Student Manual
MSPH Thesis/Project (HLTH 6900/6901)

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This document is intended as a guide to the process and conceptualization of the capstone experience within the MSPH program, which is linked with and subordinate to applicable college and university-wide policies and procedures governing these activities.

This document serves to assist students to understanding the differences between and to choose knowledgeably between a master’s thesis and a master’s project as their capstone experience. The document also provides evaluation and presentation criteria for the proposal and final defenses.

The overarching objective of the capstone manuscript (be it a thesis or a project) is for each student to produce a substantial scholarly product that:

- Demonstrates substantive knowledge addressing, at a minimum, the core competencies/disciplines of public health and utilizing an appropriate paradigm/conceptual framework;
- Requires interpretation and analysis of data in the support of a decision or conclusion;
- Demonstrates oral and written communication and presentation skills;
- Withstands critique by an appropriate audience;
- Progresses under the supervision and mentorship of faculty;
- Requires development of and adherence to a schedule/time frame; and
- Demonstrates practical consideration of conducting public health projects or research.

It is desirable for the capstone experience process to:

- Accommodate the diverse interests, backgrounds, and capabilities of students and faculty;
- Provide prescriptive guidelines with flexibility to enable creativity;
- Capitalize on existing course content and materials where at all possible; and
- Ensure that there are sufficient resources available and in place.
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Overview

Students completing either the thesis or a project must demonstrate mastery of core competencies through the successful application of core knowledge and principles, and critical thinking and analytic reasoning skills. The capstone experience is a student-directed activity. Students are largely responsible for initiating actions, moving the process forward, and ensuring timelines are met and deliverables are provided. The faculty provide mentoring and critical guidance, while also serving to critique and evaluate student performance.

The student is advised to select a thesis/project that best matches his/her interests and most emphasizes the development/demonstration of skills consistent with the student’s professional aspirations. Consult Appendix 1 for descriptions, outlines, and evaluation rubrics for the thesis, for the project frameworks, and for the assessment of presentation skills. Students are also encouraged to explore options for finding synergies/efficiencies between their coursework, their internship, and their capstone experience.

Advising and Committee

Students are advised to plan ahead for each step. The Thesis or Project Committee shall consist of the Chair, a regular member of the graduate faculty whose primary appointment is in the Department of Public Health Sciences, and at least two other Committee Members, drawn from the UNC Charlotte graduate faculty. Preferably all members’ expertise and/or interests are related to the content and/or methodological area of the thesis/project.

Notes:
1) Students are encouraged early on in the MSPH Program to begin exploring and discussing topic options and possible committee members with their academic advisor. (The thesis chair need not be the academic advisor.)
2) Under some circumstances, a Chair who is a regular member of the graduate faculty but does not hold a primary appointment may be permitted under two conditions. First, the proposed Chair has adequate familiarity with the program requirements. Second, one other member of the committee is a regular member of the graduate faculty and holds a primary appointment in the Department of Public Health Sciences and agrees to act as a surrogate chair. Prior approval from the MSPH Coordinator is required.
3) Students engaged in a practice setting may wish to include a preceptor from the practice site as a committee member. It may be possible to arrange for special appointments to the graduate faculty for preceptors holding at least a master's degree in a field relevant to public health (doctorate preferred). Such discussions should occur with the MSPH Coordinator well in advance of forming the committee.

Chair. The Chair agrees to be the student’s principal advisor and mentor for the capstone experience. (The MSPH Coordinator remains as the overall academic advisor.) The Chair will (1) assist the student in identifying potential Committee Members; (2) ensure the student complies with department, college, and university policies and procedures related to the thesis/project; (3) work with the student to reconcile and address critical feedback from the committee members; and (4) facilitate the defense and revision processes.

Committee. The two Committee Members will support the student and the Chair throughout the process, providing critical insight and constructive feedback, and ensuring that substantive concerns are brought to both the student’s and the Chair’s immediate attention.
**Student Responsibilities.** The Student is responsible for complying with the process and product guidelines set forth in this manual and with the policies and standards of the Graduate School and UNC Charlotte. These responsibilities include:

- Recruiting a Chair and, in consultation with the Chair, two Committee Members
- Preparing and defending a preliminary proposal (proposal defense) and final text (final defense)
- Coordinating a time for the proposal and final defenses that is acceptable to all members
  - Ensuring a room is reserved (typically the PHS Conference room, CHHS 426 is used); see our program administrative support associate to reserve a room
  - Arranging for any needed audio-visual support
  - Ensuring that the committee members are notified of the location of the defense
  - Ensuring that the MSPH Coordinator is informed of the time, location, and outcome of the defense at least one week in advance.
- Ensuring that the committee has been provided a copy of the proposal/thesis/project report at least 7 days in advance of the defense
- Ensuring that the Chair has reported the results of the defense to the MSPH Coordinator
- **Ensuring all requisite forms and documents are submitted to the Graduate School within the deadlines stipulated for graduation.**

The same faculty committee will be used for both the proposal and final defense. The Committee should optimally be formed at least one month in advance of the proposal defense. While the Chair will provide direct mentoring, the student must consult the Committee at least once during the drafting of the proposal and once during the writing of the thesis (with requests for additional consultations at the discretion of the student and committee members) prior to the defense. As noted above, the committee must be provided the written proposal/thesis/project report at least 7 days in advance of the scheduled defense. [Members of the Committee may choose – *at their discretion* – to waive or shorten this requirement.]

**Proof of IRB Training.** Furthermore, ALL students must provide proof to the Chair of their successful completion of an approved IRB training course or equivalent (e.g., UNCC’s online course operated by the CITI consortium found at [https://www.citiprogram.org/](https://www.citiprogram.org/)) prior to scheduling the proposal defense. [In most cases, students will have completed this requirement as part of HLTH 6204 Public Health Research Methods.] This condition applies whether the student is pursuing a thesis or a project and whether or not the activity is considered IRB exempt. If a thesis or project is deemed to require formal IRB approval, work cannot begin until such approval has been secured.

Students are encouraged to register for up to three credits of thesis or one credit of project work during the proposal writing phase (ideally the summer and/or fall between year 1 and year 2). Generally, students will not be allowed to register for a total exceeding three credits of thesis or one credit of project work until after the proposal defense has been successfully completed (or at least scheduled). Students do not need to be registered for HTLH 6900 or HLTH 6901 to prepare or defend a proposal.
HLTH 6900 Thesis and HLTH 6901 Project are restricted to permission of the MSPH Coordinator. Students wishing to register for the 1-3 credits of preliminary work to develop the proposal should send an email request to the MSPH Coordinator indicating:

- the name of the Chair of the Committee (and the Committee Members if available)
- the number and type of credits either Thesis (HLTH 6900), maximum of two credits prior to defending proposal* or Project (HLTH 6901), maximum of one credit prior to defending proposal
- a working title or brief description of the planned focus of the thesis or project.

The email should be copied to the proposed Chair of the Committee.

*Students in their intended last semester may be permitted to register for all 6 credits of HLTH 6900 Thesis or 3 credits of HLTH 6901 Project provided they have consulted with the MSPH Coordinator in advance and have either completed or scheduled their proposal defense.

**Thesis Versus Project**

The thesis and project are equivalent capstone experiences, which demonstrate mastery and application of core competencies in a professionally relevant format. The thesis requires the generation of new knowledge through the comprehensive application of the research process. The thesis option is a better choice for students who intend to pursue doctoral study, who see themselves as working in an academic setting, or who desire to gain confidence in their ability to plan, conduct, and write-up research. A project is more appropriate for those intending to work in a professional setting where they wish to gain confidence in their ability to critically apply existing knowledge and methods to the solution of a problem.

While there are no clear cut distinctions as to where a project ends and a thesis begins along this continuum, some considerations and generalizations about the differences include:

- While the thesis and project are conceptually equivalent, they do involve differential application and differential intensity/depth of skills. A thesis inherently spans the entire range of the research process, while a project may emphasize only a limited segment of the research process.
- The thesis is in the form of a peer-reviewed, publishable manuscript while a project may take other professionally relevant forms (such as a grant proposal or program implementation plan). Technical and procedural distinctions include that a thesis is more tightly regulated by the Graduate School in terms of format, style, and procedures.
- A thesis is inherently hypothesis-based (or research question-based) while a project usually involves the evidence-based application of theory and empirical evidence to a practical situation/problem.
- Given the inherent complexity of activities and time demands, 6 credit hours of research are required for a thesis. For a project, 3 credit hours of project work are required.

The determination as to whether a thesis or project approach best conforms to a student’s needs and professional aspirations is best addressed in consultation with the faculty.
Students pursuing the thesis option are advised to plan early and thoroughly to facilitate a timely completion of their program. Full-time students are encouraged to plan a thesis topic prior to the start of their second academic year. Students should have completed or be concurrently completing HLTH 6201-6205 by the time they begin their thesis work and have completed or be concurrently completing HLTH 6206 and HLTH 6207 prior to scheduling the final defense.

The selection of topic and approach must be reviewed and approved by a faculty committee (the proposal defense) and IRB approval received (if needed) before research/active project work can begin.

**Proposal Outline**

The proposal submitted for a thesis should follow the outline listed below. The outline corresponds to the major chapters expected in a thesis. Deviations from the content in this outline should be discussed and approved by the Chair (and Committee) in advance of submitting the proposal for the defense. The organization/presentation of the items may be sequenced in alternate rational formats for clarity of presentation.

1. **Introduction**
   a. Establish importance of topic
   b. Discuss conceptual model/relationship of independent and dependent variables
   c. Summarize of what is/is not known
   d. Identify what gap the study is filling
   e. State research purpose(s)

2. **Literature Review**
   a. Provide a general overview/development of literature in the content and/or methodological area
   b. Discuss/explain the underlying theoretical models/conceptual frameworks
   c. Describe the relationships among variables
   d. Refer to other relevant literature
   e. Summarize, draw conclusions, and discuss implications

3. **Hypotheses and Specific Aims (or research questions)**

4. **Methods**
   a. Study design
   b. Study population
      i. Sampling methods
      ii. Sample size/power
      iii. Sample recruitment
   c. Measurement issues
      i. Variables (level of data)
      ii. Measurement
         1. instruments*
2. standards  
3. reliability  
4. validity  

*include copies of relevant instruments (surveys, etc) as appendices  
d. Data analysis plan (including dummy tables if applicable)

5. Study Limitations  
6. Ethical Issue/ Human Subject Protection  
7. Significance

**Suggested Timeline**

Given the length of time inherent in primary data collection activities, students should be prepared to begin data collection early in their second year of study (more or less time may be required depending on the nature of the data collection design). The written thesis builds upon the proposal, revising the existing chapters and adding chapters for results, discussion, and conclusions/recommendations. Once the thesis is prepared, a defense is scheduled. The formal review ensures that core competencies are adequately addressed and other relevant competencies are appropriately executed. Unless there are extenuating circumstances, the thesis committee shall be the same three faculty who reviewed the proposal. Appendix 1 presents the assessment tool that the committee will use to evaluate the thesis.

**IRB Approval.** Thesis research in public health generally involves the use of human subjects. In ALL cases, proposals involving human subjects must be reviewed and approved (or declared exempt) by the UNC Charlotte IRB. The Thesis Chair may use the decision rubric prepared by the IRB to determine if the thesis constitutes human subjects research. In ALL cases, protocols involving human subjects must be reviewed/approved by the UNC Charlotte IRB (or documented as being IRB exempt) in accordance with UNC Charlotte policies and procedures. The thesis chair is listed as the PI for the protocol and the thesis student as the student investigator. Depending on their level of involvement, the other committee members can be listed as co-investigators.

The IRB meets monthly during the academic year but rarely during the summer months. Proposals are reviewed for exemption throughout the year, generally receiving an answer within two weeks. If a proposal is deemed to need a full IRB review, it must be received by the committee at least one week in advance of the meeting where it will be discussed. The schedule and due dates are found at [http://research.uncc.edu/compliance-ethics/human-subjects/irb-schedule-meetings](http://research.uncc.edu/compliance-ethics/human-subjects/irb-schedule-meetings). Often further revisions and, sometimes, resubmission and review at the next meeting are required possibly delaying the start of your project. **Thus, the IRB process needs to be accounted for in planning your timeline.**

**Sequence of Events.** This outline summarizes the sequence of events leading to a completed thesis. It highlights the key steps and suggested timeline for action. The specific sequence and timing should be discussed in consultation with the Thesis Chair. Adjustments may need to be made to accommodate changes in university or college policy and the specifics of the chosen thesis.
Spring 1: Plan for thesis, begin drafting proposal
Summer 1: Form Committee; register for proposal writing thesis credit (and/or in fall), finalize proposal
Fall 2: Provide proof of IRB training to Chair
Schedule proposal defense; inform MSPH Coordinator
Meet with committee members at least once
Submit proposal 7 days in advance of defense
Defend proposal
Report approval of topic to Graduate School* (via MSPH Coordinator)
Register for Thesis credits for spring / Begin Data collection/analysis
Spring 2: **Apply for candidacy and graduation PRIOR to end of ADD/DROP**
Complete thesis
Meet with Committee members at least once
Schedule defense; inform MSPH Coordinator
Submit thesis 7 days in advance of defense
Defend thesis**
[have ≥ 4 copies of the title page – printed on cotton paper – signed at defense]
Revise as needed
Submit defense form (via MSPH Coordinator)
Submit thesis to Graduate School for format review/binding PRIOR TO DEADLINE FOR THESES.

*Once a topic approval form has been submitted, students must maintain "residency," (e.g., be enrolled each fall and spring semester) until completing the degree. Students must be in residence during the semester in which they defend their theses and graduate. For further details on residency, consult the MSPH student handbook and the Graduate School website.

**Given the number of students completing each semester and the number of faculty serving on multiple thesis and project committees, a) students cannot wait until the deadlines to complete their defenses and revisions and b) given multiple completing priorities, it is unreasonable to expect faculty to turn-around revisions overnight. Plan accordingly.

**Thesis Outline**

The Graduate School has final authority to review the thesis manuscript for adherence to formatting and printing guidelines. The Graduate School provides a detailed manual outlining the specific formatting guidelines for preparing and printing a thesis (Appendix 2) and providing example pages (Appendix 3). These forms as well as process guidelines for submitting the approved thesis for review and binding are found on the Graduate School website (see http://graduateschool.uncc.edu/academics/forms.html).

NOTE: The Graduate School requires a formal review of the thesis for format compliance. This must be scheduled – in advance – with the Graduate School. Students may schedule this review once they have submitted their thesis to the committee for the final defense (students need not wait until after the final defense). The end of the semester is quite hectic for the Graduate School and review slots near the submission deadline are limited. Please plan accordingly.

Until the Graduate School has accepted the thesis for binding, the process is not complete, and the student will not be cleared for graduation.

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Project Option

Full-time students are encouraged to plan their project topic prior to the start of their second academic year or early in the fall semester of the 2nd year. Students should have completed or be concurrently completing HLTH 6201-6205 by the time they begin their project work and have completed or be concurrently completing HLTH 6206 and HLTH 6207 prior to scheduling the final defense. The selection of topic and approach must be reviewed and approved by the project committee (proposal defense) before work on the project may begin.

Proposal Outline

Given the variability of frameworks available for the project manuscript (e.g., grant proposal [community service or research], policy analysis, program implementation plan, program evaluation plan, consultant’s report), the specific structure of the project proposal will vary accordingly. The project proposal should be structured according the framework outline the student has selected for his/her project and include comparable content and level of detail expected for the thesis proposal. The literature review of a project is typically more narrowly focused than for the thesis but is of comparable rigor to that of a thesis proposal. As with the thesis, the selection of topic and approach must be reviewed and approved by a faculty committee (the proposal defense) before research/active project work can begin. Students pursuing the project option are advised to plan early and thoroughly to facilitate a timely completion of their project. [Note: the project proposal emphasizes the detailed methods needed to produce the final product (a workplan), NOT elements of the final product itself]

Suggested Timeline

Given the variable nature of projects, students should allow adequate time to complete all project tasks, including IRB approval/exemption and implementation/evaluation of an activity, following their proposal defense. The Chair can advise a reasonable time line. The written project builds upon the proposal, revising the existing chapters and adding chapters specific to the framework selected. Once the project report is prepared, a defense is scheduled. The formal review ensures that core competencies are adequately addressed and other relevant competencies are appropriately executed. Unless there are extenuating circumstances, the Project Committee shall be the same three faculty who reviewed the proposal. Appendix 1 presents the assessment tools that the committee will use to evaluate the project.

IRB Approval. Projects typically do not involve research data per se and may be IRB exempt. In ALL cases, project proposals involving human subjects must be reviewed and approved (or declared exempt) by the UNC Charlotte IRB. The Project Chair may use the decision rubric prepared by the IRB to determine if the project constitutes human subject research.

The IRB meets monthly during the academic year but rarely during the summer months. Proposals are reviewed for exemption throughout the year, generally receiving an answer within two weeks. If a proposal is deemed to need a full IRB review, it must be received by the committee at least one week in advance of the meeting where it will be discussed. The
Schedule and due dates are found at [http://research.uncc.edu/compliance-ethics/human-subjects/irb-schedule-meetings](http://research.uncc.edu/compliance-ethics/human-subjects/irb-schedule-meetings). Often further revisions and, sometimes, resubmission and review at the next meeting are required possibly delaying the start of your project. Thus, the IRB process needs to be accounted for in planning your timeline.

**Sequence of Events.** This outline summarizes the sequence of events leading to a completed project. It highlights the key steps and suggested timeline for action. The specific sequence and timing should be discussed in consultation with the Project Chair. Adjustments may need to be made to accommodate changes in university or college policy and the specifics of the chosen project.

| Spring 1: | Plan for project, begin drafting proposal |
| Summer 1: | Form Committee; register for project credit (or in fall); Finalize proposal |
| Fall 2: | Meet with committee members at least once |
| | Provide proof of IRB training to Chair |
| | Schedule proposal defense; inform MSPH Coordinator |
| | Submit proposal 7 days in advance of defense |
| | Defend proposal |
| | Report approval of topic to graduate school* (via MSPH Coordinator) |
| | Register for project credits for spring/Begin project work (or defer to Spring 2) |
| Spring 2: | **Apply for candidacy and graduation PRIOR to end of ADD/DROP** |
| | Complete project |
| | Meet with committee members at least once |
| | Schedule defense |
| | Submit project manuscript 7 days in advance of defense |
| | Defend project manuscript** |
| | [have ≥ 1 copies of the title page – printed on cotton paper – signed at defense] |
| | Revise as needed |
| | Submit defense form (via MSPH Coordinator) **BY THE LAST DAY OF EXAMS** |
| | Submit bound manuscript to department |

*Once a topic approval form has been submitted, students must maintain "residency," (e.g., be enrolled each fall and spring semester) until completing the degree. Students must be in residence during the semester in which they defend their theses and graduate. For further details on residency, consult the MSPH student handbook and the Graduate School website.

**Given the number of students completing each semester and the number of faculty serving on multiple thesis and project committees, a) students cannot wait until the deadlines to complete their defenses and revisions and b) given multiple completing priorities, it is unreasonable to expect faculty to turn-around revisions overnight. Plan accordingly.

**Project Outline**

Unlike a thesis, which has a format prescribed by the Graduate School, the project can take one of several professionally relevant formats. For the MSPH program, the formats can include: a grant proposal (community service or research), a policy analysis paper, a program implementation plan, a program evaluation plan or a consultancy report (other frameworks may be added). See Appendix 1 for specific details.
NOTE: A single bound copy of the final approved version of the project, with an original signed cover page (similar to the format expected of theses) is required to be submitted to the MSPH Program Coordinator. This copy of the project will be archived in the department library along with copies of MSPH student theses. (Copy for binding submitted through the Graduate School, as for theses.)
The proposal and final defenses should be scheduled in advance (as described above). A minimum of 90 minutes should be allotted for the defense, but scheduling a two-hour block is recommended.

**Public and Closed Portions**

MSPH proposal defenses (thesis or project) are closed. Only the student and the committee are present. For training or quality assurance purposes, the MSPH Coordinator (or other faculty designees) may observe. Additional observers may be permitted, subject to the advance concurrence of the student and the Committee Chair. Any such non-faculty observers shall be excused from the room during the committee’s examination and deliberation.

MSPH final (thesis or project) defenses are open to the university community (e.g., faculty and students of the department or from the college or related academic programs having a legitimate interest) and members of agencies associated with the thesis or project. Any such observers shall be excused from the room during the committee’s examination and deliberation. For training or quality assurance purposes, the MSPH Coordinator may attend the examination and/or designate other graduate faculty to observe the examination.

**Sequence of Events**

The defense begins with administrative/introductory remarks by the Chair who will review the process and procedures for the defense, including any ground rules set forth for the specific defense. (The student and/or observers may be excused briefly prior to the start of the defense while the committee organizes its approach to the defense.) The student will then make a prepared 15-20 minute (proposal) or 20-30 minute (final defense) presentation which summarizes the proposal/thesis/project. (The Chair will announce in advance whether questions may be asked during the presentation or held to the end. Normally, clarifying questions will be permitted during the presentation with probing/analytic questions following the presentation.)

Following the formal presentation and clarifying questions, any observers are permitted to ask questions and then the non-faculty observers are excused. Questioning/critiquing of the student by the Committee then begins. For the proposal defense, emphasis is on the suitability of the proposed research/project and the design/methods/analytic plan/approach. For the final defense, emphasis is on the results, lessons learned, and implications. In both cases, questions related to mastery/application of core competencies may be asked, even if they are tangential to the proposal/thesis/project under review. The formal examination concludes when the Committee has finished its questioning or the allotted time has elapsed. Fifteen minutes are reserved for the Committee’s deliberations and communication of their findings to the student. The student will be excused from the room while the Committee deliberates. The student is then invited to return and to receive the Committee’s findings, concluding the defense.
Outcomes
Defenses (be it proposal or final) result in 4 possible outcomes: unconditional pass, conditional (minor) pass; conditional (major) pass, or fail.

- **Unconditional Pass** is associated with consensus scores of 3 or more in all areas. It may, however, include requests for minor revisions, which are reviewed and accepted by the Chair on behalf of the Committee.

- **Conditional Pass** is associated with a score of 2 or less in one or more areas where the shortcomings may range from being technical in nature, easily corrected, and/or for which the student demonstrates understanding during the defense (e.g., minor) to more substantive issues ranging from general weakness to a critical weakness in a specific area (e.g., major). The student works with the Chair to correct the deficiencies identified by the Committee. It is at the committee’s discretion to determine whether the Chair or the full committee will have the responsibility to review and accept the revisions.

- **Fail** is associated with poor performance (multiple scores below 3) and evidence of gaps in knowledge and critical reasoning skills during the defense. The deficiencies are such that the Committee wishes to see a re-defense of the revised proposal or consider the student for dismissal. Should the student’s defense be deemed substandard but correctable, the Committee Chair will convey the specific remediation required prior to a subsequent defense or refer the matter to the MSPH Coordinator or Department Chair for further review and action, as consistent with University, Graduate School, College, Department, and MSPH Program policies.
  o Students work with their Committee and the MSPH Coordinator to correct any deficiencies in the proposal/manuscript and other areas as needed prior to scheduling a re-defense.
  o Students are permitted only one re-defense. A subsequent failure is grounds for academic dismissal from the program.

  Should the Committee recommend dismissal without a re-defense, the Chair will confer with the Program Coordinator and Department Chair to determine the course of action. This decision will then be conveyed to the student and the Graduate School.

Following a successful proposal defense, the Committee signs the Graduate School’s Topic Approval form (Appendix 4). This form is routed to the MSPH Coordinator who will then sign and forward it to the Graduate School, retaining a copy for the student’s file. The Committee also completes the diagnostic presentation assessment (see details below). Copies of both forms are added to the student’s file and a copy is provided to the student. If the student defense was not successful, the assessment form and documentation of specific deficiencies are brought to the MSPH Coordinator for remediation and further action.

Following a successful final defense, the committee completes the Graduate School Report of Defense form (Appendix 5), the framework specific evaluation instrument, and the presentation assessment form and submit them to the MSPH Coordinator for processing and
submission to the Graduate School. Following the defense, the student completes any required revisions and, after consulting the Chair, submits a minimum of three copies (two for the Graduate School, one for the Department) of the thesis to the Graduate School for binding (1 copy [For the Department] if a project). The Graduate School requires an additional signed title page for all theses (e.g., a minimum of 4 signed title pages are needed). If the defense was not successful, the assessment form and documentation of specific deficiencies are brought to the MSPH Coordinator for remediation and further action.

Presentation Evaluation
Effective presentation and oral communication skills are core competencies expected of MSPH graduates. Consequently, separate from the content assessment of the defense, the Committee will evaluate the student’s presentation skills. See the Presentation Evaluation rubric (Appendix 1).

During the proposal defense, the assessment will be used to advise the student of perceived strengths and weaknesses and recommended actions to ensure a strong presentation during the final defense (diagnostic). For the final defense, the committee will formally assess the student’s presentation/oral communication skills (evaluative). Successful mastery of the communication skills (minimum score of 3 in each category or justification by the committee) is a requisite for passing the defense.

Ethical Conduct and Academic Integrity
Ethical conduct and integrity are intrinsic to the professional practice of public health. Within the MSPH program, ethical conduct takes on three dimensions. First is the commitment of a practitioner to fair and honest dealings with peers, the community, and the faculty (see code of ethics for a health educator in the MSPH Student Manual). Second is the commitment of a student to academic integrity inherent in being a student at UNC Charlotte (see policy on academic integrity, especially with regard to cheating and plagiarism). Third is the commitment of a scholar to the ethical conduct of research. Consistent with university and subordinate unit policies, violations of these ethical obligations may result in punishments ranging from counseling to censure/reprimand, to loss of grade, failure of a course or defense, and suspension or dismissal from the program.
Appendix 1. Thesis & Project Framework Guidelines

The thesis or project manuscript is evaluated to ensure adequate demonstration of core competencies and the correct application of a specific set of competencies to the research of a public health problem.

At a minimum, the manuscript will demonstrate the appropriate and sufficiently thorough application or consideration of each of the core area competencies in relation to the problem under analysis and the framework selected. Each of the acceptable frameworks detailed below include specific associated evaluation considerations to guide student preparation and faculty evaluations.

The manuscript may build upon work previously submitted for other courses or for professional practice, but must have been prepared since matriculating as an MSPH student. While the student may build upon prior work, the project must reflect substantial new effort. The distinction of what constitutes new work should be clarified with the Chair or MSPH Coordinator in advance of the proposal defense.

Critical use of references is required. References must be consistently cited in accordance with a referencing style consistent with the discipline from which the thesis or project is drawn or an intended journal for publication (the AMA or APA styles are recommended). Students are advised to consider the distinction between advocacy documents (now easily accessible on the World Wide Web) and peer-reviewed literature. Use of reference management software (such as Endnote, available at UNC Charlotte) is strongly encouraged.

Similarities & Differences

The objective of the proposal defense is to ensure the student has sufficient mastery of core competencies and sufficient understanding of the research/practice process and adequate support to successfully complete the thesis or project. The objective of the final defense is to ensure that the student completed the agreed upon tasks and has effectively analyzed/synthesized those findings and experiences from engaging in the process into his/her professional practice.

Thesis proposals are usually more developed and detailed than a project proposal, especially the methods section and analysis plans.

Unlike thesis proposals, the methods section of project proposals outlined the proposed work plan and required resources to produce the proposed deliverables.

The methods and analysis sections of proposals are written in the future tense (what you plan to do). These sections are updated and changed to the past tense (what you did do) for the final defense. Results are written in the present tense.

Given the differing levels of detail and planning needed at the proposal, students typically find the thesis proposal more challenging and daunting than the final defense, but the converse true for projects.
Style guidelines

Theses. The Graduate School establishes formatting and style guides for theses (see Appendices 2 and 3 or the Graduate School website).

Projects. The Department proscribes guidelines for projects. Other than the exceptions noted below, the style and formatting guidelines for theses apply to projects. Like a thesis, the length and content will vary with the specific purpose. In general, projects will be a minimum of 20 typed, double-spaced body pages using times New Roman 12 point font or Arial 11 point font. The project paper will summarize a student’s investigation into a public health problem of professional relevance and interest. The project manuscript will be presented in accordance with one of several prescribed formats found latter in this appendix. Project reports will include cover page, an abstract or executive summary, a table of contents, references, tables, and figures, using the style guides for a thesis.

Demonstration of Core Competencies: Evaluation Guidelines

The primary educational objective of the capstone thesis or project is to demonstrate appropriate consideration and application of core concepts, skills, and knowledge in researching a public health problem. Core competencies must be appropriately addressed in each thesis. (See MSPH Student Manual for a full depiction and explanation of core MSPH competencies.

Quantitative Sciences [Epidemiology and Biostatistics, collectively]
- Appropriate and sufficiently thorough consideration of relevant historical information surrounding the problem ranging from trend information to assessments of previous efforts and related research.
- Appropriate and sufficiently thorough consideration of epidemiology, demography, vital statistics, and biostatistics (analytical planning, sample size, etc.).

Environmental and/or occupational considerations
- Appropriate and sufficiently thorough consideration of the role and interaction of the physical environment, which includes biologic concepts (genetics, physiology, immune response, life cycles, processes such as aging, growth, and development, and physiologic measurements).

Social/cultural/behavioral considerations
- Appropriate and sufficiently thorough consideration of socio-cultural and behavioral factors which directly or indirectly impact on the problem under consideration.

Health Services Planning and Administration
- Appropriate and sufficiently thorough consideration of management precepts ranging from the domains of administration to leadership to financial planning (budgeting) to policy setting to implementation and planning (logistics).
Research and Evaluation Methods

- Appropriate and sufficiently thorough selection and application of processes and techniques to conduct sound inquiries and evaluations and to develop and improve public health research and programming.

Cross-cutting themes

- Appropriate and sufficiently thorough application of skills and perspectives related to: frameworks of public health practice, systems thinking, leadership, communication and advocacy, and ethics/values/cultural diversity.

Core competencies will cut across the chapters identified for the thesis. For example, quantitative competence may be demonstrated in the literature review and/or methodology section and/or results and/or discussion section.

Note: Beyond demonstrating minimum competence, theses and projects are held accountable to a level of competence consistent with the problem, approach, and analytic techniques employed by the student. For example, when a student uses an advanced statistical analysis, that student is accountable to correctly describe and apply it, even if that statistical test exceeds the minimum competence expected of an MSPH graduate.

In addition, the student’s completion of required IRB (CITI) training is noted here as is the proposal’s conformity with technical/formatting requirements (e.g., title page, abstract/executive summary, table of contents, references, appendices).

Thesis: Evaluation Guidelines

Manuscripts are evaluated along a number of dimensions using the 4-point scale described below. The basis for the evaluation will be the level of competence expected of an MSPH graduate within the context of the framework and problem/topic selected by the student. The ratings with respect to expectations are as follows:

1 (not met/missing) the element was omitted or not adequately addressed
2 (partially met) the element was addressed, but not to the level expected
3 (fully met) meets/exceeds expected level of competence
4 (exceptional) clearly exceeds the expected level of competence

In addition to assessing whether core competencies have been appropriately addressed, theses are evaluated along these 11 dimensions:

- Importance of the problem to public health
  - Has the magnitude of the problem been characterized?
  - Is a case made for its importance?

- Organization/ Presentation
  - Is it easy to read/understand?
  - Are the tables and figures informative and of quality?
  - Do the ideas progress logically?
  - Does it conform to guidelines of the target publication/standard format?

- Abstract appropriately structured and an adequate reflection of paper’s content

- Introduction places the current study in the context of current knowledge
  - Is the literature review of thorough and of high quality?
  - Does the introduction demonstrate where this project ‘fits in’?
● Design appropriate to answer the question
  o Are consideration given to options?
  o Is a rationale given for choosing the design?
  o Are strengths and limitations inherent in design discussed (validity)?
  o Are strengths and weaknesses of measurements discussed (reliability)?
● Population appropriate to answer the research question
  o Are considerations/advantages/disadvantages of choice discussed?
● Analysis appropriate to answer the question
  o Are methods described; limitations noted?
  o Is the plan sufficient to address the research question?
  o Is the level of data collection/coding sufficient to answer the research question?
  o Are issues of power sample size addressed?
● Plausibility of results appropriately addressed
● Public health implications appropriately addressed
● References complete and adequately reflecting current literature on the topic; peer-reviewed sources provide adequate support for assumptions or background information.
● Overall scientific merit
  o Is the study design appropriate to the stated objectives?
  o Is the appropriate level of data used?
  o Has an appropriate literature review been included?
  o Does the project increase our understanding or to replicate inconclusive/controversial findings?
# Thesis: Evaluation Score Sheet

## MSPH Capstone Experience

- _____ Proposal Defense
- _____ Final Defense

**Student Name:** __________________________  **Date:** _________________

**Title:** ______________________________________________________________________

**Score:**  
(4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

### A. Core Competencies Appropriately Demonstrated

<table>
<thead>
<tr>
<th>Competency</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative sciences</td>
<td></td>
</tr>
<tr>
<td>Social/cultural/behavioral considerations</td>
<td></td>
</tr>
<tr>
<td>Environmental and/or occupational considerations, including biological</td>
<td></td>
</tr>
<tr>
<td>Management/resource and/or policy considerations</td>
<td></td>
</tr>
<tr>
<td>Research and Evaluation Methods</td>
<td></td>
</tr>
<tr>
<td>Cross-cutting themes (e.g., frameworks, systems thinking, leadership,</td>
<td></td>
</tr>
<tr>
<td>communication, advocacy, ethics, values)</td>
<td></td>
</tr>
</tbody>
</table>

**CITI training verified**  
- _____ Yes  
- _____ No

**Technical Requirements**  
- _____ Yes  
- _____ No

### B. Framework specific criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health importance</td>
<td></td>
</tr>
<tr>
<td>Organization/presentation</td>
<td></td>
</tr>
<tr>
<td>Abstract</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td></td>
</tr>
<tr>
<td>Analysis appropriate to answer the question</td>
<td></td>
</tr>
<tr>
<td>Plausibility of results</td>
<td></td>
</tr>
<tr>
<td>Public health implications appropriately addressed</td>
<td></td>
</tr>
<tr>
<td>References complete</td>
<td></td>
</tr>
<tr>
<td>Overall Assessment</td>
<td></td>
</tr>
</tbody>
</table>

**Result:**  
- _____ Unconditional Pass  
- _____ Conditional Pass  
- _____ Fail

**Comments/specific instructions:** __________________________________________

___________________________________________________________________________

___________________________________________________________________________

**Signature of Committee:** ________________________________________________

(Chair)  
__________________________________________
Project: Evaluation Guidelines

The Committee for a project operates similarly to a Thesis Committee. Manuscripts are evaluated along a number of dimensions using the 4-point scale described below. The basis for the evaluation will be the level of competence expected of an MSPH graduate within the context of the framework and problem/topic selected by the student.

The ratings with respect to expectations are as follows:

1 (not met/missing) the element was omitted or not adequately addressed
2 (partially met) the element was addressed, but not to the level expected
3 (fully met) meets/exceeds expected level of competence
4 (exceptional) clearly exceeds the expected level of competence

Each project format will have a minimum of 14 grading components. All formats include the 6 core domains and are supplemented with framework-specific domains.

As with thesis scoring, students receiving scores of 3 or 4 in all domains receive an unconditional pass. Students receiving scores less than 3 in any domain must address the deficiencies as specified by the Committee. [Minor changes can often be addressed in revisions; major changes may necessitate a subsequent defense.]
Project Framework: Policy Analysis (Problem Solving)

Policy Analysis Format Guidelines

Heading {cover sheet}
Define the intended audience and “who” is presenting the information.

Executive Summary
Provide a one-page synopsis summarizing the key points, emphasis should include the major recommended actions as well as the nature and magnitude of the problem with a brief discussion of the rationale.

Statement of Problem
Define the problem.
Describe assumptions, general magnitude and distribution of problem, limitations of data.
Define terminology.
State goals, objectives, and criteria that will be used to evaluate 'success.'

Magnitude of the Problem
Describe what is known about problem, such as incidence, prevalence, economic impact, human impact.
Justify why this is a public health problem and why it is important to solve.

Key Determinants
Describe risk factors & risk behaviors, the natural history of the disease process, other knowledge about the nature of the problem.
Provide a conceptual framework.

Prevention/Intervention Strategies
Describe and discuss current intervention/prevention strategies as well as additional options for intervention/prevention.

Policy & Priority Setting
Assess the relative advantages and disadvantages of the possible intervention/prevention strategies previously outlined. Consider potential benefit to individuals and to society, cost to individuals and to society, technical and political feasibility, ease of implementation, and potential obstacles.
Presentation should be balanced and cover the range of options.

Specific Recommendations
This section specifies the recommended course(s) of action and a rationale for selecting that/those action(s).

Implementation & Evaluation
For the recommended course of action identify barriers to implementation, political steps necessary for its implementation, and means of evaluating its impact.
This section should relate your stated goals with the recommended course of action.
Policy Analysis Critique Guidelines

1. Executive Summary
   Does it briefly summarize problem, magnitude, key determinants, and recommended course of action?

2. Statement of Problem
   Was the problem clearly identified and defined?
   Is it an appropriate/relevant public health problem?
   Is the group/organization/agency selected to hear the argument appropriate?

3. Magnitude of the problem
   Is the magnitude of the problem clearly identified?
   Are the strengths and limitations of the measures/estimates discussed?
   Does the paper make a compelling case that the problem is significant enough to warrant attention?

4. Key Determinants
   Are the appropriate biological, behavioral, and environmental determinants of the problem addressed?

5. Prevention/Intervention Strategies
   Are current efforts summarized?
   Are a sufficient breadth of options/strategies considered?
   Do the options follow from the key determinants discussed?

6. Policy & Priority Setting
   Are the relative advantages and disadvantages of each option/strategy considered?
   Are the benefits/risks compared at individual, community, and societal levels?
   Are political, economic, and technical feasibility considered?

7. Recommendations
   Are the recommendations consistent with the analysis of the problem?

8. Implementation & Practice
   Are the likely barriers to implementation addressed?
   Are logistical/technical/resource concerns addressed?

9. Evaluation
   Is the impact of the proposed intervention measurable?
   Is 'success' defined?
   Are provisions made for evaluating the impact of the recommended course of action?

10. Overall Impression
    Is a compelling argument made that would convince you to adopt the recommended strategy? Is the argument presented succinctly and effectively?
Policy Analysis Evaluation Score Sheet
MSPH Capstone Experience

_____ Proposal Defense  _____ Final Defense

Student Name: __________________________ Date: ________________

Title: ____________________________________________________________________________________

Score:  (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

A. Core Competencies Appropriately Demonstrated

_____ Quantitative sciences
_____ Social/cultural/behavioral considerations
_____ Environmental and/or occupational considerations, including biological
_____ Management/resource and/or policy considerations
_____ Research and Evaluation Methods
_____ Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)

CITI training verified  ____Yes  ____No

Technical Requirements  ____Yes  ____No

Result:  _____ Unconditional Pass  _____ Conditional Pass  _____ Fail

Comments/specific instructions:______________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

Signature of Committee: __________________________ (Chair)
Project Framework: Research Grant Proposal

Research Grant Proposal Format Guidelines*

1. Abstract
2. Specific Aims
3. Background
4. Methods
   - Design
   - Population
   - Sample Size (calculations, assumptions, references)
   - Analysis
5. References
6. Budget
7. Human/animal subjects

*The format may be modified to comply with the specific requirements of the intended granting agency (documentation of the proscribed agency format must be submitted with the proposal/project). The specific evaluation criteria outlined for the grant proposal format, including demonstration of core competencies must still be addressed. For those formats where the core competencies are not easily incorporated, an expanded background section is recommended.
Research Grant Proposal Critique Guidelines

1. Importance of the problem to public health
   - magnitude of the problem been characterized
   - case made for its importance

2. Feasibility of the overall proposal
   - technical
   - logistical (time line/research plan)
   - administrative, political, and financial

3. Presentation of the written product
   - organization of material
   - logical progression of ideas
   - appropriate use of graphs/tables
   - language understandable, simple
   - completed within page limitations

4. Design appropriate to answer the question
   - consideration given to options
   - rationale given for choosing design
   - strengths and limitations inherent in design discussed

5. Population choice reasonable and feasible
   - considerations/advantages/disadvantages of choice

6. Sample size appropriate to answer question
   - limitations, assumptions noted, calculations, references for formula chosen

7. Analysis appropriate to answer the question
   - plan sufficient to address research question
   - level of data collection/coding sufficient
   - confounding/interaction/bias/design limitations accounted for

8. Budget
   - appropriate, sufficiently detailed

9. Ethical issues appropriately addressed

10. Overall scientific merit
    - study design appropriate to the stated objectives
    - appropriate level of data used
    - appropriate literature review been included
    - increases our understanding or replicates inconclusive/controversial findings?
Research Grant Proposal Evaluation Score Sheet
MSPH Culminating Project

_____ Proposal Defense  
_____ Final Defense

Student Name: __________________________ Date: ____________________

Title: __________________________

Score:  (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

<table>
<thead>
<tr>
<th>A. Core Competencies Appropriately Demonstrated</th>
<th>B. Framework specific criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____ Quantitative sciences</td>
<td>1. Public health importance:</td>
</tr>
<tr>
<td>_____ Social/cultural/behavioral considerations</td>
<td>2. Feasibility of the overall proposal:</td>
</tr>
<tr>
<td>_____ Environmental and/or occupational considerations, including biological</td>
<td>3. Presentation of the written product:</td>
</tr>
<tr>
<td>_____ Management/resource and/or policy considerations</td>
<td>4. Design appropriate to answer the question:</td>
</tr>
<tr>
<td>_____ Research and Evaluation Methods</td>
<td>5. Population choice reasonable and feasible:</td>
</tr>
<tr>
<td>_____ Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)</td>
<td>6. Sample size appropriate to answer question:</td>
</tr>
<tr>
<td>CITI training verified  ___Yes  ___No</td>
<td>7. Analysis appropriate to answer the question:</td>
</tr>
<tr>
<td>Technical Requirements  ___Yes  ___No</td>
<td>8. Budget appropriate:</td>
</tr>
<tr>
<td></td>
<td>9. Ethical issues appropriately addressed:</td>
</tr>
<tr>
<td></td>
<td>10. Overall Assessment:</td>
</tr>
</tbody>
</table>

Result:  _____ Unconditional Pass  _____ Conditional Pass  _____ Fail

Comments/specific instructions: ____________________________________________________________

__________________________________________________________

Signature of Committee: __________________________________________

(Chair)
Project Framework: Community Service Grant Proposal

Community Service Grant Proposal Format Guidelines*

1. Executive Summary: Describe the importance of the problem to public health and its magnitude; provide a brief summary / overview of the proposal and the methods that you will use.

2. Specific Aims/ Objectives: State the aims and objectives of the proposal in measurable terms.

3. Introduction:
   a. Background information including a situational analysis for the community of interest
   b. Review of the literature regarding the topic
   c. Appraisal of different strategies that might address the problem
   d. Recommendation for a course of action, including the rationale used to make this decision.

4. Methodology
   a. Conceptual framework
   b. Implementation plan synopsis (who, what, when, plans for self-sufficiency)
   c. Evaluation plan synopsis (measurable objectives; time frame; methodologies; data sources needed)

5. Budget/Planning

6. Ethical Considerations, Community Support
   a. Indicate community acceptance/support of program
   b. Discuss ethical/human rights considerations
   c. Discuss linkages/integration of proposed program with existing community resources
   d. Discuss sustainability beyond funding period

7. References

*The format may be modified to comply with the specific requirements of the intended granting agency. The specific evaluation criteria outlined for the grant proposal format, including demonstration of core competencies, must still be addressed. For those formats where the core competencies are not easily incorporated, an expanded background section is suggested.
Community Service Grant Proposal Critique Guidelines

1. Importance of the problem to public health
   - magnitude of the problem characterized
   - case made for its importance

2. Feasibility of the overall proposal
   - technical
   - logistical
   - administrative
   - political
   - financial

3. Presentation of the written product
   - organization of material
   - logical progression of ideas
   - appropriate use of graphs/tables
   - language understandable, simple
   - able to complete within page limitations

4. Design / conceptual framework appropriate to address the problem
   - consideration given to options
   - rationale given for choosing intervention
   - strengths and limitations inherent in choice discussed

5. Implementation component adequately discussed

6. Evaluation plan appropriate (to goals; methods used; data source)

7. Budget appropriate and sufficiently detailed

8. Ethical issues appropriately addressed.

9. Integration/coordination with existing community resources

10. Plans for self-sufficiency/sustainability

11. Overall merit
   - Design appropriate to the stated objectives
   - Appropriate level of data used
   - Appropriate literature review included
   - Appropriately applies/translates existing knowledge
Community Service Grant Proposal Evaluation Score Sheet
MSPH Culminating Project

_____ Proposal Defense

Student Name: ___________________________ Date: _________________

Title: _______________________________________________________________

Score:  (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

A. Core Competencies Appropriately Demonstrated

_____ Quantitative sciences

_____ Social/cultural/behavioral considerations

_____ Environmental and/or occupational considerations, including biological

_____ Management/resource and/or policy considerations

_____ Research and Evaluation Methods

_____ Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)

CITI training verified  ___Yes  ____No

Technical Requirements ___Yes ___No

B. Framework specific criteria

1. Public health importance ______

2. Feasibility of the overall proposal______

3. Presentation of the written product______

4. Design / conceptual framework ______

5. Implementation component ______

6. Evaluation plan ______

7. Budget ______

8. Ethical issues ______

9. Integration/coordination with existing community resources ______

10. Plans for self-sufficiency/ sustainability ______

11. Overall merit ______

Result:  _____ Unconditional Pass  _____Conditional Pass  _____Fail

Comments/specific instructions: _____________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

Signature of Committee: ___________________________ ___________________________

(Chair)
Project Framework: Program Implementation

Program Implementation Format Guidelines

1. Executive Summary
2. Situational Analysis / Priority Setting
3. Strategy Appraisal
4. Allocation of Resources
5. Programming
6. Budgeting
7. Implementation
8. Evaluation
9. Summary
Program Implementation Critique Guidelines

1. Executive Summary: summarizes key points; engages reader

2. Situational Analysis / Priority Setting:
   - assessment of current health situation; of relevant related factors (environmental, political, etc); of how current situation differs from desired state
   - appropriate amounts and quality of data presented
   - needs identified
   - method of determining priority defined (burden of disease, effectiveness, etc)

3. Strategy Appraisal:
   - several feasible strategies considered; appropriate criteria considered (political, economic, impact, etc)
   - assumptions defined, sensitivity analysis considered

4. Allocation of Resources:
   - consideration of where resources will come from (new; divert existing)
   - feasibility of such action; and structural/systemic capacity for such allocation

5. Programming:
   - program goals clearly defined
   - organizational issues addressed (human resources, training, space assignments)
   - operational issues addressed (capital, facilities, equipment)
   - time line

6. Budgeting:
   - related to program plans; reasonable; thorough; and sufficiently detailed

7. Implementation:
   - responsible individuals/positions identified
   - consideration given to potential barriers
   - time lines/contingency plans (PERT/GANNT/CPM charts included)

8. Evaluation:
   - measurable objectives identified
   - objectives relevant to stated goals
   - indication of measurement methods

9. Organization/Presentation:
   - easy to read/understand
   - quality of tables and figures
   - logical progression of ideas

10. Overall assessment:
    - situational analysis appropriate for assessing the needs of the target group
    - appropriate strategies identified and critiqued
    - program goals clear and feasible given the available resources
Program Implementation Evaluation Score Sheet

MSPH Culminating Project

_____ Proposal Defense

Student Name: ___________________________ Date: __________________

Title: ____________________________________________

Score: (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

A. Core Competencies Appropriately Demonstrated

_____ Quantitative sciences

_____ Social/cultural/behavioral considerations

_____ Environmental and/or occupational considerations, including biological

_____ Management/resource and/or policy considerations

_____ Research and Evaluation Methods

_____ Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)

CITI training verified ___Yes ___No

Technical Requirements ___Yes ___No

B. Framework specific criteria

1. Executive Summary: _____

2. Situational analysis/ Priority setting: _____

3. Strategy appraisal: _____

4. Allocation of resources: _____

5. Programming: _____

6. Budgeting: _____

7. Implementation: _____

8. Evaluation: _____

9. Organization / presentation: _____

10. Overall assessment: _____

Result: _____ Unconditional Pass _____Conditional Pass _____ Fail

Comments/specific instructions: ________________________________________________

__________________________________________________________________________

_____________________________ (Chair)

Signature of Committee: ___________________________ ___________________________
Project Framework: Program Evaluation Proposal

Program Evaluation Proposal Format Guidelines

1. Summary
2. Introduction/Specific Aims
3. Literature review
4. Research questions/Hypotheses
5. Methods
6. Setting
7. Sources of data
8. Analysis
9. Logistical Considerations
10. Ethical considerations
Program Evaluation Proposal Critique Guidelines

1. Summary
   - summarize main ideas, captures reader’s interest

2. Introduction/specific aims
   - define problem defined
   - state goals, relevance of project

3. Literature review
   - Thoroughness review of literature (what is/what is not known)
   - demonstrates where this project fits in (new methods; new approach)

4. Research questions/hypotheses
   - measurable objective or testable hypothesis
   - conceptual framework relating inter-relationship of variables

5. Methods
   - design identified; appropriate to answer question (Campbell/Stanley nomenclature)
   - consideration given to options
   - rationale given for choosing design discussed
   - strengths and limitations inherent in design discussed (validity)
   - measurement tools, constructs, other definitions/tools discussed (reliability)

6. Setting
   - population identified appropriate to answer the research question
   - inclusion/exclusion criteria provided and appropriate;
   - sampling frames, techniques for assignment addressed;
   - considerations/advantages/disadvantages of choices provided

7. Sources of data
   - data, data forms from which variables are derived discussed
   - type of data (primary, secondary) identified
   - data collection/cleaning procedures described
   - relevant documents attached as appendices (questionnaires, consent forms, etc.)

8. Analysis
   - statistical techniques identified; appropriate to answer the question
   - methods described; limitations noted (assessment of reliability)
   - plan sufficient to address research question
   - confounding/interaction/bias/design limitations accounted for;
   - issues of power/sample size addressed; calculations shown

9. Logistical considerations
   - personnel, time lines, budgets, etc

10. Ethical considerations

11. Overall assessment.
   - study design appropriate to the stated objectives
   - appropriate level of data used
   - appropriate literature review been included
   - project increases understanding or replicates inconclusive/controversial findings
Program Evaluation Proposal Evaluation Score Sheet

MSPH Culminating Project

_____ Proposal Defense

_____ Final Defense

Student Name: ___________________________ Date: _________________

Title: ________________________________

Score:  (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

A. Core Competencies Appropriately Demonstrated

<table>
<thead>
<tr>
<th>Score</th>
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<tbody>
<tr>
<td>_____</td>
<td>Quantitative sciences</td>
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<tr>
<td>_____</td>
<td>Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)</td>
</tr>
</tbody>
</table>

CITI training verified ___Yes ___No

Technical Requirements ___Yes ___No

B. Framework specific criteria

| 1. Summary | _____ |
| 2. Introduction/specific aims: | _____ |
| 3. Literature review: | _____ |
| 4. Research questions/hypotheses: | _____ |
| 5. Methods: | _____ |
| 6. Setting: | _____ |
| 7. Sources of data: | _____ |
| 8. Analysis: | _____ |
| 9. Logistical considerations: | _____ |
| 10. Ethical considerations: | _____ |
| 11. Overall assessment: | _____ |

Result: _____ Unconditional Pass _____ Conditional Pass _____ Fail

Comments/specific instructions: __________________________________________

__________________________________________ ______________________________

Signature of Committee: ___________________________ (Chair)
Consultancy Report Format Guidelines

Consultancy Reports are reports written to provide a specific ‘deliverable’ to a client (typically in response to a defined scope of work). Consultancy Reports can involve a variety of methods/content areas (e.g., needs assessments, formative research, synthesis of existing information, expert review/opinion, etc). Consequently, there are a variety of appropriate structures. A student using this framework should use the following template as a guide for the content, but determine with the Chair an appropriate organizational structure.

1. Executive Summary
2. Introduction
3. Literature review/background/context
4. Charge (or Research questions/Hypotheses)
5. Setting
6. Methods
7. Sources of data/Variables
8. Analysis
9. Discussion
10. Findings and Recommendations
Consultancy Report Critique Guidelines

1. Executive Summary
   • identify charge
   • summarizes context, methods, findings/recommendations (captures reader’s interest)

2. Introduction
   • define problem
   • state goals, relevance of project

3. Literature review
   • thorough review of literature (what is/what is not known)
   • demonstrate where this project ‘fits in’

4. Charge (Research questions/hypotheses)
   • specific question or product to be delivered
   • conceptual framework described

5. Setting
   • population identified consistent with charge
   • inclusion/exclusion criteria provided
   • sampling frames, techniques for assignment provided
   • considerations/advantages/disadvantages of choice discussed

6. Methods
   • design identified; appropriate to answer question
   • strengths and limitations inherent in design discussed (validity)
   • measurement; constructs; definition and other tools discussed (reliability)

7. Sources of data
   • data, data forms from which variables are derived described
   • type of data (primary, secondary) identified
   • data collection/cleaning procedures described
   • relevant documents (questionnaires, consent forms, etc.) attached

8. Analysis
   • statistical techniques identified; appropriate to answer the question
   • methods described; limitations noted (assessment of reliability)
   • plan sufficient to address charge
   • issues of power/sample size addressed; calculations shown

9. Discussion
   • summary/synthesis of main points
   • interpretation/comparison (to standard, to expected value, to conceptual model, etc)
   • limitations

10. Findings/Recommendations
    • conclusions and recommendations that address the stated charge
    • recommendations for additional action/work

11. Overall assessment.
    • study design appropriate to the charges
    • appropriate literature review been included
    • analysis complete and recommendations/findings supported by data.
Consultancy Report Evaluation Score Sheet

MSPH Culminating Project

_____ Proposal Defense  

_____ Final Defense

Student Name: __________________________________ Date: ____________________

Title: ______________________________________________________________________

Score:  (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

A. Core Competencies Appropriately Demonstrated

<table>
<thead>
<tr>
<th>Qualitative sciences</th>
<th>Social/cultural/behavioral considerations</th>
<th>Environmental and/or occupational considerations, including biological</th>
<th>Management/resource and/or policy considerations</th>
<th>Research and Evaluation Methods</th>
<th>Cross-cutting themes (e.g., frameworks, systems thinking, leadership, communication, advocacy, ethics, values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Sources of data:</td>
<td>8. Analysis:</td>
<td></td>
<td></td>
<td></td>
<td>9. Discussion:</td>
</tr>
</tbody>
</table>

CITI training verified ___Yes  ____No

Technical Requirements ___Yes  ____No

Result:  _____ Unconditional Pass  _____ Conditional Pass  _____ Fail

Comments/specific instructions:___________________________________________________________________________________________________________

___________________________________________________________________________________________________________

Signature of Committee: ____________________________________________________________  ________________ (Chair)

_______________________________

______________________________
MSPH Capstone - Oral Presentation Critique Score Sheet

_____ Proposal Defense  ____ Final Defense

Student’s Name: _____________________________  Date: ______________

Score: (4 = exceptional; 3 = fully met; 2 = partially met; 1 = not met/missing)

1. **Content**
   - Was the target audience identified?
   - Was the appropriate content presented?
   - Was the issue clearly identified and defined?
   - Was the presentation appropriate to the target audience?
   - Was sufficient supporting detail provided?
   - Were the recommendations/assertions supported?

2. **Organization**
   - Was the content organized and presented in a coherent manner?
   - Were new or unfamiliar terms explained?
   - Did the presentation of ideas flow smoothly?

3. **Style**
   - Did the speaker(s) hold your interest?
   - Was the speaker convincing/effective?
   - Was the speakers’ voice loud enough? understandable?
   - Did the speaker make eye contact with the audience?

4. **Audio-visuals**
   - Were visuals (graphics, transparencies/slides) used effectively?
   - Was the quality of the slides appropriate (readable, correct spelling, not cluttered)?
   - Was an appropriate number of visual aids used?
   - Were visuals clearly explained?
   - Did the visuals add to the presentation?

5. **Time Utilization**
   - Was the time appropriately allocated to the parts of the presentation?
   - Were the time constraints followed?
   - Did it appear that the presentation had been rehearsed?

6. **Questioning**
   - Were questions appropriately addressed? With confidence and knowledge?
   - Did the speaker interact with the audience?

7. **Overall Impression**
   - Was a compelling argument made?
   - Was the presentation convincing?
   - Was an understanding and application of core knowledge demonstrated?

Result:  _____ Unconditional Pass  _____ Conditional Pass  _____ Fail

Comments/specific instructions:___________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Signature of Committee: ______________________________________  ______________________
(Chair)  ______________________________________


Appendix 2. Graduate School Thesis Procedures, Manual & Sample Pages

The following section, the Manual of Basic Requirements for Theses and Dissertations, is reprinted for the convenience of our students from the file available from the Graduate School at http://graduateschool.uncc.edu/current-students/graduation/thesis-and-dissertation-manual and effective as of August 2013.

This site contains many useful MS Word templates (sample page formatting) to facilitate preparing theses and projects for submission.

MSPH Students are advised to check the Graduate School website to ensure that they are in compliance with the style guide in effect at the time of submitting their thesis or project.
THESIS SUBMISSION PROCEDURES

It is important that your thesis has been reviewed by the Graduate School, and it conforms to the requirements and guidelines in the Manual of Formatting Requirements for Theses and Dissertation. Plan to review your thesis as early as possible to give you ample time for revisions.

The approved thesis is due by the deadline published in the "Office of the Registrar’s Academic Calendar" for fall, spring or summer semesters. **NOTE: If you submit your approved thesis after the deadline, your graduation will be delayed till the next term.**

**Important Reminders:** On or before the first day of classes of the semester or summer term in which you intend to submit your thesis for graduation:

a) Be registered for the semester or term you intend to graduate.
b) Complete the online Application for Degree through Banner Self Service.
c) Complete the Application for Admission to Candidacy form in Banner Self Service, print and obtain your Graduate Coordinator’s approval and signature prior to submitting to the Graduate School.

The deadlines for the candidacy form and the online graduation application can be found on the "Office of the Registrar" web page at: [http://registrar.uncc.edu/calendars/index.asp](http://registrar.uncc.edu/calendars/index.asp)

- **Pre-defense review:** Make an appointment with Ms. Anita Smith at the Graduate School to review your thesis before your defense. You can email her at: afsmith@uncc.edu. You must bring a printed copy of your thesis to the appointment.

- **Get approval: Note:** Your committee must have your complete thesis three weeks prior to your defense. Defend your thesis and get preliminary approval of the content of your work from your thesis committee members.

- **Post-defense review:** Make an appointment with Ms. Anita Smith at the Graduate School to review the final draft of your thesis after your defense and you have made any revisions recommended by your committee. You must bring a printed copy of your thesis to the appointment, and make all revisions recommended after the review.

- **Appointments:** Make appointments for all reviews and submissions.

- **Submit binding form with copies:** Submit the “thesis binding form” with your name and the title of your thesis legibly written, with your copies for binding.

- **Submit correct number of copies:** Submit three copies of your thesis for binding to the Graduate School. The thesis must be printed on 100% cotton paper. Count all pages to ensure none is missing and arrange the pages in the proper order for binding.

- **Submit in appropriate packaging:** Submit each final copy of the thesis in a separate box or envelope, which can be fastened. **NOTE: Do not attach the pages of your document together by any means. The container (box or envelope) must have the following information prior to arrival at the Graduate School:**
  
  Student's name

  Full title of thesis
The major department (or college)
The degree
Total number of pages

☐ Submit binding fee: Submit the appropriate binding fee to the Graduate School. The Graduate School makes arrangements for the binding of theses. The fees below are approximate and subject to change.

<table>
<thead>
<tr>
<th>Pages</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 100</td>
<td>$10.00/copy</td>
</tr>
<tr>
<td>100 to 150</td>
<td>$15.00/copy</td>
</tr>
<tr>
<td>150 to 200</td>
<td>$20.00/copy</td>
</tr>
<tr>
<td>200 to 250</td>
<td>$25.00/copy</td>
</tr>
<tr>
<td>250 to 300</td>
<td>$30.00/copy</td>
</tr>
<tr>
<td>300 to 350</td>
<td>$35.00/copy</td>
</tr>
</tbody>
</table>

☐ Personal copy: You may submit additional copies for binding for your personal use; however, these copies must be identical to the original thesis and on 100% cotton paper. You must provide a mailing label with adhesive backing with your name and address typed or written legibly.

☐ All copies will be sent for binding at the end of the graduation term. Please allow up to eight weeks after the end of the term for delivery of your personal bound copies.

Other Important Steps

Printed Documents required at the Graduate School: You must submit the original hard copy of these documents to the Graduate School before you can be cleared for graduation. Forms submitted as scans, emails or faxes are not accepted.

☐ Petition for Topic Approval Form. If you answered “Yes” to Any of the Three Questions, a Copy of the Approval Letter from the Appropriate UNC Charlotte Institutional Committee Must Be Attached.

☐ Application for Transfer Credit Form if transferring courses from another institution.

☐ Title Page of the thesis with original committee member signatures. Submit to the Graduate School within 24 hours after defense.

☐ Report of Comprehensive Exam, Thesis or Project Defense Form. Submit to the Graduate School Within 24 Hours After Defense.

☐ See the Graduation Checklist for more information. This form will be given to you at your first review appointment. If you are not given the form, ask for it.
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INTRODUCTION

This guide for the preparation of theses and dissertations at The University of North Carolina at Charlotte (UNC Charlotte) is designed to assist graduate students, major professors and other members of graduate advisory committees in understanding the required and optional formatting guidelines of the Graduate School for theses and dissertations. A written thesis is required for most Master of Science degrees and a written dissertation for all Doctor of Philosophy and Doctor of Education degrees at UNC Charlotte. While individual disciplines may have different ways in which the research at this level may be completed and presented, consistency in certain requirements for formatting is necessary.

In preparing a thesis or dissertation for submission for a master’s or doctorate degree, keep in mind that neatness and correctness in form are of importance second only to the accuracy and soundness of the research. This guide will assist you in the preparation of an acceptable thesis or dissertation. It is not intended to be an exhaustive manual or style guide. A published guide appropriate for your discipline should be used to cover specific questions of style; however, the following guidelines are required for all UNC Charlotte theses and dissertations. Do not use another thesis or dissertation as a model for your work, since a particular style or example in a previous work may be incorrect or out of date. The style and format set forth in this manual take precedence over other style manuals and earlier editions of this guide.

Continuous Registration

Students in graduate degree programs are required to maintain continuous registration for the thesis or dissertation until work is completed. The continuous registration requirement begins with the semester in which the student first registers for thesis or dissertation credit. Students must be enrolled during the term in which they graduate from the University.

Review by the Graduate School

The Graduate School has staff members who review the formatting of every thesis and dissertation to be sure that they meet the guidelines outlined in this manual. Make an appointment with one of the reviewers as early as possible before the deadline for final submission of the thesis or dissertation. All copies of the unbound approved thesis or dissertation must be submitted to the Graduate School by the deadline published by the Registrar for fall, spring or summer semesters. During the fall and spring semesters, the deadline for submitting the thesis differs from the deadline for submitting the dissertation. The deadlines for the summer sessions are the same for both theses and dissertations. It is extremely important that you schedule your defense, far enough in advance of the deadline for submitting the final copies of the document to the Graduate School, so that you have time to make any necessary changes or corrections. You may not submit the final version of your thesis or dissertation to the Graduate School before completing your defense.
PART I: FORMAT GUIDELINES

The keys to success in the development of your document are: consistency and following the guidelines in this manual. Many times it can be difficult and time consuming to correct margins, font changes, tab settings, etc. in the middle of a document. If you set-up your document to agree with the format guidelines listed in this Guide before you begin typing, you will have less risk for error and save time making corrections along the way. See Sample Pages for assistance.

Type Face and Font Size

The standard typeface is Times New Roman. Set the font size at 12 point.

EXTRA HELP: Do not use bold, underline or create unusual fonts for chapter titles; do not use running headers or footers. Do not use bold, underline or italics for headings, subheadings, etc. Changes in font style or typeface are not permitted except for inclusion of illustrative or documentary materials such as computer printouts or if required for mathematical expressions. If you are unsure about the acceptability of the typeface you want to use for your final copy of the thesis or dissertation, please verify with the thesis/dissertation reviewer in the Graduate School that it can be used.

Margins

All copies of a thesis/dissertation must have the following uniform margins:

- **Left-hand margin:** 1 ½ inches (to ensure sufficient room for binding)
- **Right-hand margin:** 1 inch
- **Bottom margin:** at least 1 inch
- **Top Margin:** 1 inch
- **Exceptions:** The copyright page must have a 2 inch Bottom margin, the first page of each chapter must have a Top margin that is 2 inches.

Spacing and Indentation

- All theses and dissertations are to be typed with **double spacing between lines throughout**.

- Certain sections should be single-spaced, such as: long quotations; table and figure captions, descriptions and footnotes, list of references, literature cited, bibliography, etc. with a double space between each individual reference or computer print-out.

- Tables and figures may appear on the same page with text, separated from the text, above and below, by triple spacing.

- The beginning of each new paragraph must be indented.
**EXTRA HELP:** Be sure to eliminate any extra line spacing that might occur between paragraphs, in front or back of tables, graphs, figures, etc. There should be no triple or quadruple spacing anywhere in your manuscript unless specifically listed in this manual.

**Pagination**

All pages of the thesis/dissertation, including any appendices, should bear a number except the title page and the first page of each chapter.

**Position of Page Number**

- Upper right-hand corner on the margin line at the right
- ¾” from the top of the sheet

**Organization of Parts and Formatting Requirements**

Generally, a thesis or dissertation consists of three major parts, but there may be as many as five: the preliminary pages, the text, the reference pages, an appendix, and a vita. The following table contains a list of the required and optional parts, and the order each part should be created within the body of the document.

The optional parts to be included with any thesis or dissertation should be determined by mutual agreement between the student and his or her Advisory Committee. Both required and optional components of the thesis/dissertation are described below.

<table>
<thead>
<tr>
<th>Parts of a Thesis/Dissertation</th>
<th>Page Numbering Requirements</th>
<th>Formatting Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>I) Preliminary pages</td>
<td>lower-case Roman numerals (i, ii, iii, iv, etc)</td>
<td>The title/signature page of a thesis or dissertation must bear the following; in the following order: a. 1&quot; top margin b. The title of the thesis or dissertation typed in capital letters c. Skip 3 single spaced lines. d. The word “by” e. Skip 1 single spaced line. f. The full legal name of the candidate g. Skip 4 single spaced lines. h. The submission statement single spaced as shown in the sample pages at the end of this guide. i. Skip 1 single spaced line.</td>
</tr>
<tr>
<td>a) Title/ Signature Page (required)</td>
<td>counted as page i, but not numbered</td>
<td></td>
</tr>
</tbody>
</table>
j. The city in which the committee accepts the work.
k. Skip 1 single spaced line.
l. The year of graduation.
m. Skip 1 single spaced line.
n. Approved signature lines as shown in the example at the end of this guide.
o. Signatures must be in black or blue ink only
p. This page is not numbered but is counted

The title/signature page should follow exactly the spacing and use of capital letters as shown in the sample pages at the end of this guide. The title should be centered at the top of the page and, to facilitate interlibrary referencing, it should be pared whenever possible so it contains only key terms and necessary words. Each copy of the title page must have original signatures in either blue or black ink.

b) Copyright Page (required)

<table>
<thead>
<tr>
<th>lower-case Roman numeral ii</th>
</tr>
</thead>
</table>

Candidates are strongly advised to register copyright for the thesis or dissertation. Whether or not the copyright is registered, a notice of copyright with the following information must be included with each copy of the thesis or dissertation. Putting the copyright page in your thesis or dissertation notifies the public as to your claim for copyright; however, the legal registration in Washington, D.C. would facilitate litigation if there were ever a case of infringement. Additional information concerning copyright procedures is provided in Part 2 of this manual.

© 20__

Full Legal Name
ALL RIGHTS RESERVED

This information should be centered and single-spaced with the last line 2 inches from the bottom of the page. This page is numbered with a small Roman numeral placed ¾" from the top of the paper and 1" from the right edge of the paper. The year of graduation is used on this page.
| c) Abstract (required) | lower-case Roman numeral iii | The abstract page is required, but not listed in the table of contents. The abstract is double-spaced, consisting of the briefest possible summary of the work and conclusions not exceeding one page in length. The heading for the abstract is single spaced and should be constructed as follows:

   a. The word ABSTRACT is centered with a 1" top margin.
   b. **Skip 2 single spaced lines.**
   c. On the 3rd single spaced line below the word ABSTRACT, type your full legal name in all capitals. Type the title using lower case only except for the first letter of the first word. Type the name of the professor who directed the thesis or dissertation in parentheses and in all capitals. **See example** in the sample pages at the end of this guide

   *NOTE: The title shown on the abstract page and the title on the title/signature page must be the same.*

   d. Skip 2 single spaced lines.
   e. On the 3rd single spaced line below the heading, begin the text of the abstract. The text of the abstract is double spaced. See the example shown at the end of this manual.
   f. This page is numbered with a small Roman numeral placed ¾" from the top of the paper and 1" from the right edge of the paper. |
| d) Dedication Page (optional) | continue with lower-case Roman numerals | The Dedication page, if used, pays a special tribute to a person(s) who has given extraordinary encouragement or support to one’s academic career. The Acknowledgement page should be brief, simple, and free of sentimentality or trivia. It is customary to recognize the role of the advisor, the other members of the advisory committee, and only those organizations or individuals who actually aided in the project. Further, you should acknowledge any outside source of financial assistance, such as GASP |
| f) Introduction (optional) | continue with lower-case Roman numerals | Depending on the discipline or the requirements of the student’s advisory committee, an Introduction may be included as a preliminary page. In this case it should be included before the Table of Contents.  
   a. The word INTRODUCTION is centered with a 1” top margin.  
   b. Skip 2 single spaced lines.  
   c. On the 3rd single spaced line below the word INTRODUCTION, begin the text. The text is double spaced.  
   d. This page is numbered with a small Roman numeral placed ¾” from the top of the paper and 1" from the right edge of the paper. |
| g) Table of Contents (required) | continue with lower-case Roman numerals | The Table of Contents of the thesis or dissertation lists all sections following it, including the List of Tables and List of Figures, if used, and all the headings and subheadings exactly as they appear in the text. Nothing that precedes the Table of Contents should be listed.  
   a. This page should bear the title: TABLE OF CONTENTS centered 1" from the top of the page.  
   b. Skip two single spaced lines.  
   c. On the third single spaced line below the words TABLE OF CONTENTS, list the first entry. The entries are double spaced. |
h) List of Tables *(optional)*  
If there are any tables or figures appearing in the thesis or dissertation, lists of these may be included. The descriptive titles in these lists must be identical with those in the text, but only the titles and not the explanatory notes, should be included. Each list appears on a separate page. See examples at the end of this guide. When many abbreviations or symbols are used, a separate List of Symbols or List of Abbreviations may be included for the sake of clarity.

- The titles LIST OF TABLES, LIST OF FIGURES, or LIST OF ABBREVIATIONS are in capital letters and centered 1" from the top of the page.
- Skip 2 single spaced lines.
- On the 3rd single spaced line below the heading, list the first entry. The entries are double spaced.
- These pages are numbered with a small Roman numeral placed \( \frac{3}{4} \)" from the top of the paper and 1" from the right edge of the paper.

ii) Text  

a) Chapter Title Page *(optional)*  

b) Text content *(required)*  

The organization and format of the text should be appropriate to the nature and scope of the research reported. The text must show logical organization; generally, the text includes an introduction or preface, a clear statement of the objectives, an appropriate review of previous research, a description of the materials and methods used in the research, a record of the results obtained, interpretive discussion of results in light of other research, and a summary of the significant findings of the study. Recommendations for future lines of study should also be included.

For theses and dissertations of great complexity involving extensive cross-referencing and multiple subheadings, a decimal type of organization is suggested. If the decimal system is...
used for major and minor divisions of the thesis, it must be used throughout the entire thesis or dissertation, including the appendices. It must also be used for numbering equations, tables and figures. Once a suitable system of subdivision is selected, it should be followed consistently throughout the document; combinations of the decimal and the conventional or non-decimal systems are not acceptable. (See example in Table of Contents sample.)

NOTE: Organizing the thesis or dissertation into chapters is not a Graduate School requirement; however, if you do separate the text into chapters, there is a specific format for the title (heading) of each chapter. See sample pages for examples. Either format is acceptable but be certain to apply one or the other consistently throughout your document.

Format for chapter headings:

a. The first page of each chapter must have a heading that is capitalized and centered with a 2” top margin. The first page of each chapter is counted but NOT numbered.

b. Skip two single spaced lines.

c. On the third single spaced line below the chapter heading, begin the text. The text is double spaced throughout. The only exceptions are noted within this manual.

d. Subsequent pages of the chapter have 1” top margins; page numbers in the text should be placed ¾” from the top of the paper and 1” from the right edge of the paper.

If chapters are not used but the text is still separated into sections (e.g., Introduction, Materials and Methods, Results, Discussion), each new section must have a heading using the format below:

Format for non-chapter headings:

a. Non-chapter headings should be
capitalized and centered with a 1” top margin. The page is counted AND numbered.

b. Page numbers should be placed 3/4” from the top of the paper and 1” from the right edge of the paper.

c. Skip 2 single spaced lines.

d. On the 3rd single spaced line below the heading, begin the text. The text is double spaced.

| III) References/ Bibliography (required) | Arabic numerals | The thesis or dissertation must include a separate REFERENCES or BIBLIOGRAPHY section. The format of this section must adhere to the following:

a. The heading of REFERENCES or BIBLIOGRAPHY should be capitalized and centered with a 1” top margin.

b. Skip 2 single spaced lines.

c. On the 3rd single spaced line below the heading, type the first entry.

d. All entries are to be single spaced with a double space between entries.

e. Pages are numbered with Arabic numerals placed 3/4” from the top of the paper and 1” from the right edge of the paper.

NOTE: The term Bibliography or References should be used consistently throughout the thesis or dissertation. That is, do not list it in the table of contents as Bibliography and then title it in the body of the text as References.

The form used for literature citation within the REFERENCES or BIBLIOGRAPHY section of the thesis or dissertation should be determined by the style manual selected by the discipline for which the research is written or by your advisory committee.

IV) Appendices (optional) | Arabic numerals | The appendices should be used for whatever material you or your advisory committee believes should be included, but would not be appropriate in the text of the thesis or dissertation. Such materials can include:
a. the original data obtained in the thesis or dissertation research, including computer programs and printouts, surveys, or correspondence;
b. detailed descriptions of procedures, which go beyond the general outline of methods and approaches presented in the text;
c. a particularly extensive review of the literature and other information that may be useful to future scholars who may wish to delve more deeply into the research topic.

If there is more than one appendix, appendices should be defined both by letters and titles, (Example: APPENDIX A: CONSENT FORM).

- Appendices must be listed in the table of contents and numbered consecutively following the bibliography/reference pages.
- The title should be capitalized and centered with a 1" top margin.
- Skip two single spaced lines.
- On the third single spaced line below the heading, type the first entry.
- Pages are numbered with Arabic numerals placed ¾” from the top of the paper and 1” from the right edge of the paper.

<table>
<thead>
<tr>
<th>V) Vita (optional)</th>
<th>Arabic numerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>The thesis or dissertation may conclude with a biographical sketch of the author. The sketch should be written in the third person and should indicate birth date and birthplace, where the author earned the bachelor’s degree and if applicable the master’s degree, professional societies to which the author belongs, and other professional activities.</td>
<td></td>
</tr>
</tbody>
</table>
- The word VITA is capitalized and centered with a 1" top margin.
- Skip two single spaced lines.
- On the third single spaced line below the heading, begin the text.
- Pages are numbered with Arabic numerals.
Inclusion of Photographs and Prints

Any photographs used in the thesis or dissertation should be of very high quality. Color illustrations are acceptable, but any color photographs, maps and charts included should be as high contrast as possible. Photographs can be photocopied onto rag content-cotton paper if a high-quality copy is obtainable. Color photocopying is also available.

Photographs may be developed on photographic paper cut to 8½ by 11 inches with the correct margins as required throughout the rest of the thesis or dissertation.

Although the above methods for the inclusion of photographs are preferred, you have the option to mount photographs and prints, black and white and/or color, on the same type of paper as that used for other portions of the text. Permanent photo mount spray adhesive, good quality rubber cement or drymounting tissue may be used for mounting. Photo mount corners, transparent tape or staples are not acceptable.

You may discuss these various options with the thesis/dissertation reviewer at the Graduate School during your appointment to review the first version of your thesis or dissertation.

Tables and Figures

Many theses and dissertations include tables and figures either in the text or in the appendices or both. Since the specific purpose and organization of tables and figures may vary widely among the various disciplines, the student should consult the style manual recommended by the advisory committee or the scholarly journals and books in his or her field for guidance in design and organization.

Each table and figure must bear an identifying number and a caption. The caption may consist of a descriptive title or a descriptive title plus explanatory notes; captions may be single spaced.

The term table is used to designate tabulated data; this includes computer printout sheets. The number and caption for the table must be placed above the top line of the table. If any table continues to a following page, the line above the table on the subsequent page should read “Table # (continued)” without repeating the caption.

The term figure is used to designate photographs, half-tone prints, charts, maps, graphs, plates, drawings, diagrams and other mainly nonverbal material. The number and caption for each figure must be placed below the last line or bottom of the figure. If the caption is too long to be placed below the figure, a page should be inserted on which the caption, placed slightly above center, will face the figure. The facing page must bear a number on the blank side of the page at the same location as the page numbering throughout the rest of the thesis or dissertation.

The placement of tables and figures in a thesis or dissertation may be handled in one of the following ways:
a. Each table or figure may be inserted in the text as near as practicable following the first reference to it in the text;
b. Tables and figures may be grouped at the end of each chapter;
c. Tables and figures may be grouped at the end of the thesis or dissertation.

Tables and figures may appear on the same page with text, separated from the text, above and below, by triple spacing. Two or more tables and/or figures may be grouped together on a single page, provided that they fall within the required margins. Tables and figures printed sideways (landscape printing) rather than in the normal upright position (portrait printing) should be oriented such that the top of the table or figure is located at the left or binding side of the paper, and the number and caption should be located at the top of the table or beneath the figure. The page number, however, will remain in the same upright location. In other words, all pages that are numbered would read in order when fanned, with all page numbers being in the same location on each sheet. [Note: Table pages must maintain the 1½” left margin.]

**Oversized Material**

If you have trouble fitting large tables or figures within the margins of a page, consider the following options:

a. You may place the table or figure sideways (landscape) on the page, rotating it 90° counterclockwise from its normal position. Place the illustration number and legend sideways also so that all parts can be conveniently read together. Place the page number in the same location as for the other pages, in the upper right corner of the sheet in its unrotated position.
b. You may place the number and legend on a facing page preceding the table or figure. Type them so that they will be read in the same direction as the illustration (rotated 90° if necessary). Place the page number on the reverse side so that it reads in order with all the other pages. In other words, all pages that are numbered would read in order when fanned, with all page numbers being in the same location on each sheet.
c. You may photo-reduce the body of the illustration to meet margin requirements. Do not reduce the figure number, legend, or page number.

**Footnotes/Endnotes**

The student should check with his or her department to determine whether or not the use of footnotes is appropriate form or style for that discipline. If footnotes are used, they should be employed consistently throughout the thesis or dissertation.

It is established practice in some disciplines to place footnotes at the end of each chapter. These are called endnotes and their use is acceptable; however, footnotes are preferred for doctoral dissertations since this allows the paper to be read continuously from beginning to end on microfilm.

For footnotes only, not endnotes, 10 point font is acceptable.
Reproducing the Thesis or Dissertation

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A MULTIDIMENSIONAL ANALYSIS OF COMPRESSIBLE AND INCOMPRESSIBLE FLOW FLUID DYNAMICS PROTEIN SEPARATION BY POLYACRYLAMIDE GEL ELECTROPHORENSIS

by

Brian Steven Brown

A dissertation submitted to the faculty of The University of North Carolina at Charlotte in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Applied Mathematics Charlotte

2013

Approved by:

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Dr. Jane David

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Dr. Frost Kane

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Dr. Janice Dickey

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Dr. Randle Elle

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Dr. Renee Zack
ISOLATION AND CHARACTERIZATION OF *TRITICUM AESTIVUM* ROOT cDNA SEQUENCES WHICH SHOW SIGNIFICANT HOMOLOGY TO THE GRAMNEGATIVE BACTERIAL TRANSPOSON TN1721

by

Jennifer Renee Brown

A thesis submitted to the faculty of The University of North Carolina at Charlotte in partial fulfillment of the requirements for the degree of Master of Science in Biology

Charlotte

2013

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Dr. Jane David

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Dr. Randle Elle

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Dr. Renee Zack
JENNIFER RENEE BALL. Isolation and characterization of *Triticum aestivum* root cDNA sequences which show significant homology to the gram-negative bacterial transposon Tn1721. (Under the direction of DR. HELEN W. JOHNSON)

While previously screening a bread wheat (*Triticum aestivum* cv. Pavon) pollen embryo cDNA library, four clones were identified that showed high homology to the bacterial transposon Tn1721. Finding these clones led to studies to ascertain whether the bacterial sequence was actually present in the wheat genome or was simply an artifact of the cloning procedure. Using the transposon as a probe, a root cDNA library was screened. Two putative clones were isolated from this library and sequenced in both directions. Consensus sequences were used to search the nucleotide databases for homologies. This search revealed that both clones were highly homologous to the *tetR* gene of Tn1721. Northern hybridization using RNA isolated from roots confirmed that the Tn1721 sequence was present in genes expressed by this tissue. These results support the hypothesis that regions of the Tn1721 transposon are integrated into the wheat chromosomal DNA and that this may be an example of an interkingdom horizontal transfer of DNA from a bacterium to a plant.
The important element in the Acknowledgments is simple courtesy in which there are usually two possible ingredients to consider. First you should acknowledge any significant help you received from any individual whether in your department or elsewhere. Specifically, you should acknowledge the source of special materials, documents, or equipment. Further, you should acknowledge the help of anyone who contributed significantly to the work or to the interpretation of the work. Second, you should acknowledge any outside source of financial assistance, such as grants, contracts, or fellowships. A word of caution is in order. Often it is wise to show the proposed wording of the Acknowledgments to the person whose help you are acknowledging. He or she might well believe that your acknowledgment is insufficient or (worse) that it is too effusive.
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**LIST OF ABBREVIATIONS**

- **ABA**: abscisic acid
- **ABRE**: abscisic acid response element
- **ANOVA**: analysis of variance
- **BHT**: butylated hydroxytoluene
- **cDNA**: complementary DNA
- **cpm**: counts per minute
- **DS**: dextran sulfate
- **dATP**: deoxyATP
- **ddATP**: dideoxyATP
- **2,4-D**: 2,4-dichlorophenoxyacetic acid
- **EcMt**: early cysteine-labeled metallothionein
- **KN**: Kinetin
- **mAb**: monoclonal antibody
- **mRNA**: messenger RNA
Transposons are genetic elements that are mobile within a genome, therefore, they are one of the major causes of genomic variation (Lewin 1994). However, evidence is growing that transposable elements are capable of horizontal transfer. That is, they can move across genomes of different species (Prins and Zadoks 1992). Our laboratory is interested in the identification and characterization of bacterial transposon-like nucleotide sequences found in the wheat genome that may be an example of horizontal DNA transfer.

Reynolds and Kitto (1992) screened a Mexican spring wheat (*Triticum aestivum* cv. Pavon) cDNA library to identify genes expressed specifically during pollen embryogenesis. After sequencing unique clones from this library, four sequences were found that showed high homology to the bacterial transposon, Tn1721. This transposon was derived from a gram-negative bacterium and is a Tn3-like transposon found in the Tn21 subgroup (Grinstead et al. 1990). It is a unique sequence since it contains a basic transposon (Tn1722) that is capable of independent transpososition. As shown in Figure 1, Tn1722 contains an open reading frame that encodes a 525 amino acid chemotaxic protein (Allmeier et al. 1992). The Tn1722 portion of the transposon contains the *tnpR* and *tnpA* genes which are utilized during the genetic resolution and integration of either the major or minor sequences. The entire transposable element also include three inverted repeats which function as the insertion and excisions sites for the transposon.
REFERENCES


APPENDIX A: PCR OPTIMIZATION

The optimization of the PCR reactions were conducted on the bacterial plasmid pJOE105, which contains the entire Tn1721 transposon. This optimization required three independent experiments to determine the best parameters for each set of primers: MgCl\textsubscript{2} concentration, target DNA concentration, and thermal cycling parameters.

Magnesium provides the divalent cations required by the DNA polymerase to function. The MgCl\textsubscript{2} concentrations were optimized by titration reactions ranging from 1.55 mM to 3.55 mM final concentration in each reaction tube.

The concentration of target DNA was optimized to ensure the highest possible primer specificity. DNA was diluted serially for each reaction to determine the lowest concentration of polynucleotide that still yielded visible bands on EtBr-stained agarose gels; for pJOE105 this was \# 1 ng of DNA.

PCR cycle parameters were examined to reduce the so called plateau effect which results in the non-specific amplification of background products. Taking this into account, cycling parameters were set to allow efficient amplification with the lowest number of cycles. Conditions were set at 33 cycles of 1 min. at 94 C for denaturation, 1 min. at 56.5 C for annealing, and 2 min. at 72 C for synthesis, followed by 10 min. at 72 C for extension.
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ARE HUMAN SUBJECTS INVOLVED? A "human subject" is any living individual about whom an investigator conducting research obtains data through intervention (physical procedure or manipulation), interaction (interviews, questionnaires, surveys), or other interpersonal communication.

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