foundation in mathematical concepts, processes and structure.

**GEN ED 3 Social Responsibility**

Civic Responsibility includes the skills and awareness necessary to live as responsible, ethical, and contributing citizens of the community, state, nation, and world.

**GEN ED 4 Culture: Ojibwe and other Native Cultures**

Students demonstrate understanding of Ojibwe and other Native American culture.

**GEN ED 5 Critical Thinking:** Students analyze, synthesize, and evaluate diverse concepts and make reasoned decisions based on evidence.

**GEN ED 6 Global Awareness:** Students interact effectively and appropriately in a diverse, multi-cultural, and global society.

**General Education Program Outcomes:**

This course measures the following outcomes:

|  |  |  |
| --- | --- | --- |
| **GEN ED** | **Assignment/Activity** | **Assessment** |
| 1 | Research presentation | via scoring rubric |
| 3 | Research presentation | via scoring rubric |
| 4 | Research paper | via scoring rubric |
| 5 | Research paper | via scoring rubric |

**Program Outcomes:**

1. Students graduating from this program will be able to apply natural science concepts to Ag/Natural Resources issues.

**Assessment: A team of course instructors will utilize a rubric to assess the proficient application of natural science concepts to Ag/NR issues in student presentations from Ag/NR majors. A student evaluation instrument (biweekly reports) will be completed about their specific experience and how they applied natural science concepts to Ag/NR issues. Faculty instructors of the course will utilize the student evaluation instrument to assess this outcome**.

2. Students graduating from this program will be able to apply scientific inquiry

**Assessment: A team of course instructors will utilize a rubric to assess the proficient application of the scientific method (biweekly reports and research project).**

**Culture & Tradition:**

**The Mission Statement of LCOOC states:**

*The Lac Courte Oreilles Ojibwe College mission is to provide*

*Anishinaabe communities with post-secondary curriculum and continuing*

*education while advancing the language, culture, and history of the Ojibwe.*

In order to adhere to the college's mission statement, this course will incorporate

Ojibwe Language, Culture, and History into class activities wherever possible.

These activities have been included in the class schedule.

***Course Hours Requirement***

The minimum number of hours a student must complete in order to receive credit for SCI 293 is 30 hours (2 credits). Those hours include the 27 hours of field methods classroom training at LCOOC as well as 3 hrs. of instruction and feedback (via e-mail or Canvas) during the students’ independent research work.

**Topics Covered (Tentative Schedule)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Topic** | **Materials** | **Location** |
| Monday  June 1st (9-4) | -Introduction to Research & Syllabus  -Prospectus  -Topic/Background Information  - Scientific Methods – Review (Scientific Methods and Measurement Height/Limb Exercise 1-AP)  -Review Electronic Resources – Library  -Qualitative methods  -Introduction of GPS/GIS; Google Earth | Ex. with theme lab projects  Handout  Powerpoint | Zoom-at 9:00 am at  Deb’s personal zoom code found on Canvas Modules and in e-mail. |
| Tuesday  June 2nd(9-4) | -Sampling Techniques – habitat and niche lab (quantitative)  - Habitat and Niche lab Data Analysis and Visualization (Excel Charts/Graphs, table, graphs, figures, maps)  - Soil Sample Testing with LaMotte kits and Soil Tester (Kelway) and Data Analysis and Visualization (Excel Charts/Graphs, table, graphs, figures, maps)  -Error and Bias sampling methods ppt. | Field Day for theme lab projects  Samples from College Farm  PowerPoints | Meet a College Farm at 9:00 am. |
| Wednesday  June 3rd  (9-4) | -Aquatic Resource Integrity Lab Data Collection (stream sampling)  -Aquatic Resource Integrity Data Analysis and Visualization (Excel Charts/Graphs, table, graphs, figures, maps)  Environmental Research design – water on the web ppt. | Field Day for theme lab projects  Excel &  PowerPoint | Meet at Hatchery Creek Park at 9:00 am. |
| Thursday  June 4th  (9-12) | -Environmental Research design – water on the web ppt.  -GPS Treasure Hunt  -Brainstorming with each student on their Individual Research Project Plan and Experimental Design | Finished PowerPoint.  Handheld Garmin E-trex GPS units or cell phones.  Group Discussion | Meet at College Farm at 9:00 am |
|  |  |  |  |
| Friday  July 24th  (9-12) | Scientific Research Presentations & Papers due |  | Zoom-at 9:00 am at  Deb’s personal zoom code found on Canvas Modules and in e-mail. |

**Evaluation Procedures and Grading Criteria:**

Grading at LCOOC is based on your level of achievement on papers, projects and examinations. The level of proficiency achieved will be indicated by the following letter grades for each academic level. Please refer to the Student Handbook for additional data.

|  |  |  |  |
| --- | --- | --- | --- |
| **GRADING SCALE** | | | |
| **A** |  | **100- 90** | EXCELLENT! |
| **B** |  | **89-80** | ABOVE AVERAGE |
| **C** |  | **79-70** | AVERAGE |
|  |  |  |  |
| **IF YOUR GRADES FALL BELOW THEY WILL NOT TRANSFER TO ANOTHER INSTITUTION** | | | |
| **D** |  | **69-60** | **BELOW AVERAGE** |
| **F** |  | **59 or below** | **FAILING** |
|  |  |  |  |
| I |  | N/A | INCOMPLETE |
| W |  | N/A | WITHDRAW |
| Z |  | N/A | AUDIT |
| P |  | N/A | PASS |

**Course Grading Criteria**: The final grade for the course will be determined by totaling the composite average points for each of the categories identified below which will be worth the following weight values:

|  |  |
| --- | --- |
| **Component** | **Weight** |
| Class Participation | 15% |
| Biweekly Research Activity Reports-3 | 5% |
| Research Prospectus | 5% |
| Scientific Research Paper | 40% |
| PowerPoint Presentation | 35% |
|  |  |
| Total | 100% |

**Attendance Policy:**

##### **Students who fail to make Academic Progress (minimum GPA) or meet the Pace of Progression (completing at least 67% of courses) standards may be placed on Financial Aid Probation.** Please refer to the current Student Handbook, for the Class Attendance Policy.

**Outside of Class Study Expectations:**

The US Department of Education and the Higher Learning Commission have the expectation that students should be working approximately two hours of outside of class for each credit of instruction.

#### **\*\*IMPORTANT\*\***

#### **Students with Disabilities**

It is the policy and practice of the Lac Courte Oreilles Ojibwe College to create inclusive learning environments for all students, including students with disabilities.  If there are aspects of this course that result in barriers to your inclusion or your ability to meet course requirements, please notify the instructor as soon as possible. I will maintain and uphold confidentiality of any information shared.

Institutions of Higher Education under the Americans with Disabilities Act are required to provide appropriate aids and services to students who have identified documented learning disability or other disability which might affect classroom performance. It is the responsibility of the student to provide the appropriate documentation to the college in a timely manner. Students requesting accommodations are asked to contact the **ADA Coordinator (715-634-4790** **Ext. 132)** within two weeks before the start of classes to allow sufficient time for any adaptive accommodations to be made.

##### **Academic Honesty & Integrity Policy:**

Please refer to the current Student Handbook for Academic Misconduct and Plagiarism.

***Assignments and Tests:***

**Assignments:**

Students will be responsible for a Research Prospectus, Scientific Research Paper and PowerPoint presentation on their research experience (see assignment table below for due dates).

It is a well-established fact that students get much more out of a course when they attend and participate in class discussions and activities regularly. **Attendance for all class dates is MANDATORY; if a student is absent due to an emergency it is the student’s responsibility to reschedule and coordinate make-up of class material with the instructors.**

**Assignment Table**

|  |  |
| --- | --- |
| **Assignment** | **Due Date** |
| Research Prospectus | June 7th |
| Biweekly Research Activity Reports-3 | 6/21,7/5,7/19 |
| PowerPoint Presentation | July 24th |
| Scientific Research Paper | July 24th |

Please refer to the current Student Handbook for the policy on Incompletes.

In order to receive credit for the mid-term or final grade, assignments **must** be completed on the designated day (see assignment table) unless prior arrangements have been made with your instructor. This course has no examinations.

##### **Computer Use:**

##### All students receive an lco.edu email account for the duration of the semester. In order to comply with FERPA (Family Education Rights and Privacy Act), all official notifications about your courses, financial aid, and student evaluations **must** be sent through your lco.edu email account. You can access your lco.edu email account from any browser.

## Necessary Technologies:

* Internet connection (DSL, LAN, or cable connection desirable)
* Access to the Canvas Learning Management System

**\*\*Note\*\*:** ***Not having computers or Internet at home is NOT an excuse to be late with homework.*** Your education is your responsibility. We strongly encourage you to schedule time to make use of the resources provided for students to complete your studies in a timely manner.

**Maintaining a Copy of the Course Syllabus:** Students should be aware that they may need a copy of course syllabi when applying for licensure and other future academic or professional circumstances. Students are responsible for maintaining an electronic and/or hard copy of the course syllabus for each course they take.

**Gikinoo'amaagan Odanokiiwin - Student Work:**

Gikinoo’amaagan Odanokiiwin – Student Work is a *Student Learning Project* which incorporates Ojibwe knowledge and values with Course Specific Outcomes and with those General Education Outcomes that pertain to this course. In addition, the Student Learning Project will provide a means to better evaluate student understanding and application of knowledge taught in the classroom. For this class, the Gikinoo’amaagan Odanokiiwin project is a natural resources research project. The results of this project will assess students’:

* Ability to communicate effectively. (*Gen. Ed. 1 Communication*)
* Civic responsibility includes the skills and awareness necessary to live as a responsible, ethical, and contributing citizen of the community, state, nation & world. (*Gen Ed 3* *Social Responsibility*)
* Creation of a project that integrates both course-specific content and Ojibwe cultural knowledge. (*Gen Ed. 4 Culture and Course Outcomes 1,2,3,4* )
* Ability to locate, gather, and synthesize information. (*Gen. Ed. 5 Critical Thinking*)

**Bi-Weekly Research Report-updated 5/20**

**Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ For weeks ending: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

* List each of your research activities during the 2 weeks and indicate how you used scientific method/inquiry in the research activity (relates to Degree Program Outcomes-indirect).
* Describe new knowledge, skills, or accomplishments acquired during this time period.
* Explain any classroom learning or natural science concepts that you applied to your research and/ or work experience in ag/natural resources. (relates to Degree Program Outcomes-indirect).
* In what areas could you use help in performing your research better?
* List any new equipment, software, etc., used during the reporting period.
* Other comments and/ or information.

**Field Methods Study Prospectus** Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The following sheet is meant to help you plan your project. Please respond to each prompt with a very brief, well-thought-out answer. Remember that this prospectus is just a plan. You will almost certainly change part of your plan, and you may even change all of it, before you complete your project. So make your best predictions and plans, but don’t be surprised or concerned if you decide to alter them later.

Briefly describe your research project (What do you plan to do?):

Project site/setting (Where will you work?):

Major question(s) you hope to answer/goal(s) you hope to achieve:

Products/results (What will be the measurable outcomes of your project?):

Resources needed (What do you need in order to properly conduct your research?):

Calendar of component tasks (When will you complete each part of the project?):

Your biggest concern(s) or question(s) about the project?

**Detail Grading Sheet for PowerPoint Presentation 8/2015**

It should follow APA format as closely as possible. Layout should reflect the scientific method.

|  |  |  |  |
| --- | --- | --- | --- |
| Category | Good | Fair | Poor |
| Physical Appearance:  Organization, general appearance, spelling, grammar, typing, useful visual aids if presentation, clear and appropriate language etc. | 10 | 7 | 4 |
| Abstract: Brief summary of entire project | 10 | 7 | 4 |
| Project description (What you did?)/Introduction:  Major question(s) are you trying to answer or what goal(s)  are you trying to achieve? | 17 | 13 | 10 |
| Materials and Methods, Project site/setting description:  Where did you work? What did you use?  How did you do it? | 17 | 13 | 10 |
| Products/results:  What are the measurable outcomes  of your project? What did you show, demonstrate, or produce? | 17 | 13 | 10 |
| Discussion/Conclusions:  Based on products/results, What did you learn? How did you answer your question(s) or achieve your goal? | 17 | 13 | 10 |
| References/Sources of Information used | 12 | 9 | 7 |

Total of 100 Points Possible:

Grading: 90-100% A

80-89% B

70-79% C

60-69% D

Below 60 F

5/20 revision by Deb Anderson

A Guide for Preparation of a Scientific Paper

**Scientific Papers and Reports**

After a scientific study or experiment has been completed, the results are often presented in a formal report or paper. A research report is both a work record and a means of communicating your ideas. Also, writing, rewriting, and evaluating research findings make the author think more deeply and critically about the study. The preparation of a scientific research paper or report will provide you with an academic experience different from that of a library term paper, since a research report is based upon your own data and personal involvement in an organized investigation. Throughout your writing must be clear, concise, complete, and explicit in all details. When you write a paper describing a particular experiment, anyone else reading that paper should be able to perform that same experiment in exactly the way you did it based solely upon what you include in your paper. This ability to reproduce your work from your paper is the ultimate test of the effectiveness of your writing and it is the major basis on which your papers will be evaluated.

In reading the paper I will not be overly concerned that you obtained the "correct" results. Rather, I am interested in how you communicate and discuss what you did. This will be true even if your observations were not what one would have expected. If by now you think that this will be an exercise in English as well as Biology, then you are absolutely correct.

**Content and Style**

The style and complexity of a scientific report varies depending upon the writer and his/her audience. Many scientific journals that publish scientific papers will give the author information on the style and format that they use in their publications. The required format for this paper is APA or the American Psychological Association format presented in the *Publication Manual of the American Psychological Association.*

**Specific Guidelines**

1. Your papers must have the Title, Date and the Author written on a **title page**. It should be organized into distinct sections with headings of: **Abstract,** **Introduction, Materials and Methods, Results, Discussion, and Literature Cited or References**.

Unlike other papers which you may have written, footnotes are **not** used in an APA format scientific paper. Instead, reference is made throughout the paper to one or more sources which will be listed in the Literature Cited section of the paper. As per APA format there should be a **running head** on each page.

2. The papers must be typed with double spacing having margins of one to one-half inches.

3. Write your papers in the third person so you should avoid using pronouns like "I", "we", or "you".

4. Make sure you follow the biological rules associated with the names of organisms. If an acceptable common name exists for an organism, introduce it together with the Latin name. After this is done, it is acceptable to refer to this organism by only its common name. Whenever Latin genus and species names are written, they must be either italicized *(Odocoileus virginianus)* or underlined (Odocoileus virginianus). Note that the genus name (*Odocoileus*) is always capitalized whereas the species name (*virginianus*) is not.

5. Avoid noninformative abbreviations such as "etc." and phrases such as "and so on" or "and the like".

6. Do not draw unsupported conclusions from your data. For instance, if you obtain approximately 1/2 wild plants and 1/2 mutant plants, don't conclude that a 3:1 ratio was obtained. In this same vein, don't be unduly disturbed if your data are not "what was supposed to happen". Your conclusions must be drawn from your actual experimental results and not from what you thought you should have observed.

7. Use the active voice ("The characteristics of the animals were observed ") rather than the passive voice ("The characteristics of the animals were observed by the investigators").

**What to Include in Each Section**

Abstract

Although found at the beginning of your paper you may wish to write this part last. The Abstract should provide a summary of the entire paper which is a concise but exact statement of the problem, your general procedure, basic findings, and conclusions. While the Abstract should take no more than half a page, by reading it someone should be able to gain an adequate understanding of what you wanted to prove or your hypothesis, what types of experiments you did, what your general findings were, and whether or not you were successful in meeting your experimental objectives.

Introduction

In the Introduction of the paper (a few pages) state the hypothesis that is being tested and some background information on the field of study. For example, you may want to describe and define some terms and give some information about the topic you’re studying. Make sure to cite any references that you use.

**An additional requirement** just for this class is to include a paragraph in this section on how the **research topic** is significant or relates to Ojibwe culture.

Materials and Methods (Study Site if applicable)

In this section of the paper completely explain what was done and how it was done. The researcher describes the experimental design, the apparatus, methods of gathering data and type of control. You must not describe what you found or observed, save this for the results section. A good description of the materials and methods used would enable a reader to duplicate your investigative procedures. Items included (if applicable) are:

1. The methods and materials you used during study.

2. The times, dates and environmental or weather conditions.

3. Description of study site and location so others can find your site.

Results

This portion of the paper consists of all experimental results which were obtained based on the experiment’s design, even if they are contrary to expectation. Explain exactly what you observed or found. If you saw anything which you felt was unusual, include this as well. In a scientific study you always get results, even if they are negative. Data typically are summarized using graphs, tables, or charts.

The Results section is not just a summarization of data or a collection of tables and figures, it should contain an explanation and description of the data. If certain patterns, trends, or relationships were observed, they should be mentioned. For example, do not just say "The number of offspring are shown in Table 1". Instead indicate what is being presented: "Table 1 shows that approximately 25% of the offspring are black in color".

Tables, graphs, photographs, or diagrams can be used in this section to depict your results and must be individually numbered and referred to in your text (for example," Figure #1 shows the manner in which the birds were building their nest"). Each figure and table should also contain an explanatory legend (for example below the figure you would find, Fig. 1: Birds building their nest). In graphs, be sure that the axis is clearly and completely labeled with a scale marked off and the units of measurements given if necessary.

Always keep in mind that you do not interpret your results nor draw any conclusions in the Results section, save this for the discussion section.

Discussion

In the Results section the results were summarized and described. In the Discussion section these results should be interpreted, critically evaluated, and compared to expectations. Conclusions should then be drawn based upon your experimentation and their findings. This is generally the most important section of a scientific paper because you will attempt to show **how your data met the objectives or hypothesis of your particular study**. Your discussion should consist of:

1. If applicable, reasons why you were unable to obtain the observations necessary, and what you might do differently if you were to repeat your attempts.

2. If applicable, reasons why you were unable to prove or support your hypothesis and what you might do differently if you were to repeat your efforts.

3. A judgment on your part as to how well your data compare with the theoretical expectations, and what you consider to be sources of experimental error (you may include statistical analyses if you like).

4. If you obtained any unexpected results, what are the possible explanations for these observations.

The Discussion section will take the most time and effort in writing. It will probably take at least one or two pages.

Literature Cited

Any time you include material and/or ideas from a reference source, you must cite that source in the report. Such materials and ideas may be found in any of the sections of your paper. The way in which citations are made in scientific papers is by author's name and the date (see examples below). Then in the Literature Cited section of the report, arrange the reference sources alphabetically according to the last name(s) of the author(s). **You should have at least seven references in your paper with at least 3 scientific peer-reviewed journal articles in this section.**

Suppose that in the Discussion, you stated:

The results here observed with *Brassica rapa* are different from those reported in 1984 (Anderson, 1984) but similar to those observed in 1985 (Hinterleitner, 1985).

Then in your Literature Cited section, you would state:

Anderson, D. H. 1984. The life of *Brassica rapa*. L.C.O. Press, Hayward, Wisconsin

Hinterleitner, D. H. 1985. The Crossing of *Brassica rapa*. Eagle Publishers, Hayward, Wisconsin

In the above example, the two references are both books (note that they were listed according to last name). For books it is necessary to include the: a.) author's last name, and first and middle initials, b.) the year of publication c.) title of the book (underlined or italicized), d.) the publisher e.) place of publication. If your information is in an edited book include the editor of the book after the title of the book and the pages of the book in which the article appeared at the end after the publisher. Most of this information you can find within the first pages of the book.

If the article you cited was written by Anderson and Hinterleitner in 1988 and appeared in a journal such as *Scientific American,* the format for this reference in the Literature Cited section would be:

Anderson, D. and Hinterleitner, D. 1988. The Joys of Teaching Biology. *Scientific American*, Vol. 245, pp. 105-115.

In this example the title of the article is not underlined but the name of the journal is. When citing journal articles, it is not necessary to indicate the publisher or the place of publication, but you must specify the volume number of the journal and the pages (first and last) on which the article was found.

Internet sources are cited in different ways depending upon what type of electronic sources you are using. It is best to look up how to cite your electronic sources in the APA manual so you cite them correctly. In general, the information you need to include and the order of citation is usually by author, the date the source was last updated or produced, title of document, date it was retrieved by you and the URL (web address). When accessing electronic sources make sure they are reliable (e.g. no Wikipedia or .com) and have all of the above information available. If they do not have all of the information needed for a correct citation, then do not use them.

On Web Sites you can find at the bottom of the page usually a section called terms of use, copyright date, web credits, or site history that has the information you need for a citation.

**Paper Assignment Format:**

Assignments are required to be submitted electronically and must be in Microsoft Word (doc/docx) format.

Below is the summary grading sheet followed by the detailed grading rubric that accompanies it.

SUMMARY GRADING SHEET FOR SCIENTIFIC RESEARCH PAPER

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The following point values will be assigned to the various sections of the paper. A maximum of 50 points is possible. Refer to the handout on "The Preparation of a Scientific Paper" for further details on how to write the paper. Totals for each section are transferred from the Scoring Rubric.

PHYSICAL APPEARANCE (10 points maximum)

General appearance, spelling, grammar, typing, organization into five sections, minimum of ten pages

\_\_\_\_\_\_\_

INTRODUCTION (6 points maximum)

Introductory statement on hypothesis tested, terms associated with the experiment, background information on topic, Ojibwe cultural significance \_\_\_\_\_\_\_

MATERIALS AND METHODS, STUDY SITE (8 points maximum)

A detailed explanation of what, how, when, where, and what did you use to complete the research. Also, include statistical analysis methods, equations, computer programs used, etc. Think of this as a set of instructions for someone else to follow to obtain the same data. \_\_\_\_\_\_\_

RESULTS (8 points maximum)

Presentation of all experimental results (good or bad) in graphic or tabular forms if necessary. Facts, not opinions. \_\_\_\_\_\_\_

DISCUSSION (10 points maximum)

Summarize and critically evaluate earlier related research in the literature. Complete discussion of all the project's results as they relate to the hypothesis tested; differences between all observed and all expected results analyzed and explained. If you could do it again, what would you do differently? \_\_\_\_\_\_\_

ABSTRACT (4 points maximum)

Summary of entire paper placed above the Introduction. A half-page description of the hypothesis and

how it was tested. A brief description of the methods and results and what they showed. Conclusions. \_\_\_\_\_\_\_

REFERENCES OR LITERATURE CITED (4 points maximum)

Complete list of all references cited; correct style and format of citation. \_\_\_\_\_\_\_

TOTAL \_\_\_\_\_\_\_

Paper Grade: TOTAL X 2 = \_\_\_\_\_\_\_%

**Scientific Paper- Detailed Scoring Rubric (updated 5/20 by Deb Anderson**)-50 pts. possible

|  |  |  |  |
| --- | --- | --- | --- |
| **PHYSICAL APPEARANCE** (**10 points maximum**) | 0 | 1 | 2 |
| APA format and appearance | No APA format, Appearance poor | Some APA format but missing components like a running head, title page, page numbers, table, and figure labels. | APA format followed and no components lacking. |
| Spelling, Scientific naming rules. | Poor spelling, scientific naming not utilized | No apparent effort at using Spell-Check. Scientific naming rules not applied. | No or very few misspellings. Scientific naming rules used. |
| Grammar | Poor grammar | Overuse of passive voice; inappropriate use of pronouns like “you” and “I” and “we”; no apparent effort at using Grammar-Check | Few grammatical issues. |
| Typing | Not typed | Not double-spaced; section headings missing | Very few issues with pagination, double spacing, italics,headings, **c**apitalization |
| Organization into five sections | No sections | Not all 5 sections present | All 5 sections present |
| **INTRODUCTION (6 points maximum)** | 0 | 1 | 2 |
| Introductory statement on topic. Reason(s) this topic was chosen. Personal observations or other observations that influenced choice. Background information on topic. | No Introduction on this present | Introductory statement present, but no discussion. Background info scarcely or not included. | Introductory statement present and discussed. Background info included. |
| What you expect to learn. Hypothesis clearly stated. | No Introduction on this submitted | Expectations stated, but not discussed. Hypothesis loosely referred to or not clearly stated. | Expectations stated and discussed. Hypothesis clearly stated. |
| Why this research is important, both in general and specifically to Ojibwe culture? | No Introduction submitted on this | Importance is mentioned but not discussed. | Importance is mentioned and discussed. |
|  |  |  |  |
| **MATERIALS AND METHODS, STUDY SITE (8 points maximum)** | 0 | 1 | 2 |
| Materials appropriate for study described. **What** was used to do the research? | No materials submitted | Not all materials used listed and described | All materials used fully listed and described. |
| Methods used described. **How** research was done? | No methods submitted | Not all methods used listed and described. | All methods used fully listed and described. |
| Study site location provided and described. **Where** research takes place? | No study site info submitted | Study site location not clearly provided and described. | Study site location clearly provided and described so that others could locate it. |
| Times, dates of research. **When** the research takes place? Weather conditions described if important to methods. | No times, dates, weather info submitted | Times, dates of research not listed or some missing. Weather conditions not described if important to methods. | Times, dates of research listed. Weather conditions described if important to methods. |
| **RESULTS (8 Points maximum)** | 0 | 1 | 2 |
| Organization of results | This part of results not submitted | Some results easy to understand and interpret, but not all. Some results in order with methods, but not all. Fairly unorganized results. | All results easy to understand and interpret. All results in order with methods. Organized results. |
| Results from observations or experiments (good or bad) presented with experimental design explained. | This part of results not submitted. Poor experimental design. | Some results from observations or experiments clearly presented. Good experimental design. | All results from observations or experiments clearly presented. Excellent experimental design. |
| Results from observations or experiments (good or bad) explained and described. | This part of results not submitted | Results from observations or experiments partially explained or described | Results from observations or experiments clearly and fully explained and described. |
| Depiction and quantification of results with tables, figures, graphs, numbers or statistics. | This part of results not submitted | No or poor depiction and quantification of results with tables, figures, graphs, numbers or statistics. | Good depiction and quantification of results with tables, figures, graphs, numbers or statistics. |
| **DISCUSSION (10 points maximum)** | 0 | 1 | 2 |
| Discussion of how results support or do not support hypothesis and expectations | This portion of Discussion not submitted | Little or no Discussion | Thorough Discussion |
| Reasons why results did or did not support hypothesis and expectations | This portion of Discussion not submitted | Little or no discussion | Thorough Discussion |
| Discussion of how well the results compare to what others have found based on literature review and research. | This portion of Discussion not submitted | Little or no discussion | Thorough Discussion |
| Discussion of unexpected results, sources of error, inability to collect results and explanations for these. | This portion of Discussion not submitted | Little or no discussion | Thorough Discussion |
| Conclusions based on findings and what you suggest might be done differently if the study were repeated. | This portion of Discussion not submitted | Some Discussion and interpretation of findings in a conclusion. Little or no suggestions on what to improve or do differently. | Thorough Discussion and accurate interpretation of findings in a conclusion. Suggestions on what to improve or do differently. |
| **LITERATURE CITED (4 points maximum)** | 0 | 1 | 2 |
| Complete list of all Literature Cited in text. | This part of Literature Cited not submitted | Less than 5 distinct citations. Some issues with citations. | At least 5 distinct references cited, with all literature cited in the text of paper. |
| Quality of Literature Cited, APA style and formatting of citations. | This part of Literature Cited not submitted | Over-reliance on popular press, questionable websites; issues with APA citation formatting. | Scholarly articles and sources. APA citation format used correctly. |
| **ABSTRACT (4 points maximum)** | 0 | 1 | 2 |
| Hypothesis and how it was tested | This part not submitted | Unclear | Clearly Stated |
| Summary of Results and Conclusion | This part not submitted | Unclear | Clearly Stated |