

MS Program in Medical Statistics
Department of Biostatistics and Computational Biology
University of Rochester

**Guidelines for the Internship/Applied Project,
Written Report, Oral Presentation and Final Examination**

June 2009

The MS Degree in Medical Statistics requires 1) satisfactory completion of 32 credits of approved coursework, including the 8-credit course BST 470 Internship/Applied Project; 2) oral presentation of the work conducted during the internship/applied project; 3) satisfactory performance on a final oral examination; and 4) submission of a final (revised) written report of the internship/applied project.

Student Advisement

Internship/Applied Project Advising

The project will be designed and assigned by statistical and medical advisors (researchers, other personnel) at the institution or department where the internship is held. In addition, the student must have at least one statistical advisor (the “internal statistical advisor”) from the Department of Biostatistics and Computational Biology. These project advisors will provide continued support to the student until completion of his/her internship.

Internship/Applied Project Grading

The work performed by the student during the internship project will be graded by the BST 470 instructor, who must be a faculty member in the Department of Biostatistics and Computational Biology. Typically one of the internal statistical advisors also serves as instructor for BST 470.

Program Supervision

One statistical advisor will be identified to assume the role of program supervisor. S/he will closely oversee the internship and provide regular guidance to the student not only during the internship, but also during development of the project report and preparation for the presentation and final oral examination. Multiple program supervisors may be identified, but at least one of them must be a faculty member in the Department of Biostatistics and Computational Biology.

The program supervisor(s), if University of Rochester faculty only, shall be considered the student's primary advisor(s).

BST 470 Internship/Applied Project

The internship/applied project requirement is met by either completing a statistics internship in industry or working with medical center or other investigators on an applied biomedical project. The student's internship activities should form a coherent whole that can be summarized after 2-3 months of work. Students are to have contact with medical investigators as well as supervision by statisticians. Students are encouraged to research internship opportunities early, since competition for available positions is typically high. An outline of the project plan should be submitted for approval to the Program Director after it is agreed on by the BST 470 instructor and the internship supervisor.

A satisfactory grade in BST 470 is achieved by successful completion of an approved internship and submission of a written report of the internship suitable for distribution to the student's examination committee. This written report will be due by the earlier of the following: 1) the instructor's deadline for grading BST 470; 2) ten full working days prior to the date of the final examination (see section *Oral Presentation and Final Examination*). A preliminary version of the written report must be submitted to the student's primary advisor(s) at least two weeks prior to the aforementioned deadline.

NOTE: Part-time students may choose to complete the internship in one semester (or summer) or register for two 4-credit sessions of BST 470 in two consecutive semesters (with the summer session considered a semester for this purpose). Grading of the first 4-credit session shall be based upon demonstrated progress in the internship work.

The Written Report

Content of the Report

The report should describe a coherent statistical analysis and/or consulting project undertaken by the student. Usually this will have been done as part of the internship. However, the report should describe only one piece of work – it is not intended to function as a journal of the student's internship.

Arrangement of the Report

The material must be divided into the following major divisions, which should appear in the order shown:

Title page (see Appendix I for required format)

Abstract

Table of Contents

List of Tables (where appropriate)

List of Figures (where appropriate)

Introduction

A description of the background to the project, including a brief account of the scientific rationale and objectives of the study.

Methods

Some topics to consider are type of study (observational or experimental); study population; method of sampling and choice of sample size; description of intervention(s), if any; method of randomization, if any; response variables; and covariates and

confounding variables. A description of the statistical methodology used should be provided, with references to the literature where appropriate. The description should be detailed enough to allow another competent statistician, given the same data and computing facilities, to reproduce major steps in the analysis.

Results

A summary of the major results from the analysis.

Conclusions

An interpretation of the findings. This part must be written for the general reader, and should be in non-statistical language.

Bibliography

Appendix (optional)

Physical Form of the Report

The report must be printed single sided on 8.5 x 11 inch paper. Double or one and one-half line spacing may be used. A standard font (Times New Roman, Arial, Helvetica) in 11- or 12-point font size is required. Top, bottom, and side margins should be approximately 1 inch.

Other Considerations

The report should not exceed 50 (double-spaced) typed pages, including appendices. Usually, 30 pages will be ample. Tables should be presented in concise form, as would be required by a scientific journal, not in the form delivered by SAS or similar computer programs.

Computer printouts should be included sparingly, if at all. While it may occasionally be feasible and of interest to provide listings of small sets of data in an Appendix, this is not generally required. Depending on the context of the analysis, it may be helpful to provide data forms. Use of graphical displays to highlight findings of major interest is encouraged, but again, selectivity is required.

Although it is expected that students will receive guidance and help in the preparation of reports from statisticians at the University and elsewhere, the report should document the student's own work, not that of others.

Since commercial organizations may need to ensure that proprietary information is not disclosed, the intern should provide a draft copy for review to his/her superiors before submitting it to the University. Reports that have been judged as acceptable in terms of fulfilling the internship requirement of the MS Program and that do not contain confidential information intended for disclosure only to committee members will be permanently stored in the Department and be available for reference by faculty and students.

Oral Presentation and Final Examination

Upon completion of the written report, the student will make an oral presentation of the work undertaken in the internship. The presentation should be approximately 45 minutes to one hour in length. This public lecture will be followed by an oral examination of the student by a 4-person examination committee (typically the student's primary advisor(s) and two or three additional faculty members). Committee composition is determined by the Program Director and in accordance with

University regulations. All committee members must be full-time faculty at the rank of assistant professor or higher, and one member must be from an external department. All tenure-track faculty members of the Department are welcome to participate in the examination, with a vote then taken in closed session by the examination committee members only. The purpose of this examination is to assess both the internship and the student's general knowledge of statistics acquired through formal coursework and research and analysis conducted during the internship.

Requirements and Deadlines

As previously mentioned, a satisfactory grade in BST 470 is achieved by successful completion of an approved internship and submission of a written report of the internship suitable for distribution to the student's examination committee. It is recognized that the scope and timeline of the internship may preclude scheduling the presentation and final examination during the semester or term in which BST 470 is taken, and it is therefore allowable to hold the presentation and final examination during the following semester or term. It should be noted that graduate students must register every semester and pay the required fee(s) until all requirements for the degree are completed. Please refer to the *Official Bulletin: Graduate Studies 2008-2010* for information about registration categories; a tuition and fees schedule is available from the School of Medicine & Dentistry's Bursar's Office.

Students are encouraged to allow ample time for the selection of examination committee members and scheduling of the presentation/examination. In accordance with School of Medicine and Dentistry regulations, the Offices for Graduate Education must be notified of the final examination and required paperwork must be filed at least ten full working days prior to the date of the examination. A copy of the written report is to be provided to committee members two weeks in advance of the examination. The deadline for holding a final examination during the summer is August 24 or the Friday immediately preceding if August 24 falls on a Saturday or Sunday. During the fall semester the deadline is seven calendar days before the first day of the spring semester, and during the spring semester the deadline is the last working day prior to the end-of-semester blackout period.

After the examination, students are required to provide a final, revised copy of the report that incorporates any changes suggested by the examination committee members. This final copy must be approved by the student's primary advisor(s) and submitted to the Program Director no later than one month after the final oral examination. Should the examination committee determine that major modifications are necessary, degree requirements will not be considered satisfied until the final, revised report is submitted and approved.

Students failing the final oral examination will be allowed to take another examination during the following semester or not later than one year after the original examination. More than one repetition of the examination is not permitted.

Students should consult with the Graduate Coordinator and refer to the School of Medicine and Dentistry Graduate Academic Calendar for information regarding examination deadlines, registration requirements, and degree conferral dates.

<<Report Title>>

by

<<Name of Student>>

Submitted in Partial Fulfillment

of the

Requirements for the Degree

Master of Science

Supervised by

<<Name(s) of Primary Advisor(s)>>

Department of Biostatistics and Computational Biology

School of Medicine and Dentistry

University of Rochester

Rochester, New York

<<Year>>

Appendix I