UMDNJ SCHOOL OF HEALTH RELATED PROFESSIONS

University of Medicine & Dentistry of New Jersey

Department of Health Informatics

Guidelines for Dissertation Proposal

September 2004

INSTRUCTIONS

The Dissertation Proposal should be written, reviewed, and fully approved before preparation of the dissertation is well underway. Any delay in timely review and approval of the Proposal may result in wasted effort on a dissertation. At the latest, your Proposal should be ready for final review at least two year before your expected date of degree completion. Once the members of your advisory committee approve the Proposal, you must submit your approved Proposal to the Chair of the Department.

What is a Dissertation Proposal?

A project with the scope of a doctoral dissertation requires careful planning. The dissertation proposal reflects this need for planning, and also serves as a test of the feasibility of the proposed project. The dissertation proposal must clearly convey the goals and the relevance of the dissertation project, and enough information for the student's committee to determine that the goals of the project are feasible, given the student's skills, the resources and time available to the student. In addition to this, it is useful to provide a detailed outline of the structure of the dissertation - what chapters will there be, and how will each of the chapters be organized. A full bibliography should also be included - the bibliography should include works cited in the proposal, and should also demonstrate that the student is familiar with the literature relevant to the proposed project.

General Outline

After successfully completing the Qualifying Examination, the student begins the preparation of a dissertation. Ideally the proposal should be submitted within one calendar year of taking the PhD Qualifying Examination or as soon as a line of research has been defined and there is evidence that the experimental protocols can be carried out. You must also complete the course requirements prior to commencing the dissertation research.

The process begins with a detailed (45 -50 page) proposal that outlines the proposed research and the hypothesis to be tested. The following format should be used:

I. **Title:** Please provide a brief and concise title.

II. **Goals and Objectives:** A clear statement about the overall goal of this research and several specific objectives of your proposed study. This statement should be brief and concise but clearly delineate the proposed project and its purpose.

III. **Statement of problem, background, its significance and hypothesis:** State clearly and in specific terms what the dissertation is about. The statement of the problem should be brief and concise. The statement will indicate the general purpose of the study, and relate the problem to general theories and accepted bodies

of knowledge. Show that you understand what work has been done in this area in the past, and where your proposed project fits in with this work. The explanation of the background should be focused on the goals of your project, and it should not be an exhaustive description of everything that has been done in the area. In reviewing previous literature, you should explain clearly how existing findings relate to the specific questions that you are asking. Explain why the question addressed by your dissertation is important. Information that indicates the significance of the study to the field of biomedical informatics should be included. The problem may arise from a theoretical question or from a specific circumstance that presents practical, consequential informatics questions for conducting this research. The matter proposed for study should demonstrate relevance to the field of informatics (area of your concentration). Wherever appropriate, the proposal should specify how it could benefit the field of biomedical informatics, how it is related to health care, pharmaceutical industry, medicine, and /or health care delivery, and what contribution it will make to your professional development. State the project's main hypothesis and you can put a series of sub hypotheses (associated with your research questions). The hypothesis to be tested or the questions to be answered should be stated precisely. Hypotheses are generally connected with a theory or theories; the proposal should therefore include some identification of the basic theories involved.

IV. **Literature review:** Critical review of previous work on the research topic and of the relevant methods. This review, expanded and updated, later serves as the introduction to the student's dissertation. The most important prior research or writing pertinent to the problem at hand should be identified. It is not necessary to exhaust all prior writing on the subject, but there should be an indication of substantial familiarity with the material and a clear definition of its relationship to the proposed study. The essential difference(s) between the proposed study and prior research will be explicitly identified.

V. **Preliminary Results:** What findings of relevance to your project do you already have, if any, from preliminary studies? If you have already written a paper on this topic, which the dissertation expands upon, then you should summarize the main arguments of this paper, and explain how the dissertation addresses questions left open by that paper. For experimental projects, you should discuss any data you have from preliminary or pilot experiments. What aspects of your experiment will need to be developed or improved for the dissertation?

VI. **Research Design** This section includes outlines of research planned, description of methods and on outline of timing of the projects. Your proposal should demonstrate how the objectives of the study would be accomplished. Specific steps to be taken to answer the questions or to test the hypotheses should be indicated. Data should be provided that would indicate what sort of information will be obtained, how it will be obtained, and how it will be analyzed. Where appropriate, sampling procedures should be indicated, measuring instruments fully described, description of algorithms to be developed and/or implemented, and statistical analyses identified. If instruments and/or algorithms are to be developed during the study, the procedure for their development and use should be described; if these instruments and /or algorithms have already been developed specifically for this study, they should be attached. For projects based on existing databases, you will need to describe what kinds of data you will be looking at, and the structure of the

algorithm(s) you hope to present. For experimental projects, you will need to give a clear description of the experiment(s) you plan to run, and information on how they will be prepared. You should describe the experimental design in complete details, and what specific steps and timeline. What analyses will need to be run on your data in order to address the questions you're interested in? How long do you expect it to take to complete the various stages of your research?

VII. Outcomes of the Study: Discussion of expected outcome of experiments, potential problems and alternative plans if results of experiments are not as expected. A good way of evaluating the effectiveness of your program of research is to look ahead to possible outcomes of your research. What do you expect to find, and what conclusions would you draw based on that? What objections would a skeptic is likely to raise against those conclusions? If your research yields a different set of results, what would you then conclude? Limitations of the study should be indicated in this section of the proposal. This may be accomplished by indicating such factors as the population to be studied, the time period considered, the origin and composition of information to be used, and any other information that might indicate potential sources of error for the design or limitations of the framework within which the study will be conducted. The approximate time schedule anticipated for the completion of various phases or aspects of the project should be noted.

VIII. Selected Bibliography: This will not be the same bibliography that will be included with the final thesis or dissertation, but should deal essentially with those references discussed in the Related Research section above.