

IDIS 4960R, 4970R, 4980R Final Paper Requirements for students not seeking credit toward BCMB, BIOL, CBIO, GENE, or MIBO majors.

Paper Formatting

- 10 page minimum (not including title, reference pages, tables/figures)
- Paper must be in English language
- 12 pt font
- 1 inch margins
- Double spaced
- Tables and figures should be placed after placed after the Discussion section
- Final paper should be converted from Word to PDF format prior to submission

Submitting Paper

Students are required to submit a draft of their final paper to their faculty mentor at least 1 week prior to the last day of classes. The mentor will then provide constructive comments about the paper and allow the student to submit a revised version on or before Reading Day.

Submit your final paper to your faculty mentor **and** jenley11@uga.edu by Reading Day.

Required Sections

- Title Page
- Objectives
- Abstract
- Introduction
- Materials & Methods
- Results
- Discussion
- References

Title Page

The title page should include the following information:

- Title of project

- Student information: name, major, email, and phone number
- Faculty mentor information: name, department, email, and phone number
- Names of all contributing authors
- Semester and year research was conducted
- Course prefix and number

Objectives

In a sentence or two, state the purpose of your project.

Abstract

Write a concise summary of the project (in less than 300 words) of your research project and findings. Define the scientific problem or hypothesis, principal objective, methodology, results, and conclusions of your study. This section should be clear enough to be readily understood by a general reader with some scientific background. Although this section is first, it is always best to write this section last based on the content of the other sections of the paper. Do not include reference citations in the abstract.

Introduction

The introduction is meant to familiarize the reader with the scientific area you are studying. Provide a review of the most relevant literature. The paragraphs should flow from general to specific in terms of importance to your project. Many people begin by describing their model system and its advantages over others. This approach should provide a foundation for describing the overall importance of the specific problem you are addressing. In the final paragraph, state your hypothesis(es) and/or objective(s), and describe the reasoning behind them. Many people end by stating their major, overarching conclusion.

Materials/Methods

Concisely describe all of the methods used in your study so that another individual could potentially repeat and verify your observations. This section should not be a step-by-step instruction manual unless you have developed a completely new and complex method. Include the names of specialized chemicals, biological materials, and/or other equipment or supplies not typically used by laboratories. Do not include general laboratory supplies and/or equipment. If your project involved the use of buffers and/or solutions, include the final concentrations of all ingredients and final pH (applicable to buffered solutions). If a published procedure was used as a method, provide a brief general description along with a reference to the original procedure. Determining what to include or exclude may not be easy without experience. A good rule of thumb is to ask your peers if they've heard of a particular method. If yes, then you can consider not including detailed descriptions of these methods (i.e. SDS-PAGE, agarose gel electrophoresis, PCR, etc.).

Results

Provide an objective view of your results and reserve all data interpretation for the discussion. Refer to figures and tables in numerical order. Use the text to point the reader to the most relevant observations and their essential controls. You may also include results of control experiments and observations that are not presented as part of a formal figure or table. Mark your figures or their legends with appropriate identifying labels for each symbol or abbreviation that was used. Improperly labeled figures are impossible to evaluate. All figures and tables should be placed at the end of the report. The minimum page limit for the report does not include Figures and Tables.

Discussion

Interpret your findings as they support (or contest) your hypothesis(es) and objective(s). Do not simply restate your results. If you believe that your results are supportive, describe your rationale for this conclusion and describe follow-up experiments that may be necessary. If your results contest your hypothesis, explain possible alternative hypotheses and how you might go about experimentally testing your new hypothesis(es). If your results are inconclusive, describe alternative methodologies that could be used to come to a final conclusion regarding your hypotheses. Keeping in mind that one study will not necessarily answer an overall question, where does your study lead you next? What questions remain? Be creative, and don't be afraid to speculate.

References

List the references of scientific literature that provide background information to your project and which support your research. Use only primary literature (original research articles authored by the original investigators) and/or reviews or book chapters. Do not use a web site or Wikipedia page as a reference. It is strongly recommended that your bibliography software such as EndNote is used. The UGA library has a site license for EndNote so that it is free to install and use. This will help with format of book chapters. References should be ordered alphabetically based on first author last name. Use a journal format that includes first author last name, first initial, (if multiple authors, add "et al." after 1st author entry), title of paper, year of publication, journal name, volume, issue (if indicated), and page numbers. *Example:*

Esquilin-Rivera, I., et al., Ethical Issues during Zika Epidemic in Puerto Rico and the Americas. P R Health Sci J. 2018 Dec;37(Special Issue):S41-S44.

Cite references within the paper at the end of a sentence by listing the first author last name and "et al." if multiple authors in parentheses. *Example:* Diagnosis of Zika infection presents an ethical dilemma to expectant mothers (Esquilin-River, et al.).

Figures and Tables

Figures must be numbered consecutively in the order they appear in the text. Do not use raw data as your figures. Graphs should be prepared in a program such as Excel. Figures must contain a figure legend that briefly describes the method(s) used to generate the data. The X and Y axes must be clearly labeled in terms of what was measured and the units used. Unless there is a compelling reason otherwise, for example a logarithmic scale, graphs should begin at zero. When called for, measurements should be made in at least triplicate and have bars indicating standard deviations or another statistical assessment. Tables should have clear and descriptive headers. If the table is complicated, a table legend may be used to describe and define specific features. Photographs of cells should have a scale marker embedded in the image and include a legend that describes the size of the marker, if it is not embedded in the picture. If the figure includes aligned DNA sequences the use of Courier font is recommended since each letter has an identical width, unlike most other fonts.