Purpose. One of the requirements for the MSCP program is that the student must complete a Master’s paper. In this work, the student must demonstrate mastery of methods covered in the core curriculum on biostatistics, epidemiology, and health services research, and the ability to conduct an independent piece of research. The paper should make a substantive contribution to the student’s clinical area. The paper is not meant to be the equivalent of a master’s thesis, which requires a more comprehensive assessment of the substantive and methodological scholarly literature than is required here. The paper should be generally similar to a journal article, but with greater detail in the methods section than is generally included in a clinical journal article.

Scope. In the master’s paper, the student must:

1. Frame a research question in a manner that can be addressed with the quantitative methods in the core curriculum of the program, extensions to those methods, or methods taught in elective coursework.

2. Develop a research design that is appropriate or informative to the research question.

3. Acquire data appropriate for the research question. [This need not involve primary data collection. Use of secondary data or of clinical and administrative records is acceptable if such data are appropriate.]

4. Apply epidemiological, health services, and statistical methods that are appropriate for the research design and the data analyzed.

5. Discuss and evaluate the quality of the evidence developed.

Evaluation Criteria. The completed work should show independence of effort by the student in framing the question and designing the analysis. Internal and external advisors and other faculty can provide advice about the research question and exactly how it is answered, but should do so in response to the student’s ideas. The student must carry out the data analysis. If the student cannot obtain direct access to the data, the student must have complete responsibility for writing the analysis programs used in the paper. The MSCP director must approve any project where the student does not have access to the data.

We strongly encourage the students to do work of publishable quality. Writing a master’s paper affords the student an unusual opportunity to get faculty research advice and assistance on work that could enhance both the scholarly contribution to the field and also their professional development. However, we also recognize that being “publishable” also depends on whether the data are adequate in quality and size, how interesting the research question is to a larger audience, and how much the paper and its results add to the body of knowledge in the field examined, in addition to the quality of the research execution. It is only the last of these that determines whether the paper meets the minimum standard for the master’s paper.

Format/Content. The master’s paper can be in one of two formats. It can be written as a single paper of sufficient length and detail to address the five points under the scope above. Or, the student may write a paper in the format of the journals in his or her field, plus a technical
appendix of sufficient length and detail to address the five points under scope above. A short clinical journal paper (e.g., length of less than 3500 words) will generally require a technical appendix to provide sufficient methodological detail, or an expanded Methods section that will need to be shortened for journal submission. Analytic decisions and limitations are presented very succinctly in a clinical journal paper but they need a fuller presentation for the master’s paper.

The paper, in either format, must include: a testable hypothesis or research question or a set of such hypotheses (or questions); some indication of background and significance of the research; a full description of the research design, data and analytical methods; results; discussion; and limitations. In either the fuller single paper or the technical appendix, the student must address:

- the strengths and weaknesses of the research design
- the appropriateness of the data or any problems related to data
- the choice of analytical approach for the research question, design, and data
- evidence that the model estimated is adequate
- a full description of the limitations of the research

If there are missing data issues or questions of reliability and validity, they should be discussed. Questions of internal and external validity, and sensitivity to modeling assumptions should also be addressed if appropriate. If the approach is less than ideal, the limitations section should not only include an acknowledgement, but should discuss the possible impact on conclusions. For example, if the data are known to reflect under reporting, then the limitations should discuss the likely bias in the results for the question at hand.

Advisors and Schedule. The student should identify one faculty member in a clinical department (external advisor) and one in Health Studies (internal advisor). Working with both the internal and external advisors, the student should begin to develop a research question and general approach at least 2 quarters prior to graduation i.e., fall quarter if the student plans to graduate in June.

Presentation. No later than 1 quarter prior to graduation, students must present their proposed research paper and approach in a special seminar, after the student has met with his/her Health Studies advisor for approval of said presentation. Each student should have a presentation committee of three: the internal and external advisors and one additional Health Studies faculty, who will not be a reader but will come to the presentation. The student may select that person, or the MSCP director can identify a faculty member. The presentation must be scheduled so that the student’s advisors and the additional faculty member can attend. Other MSCP students and Health Studies faculty are also invited, but their attendance is optional. The main purpose of this seminar is to approve the analytic plan of the study. The proposal presentation is scheduled for an hour, and the student should plan a 30 minute presentation. The background part of the presentation should take no more than five minutes, and just include clinical or other information necessary to understand the study. The main sections of the presentation should be the (1) study questions (2) study design (3) nature of the data (4) plan for analysis and (5) preliminary results if there are any. The focus of the discussion will be on the data and the analytic plan. Since the purpose of the presentation is primarily to evaluate and revise the
analytic plan, the presentation should not be scheduled so late in the research process that suggestions about changing the analysis are difficult to implement.

Six weeks prior to graduation, the student must present to the internal and external advisors a full draft of the paper for final review. The advisors must provide the director of the MSCP a written assessment of the master’s paper within two weeks of receiving the paper. The assessment must indicate whether or not the paper is adequate to meet the goals of the master’s paper in the MSCP program. If either of the advisors fails to provide a timely assessment, or if the advisors disagree on the acceptability of the paper, then the director of the MSCP program should evaluate the paper or ask another academic member of the Department of Health Studies to do so in time to ensure that the student can meet University deadlines for graduation. The director of the MSCP program has the final authority to determine the acceptability of the paper.

If the paper is not acceptable in the format presented, then the director of the MSCP, with the advice of the student’s advisors, can stipulate the nature of the changes that have to be made in a revised master’s paper before the student will be allowed to graduate.

**Authorship of a journal article based on the Master’s Paper and the role of the advisors.** In many cases, the paper or a revised version of the paper will be submitted to a journal for publication. While in some fields it would be unusual for advisors to be co-authors of a thesis, co-authorship of mentors is the norm in clinical papers. Students should consult the Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Authorship and Contributorship [http://www.icmje.org/ethical_1author.html](http://www.icmje.org/ethical_1author.html) to determine whether the clinical and Health Studies advisors, and other faculty, should be co-authors of the paper. If either or both of the advisors have fulfilled the first of the three necessary criteria (1. substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2. drafting the article or revising it critically for important intellectual content; and 3. final approval of the version to be published), the student should anticipate that the advisor(s) will be a co-author, although faculty may elect not to be. The second criterion for co-authorship requires that each author provide critical revision of the paper. However, at the time that the master’s paper is submitted for the degree requirement it should represent substantially the writing of the student without significant rewriting and editing by faculty. Critical revision of the paper by advisors and other co-authors should occur subsequent to the acceptance of the paper for the degree requirement.

**Exceptions Policy.** Any one-time exceptions to this policy or permanent revisions to this policy must be approved by the faculty eligible to vote in the Department of Health Studies.