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498-02 Methods of Biological Research

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DESCRIPTION OF COURSE

This course serves as an introduction to independent research where you are required to develop a research project that will enhance your understanding of the scientific method of inquiry. You will build on what you have learnt in various biology courses by making quantitative observations, developing hypotheses and/or gathering and analyzing data to test these hypotheses. Finally, you will make conclusions based on evidence emanating from your research project. You will also practice and employ common forms of oral and written scientific communication to share your findings with others.

COURSE GOALS AND OUTCOMES

1. This semester you will be expected to do an extensive background study on your chosen project and write up an introduction with proper scientific citations that will be due at the end of the semester (end of finals week).

2. I will provide you with a list of research topics from which you will choose one. Those of you who would like to design your own projects can consult me about that possibility*. This should be done as soon as possible (within two weeks) so that I may have the time to investigate the feasibility of proposed projects.

3. In addition to the above you will gather morphometric data from animal skeletons using a computer software program. You will enter your data into an excel spreadsheet and I will help you analyze your data using various statistical programs.

4. The most difficult part of your research will be the interpretation of your results in the context of your initial hypothesis. I will assist and guide you through all phases of your research and I expect you to be diligent and productive throughout the semester.

READINGS

I will provide you with journal articles as well as point you in the right direction to help you locate the relevant literature that pertains to your research project. I expect all of you to do independent searches for literature that enhances the understanding of your project. I recommend that you look for scientific journals and literature on the internet and library that are credible.

MEETINGS

The scheduled meeting time for this course is Wednesdays at 3:00-5:00pm. I will communicate with you every week via email to let you know on what is expected at each meeting. I will be available also for appointments at other times on an individual basis.

COURSE GRADE

Your grade will be based on the following accomplishments this semester:

a) Your ability to be resourceful and cooperative; and successful completion of the outlined research objectives on time.

b) Undertaking a background literature study of your research project that you will submit as a well-written introduction at the end of the semester. Your paper (intro) should be written in the proper scientific format, with proper citations (see Pechenick).

c) Attend the peer presentation sessions and give a well-organized summary of your project using the basic tenets that define scientific inquiry that should include a clearly defined hypothesis and methodology.

d) Become acquainted with the morphometrics program and begin gathering your data.

e) Your grade will be assessed penalties for missed deadlines, absences from meetings, and poorly written papers.