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There are two parts to admission in the MA in Science Education Program:

1. Getting admitted to the university to study at the graduate level
2. Getting admitted to the specific program you wish to study

ADMISSION TO GRADUATE STUDY AT UNI

The minimum bachelor’s degree grade point average (GPA) for admission to graduate study at UNI is 3.00. Students with a GPA of 2.75-2.99 may be admitted on a provisional status depending on indicators of academic potential. The Graduate Records Exam (GRE) is NOT required.

Complete the Application to Graduate Study specifying degree choice and “major code” on the application:

• MA Science Education (major code = 821),
• MA Science Education – Earth Science Emphasis (major code = 827), or
• MA Science Education – Physics Emphasis (major code = 828).

The application fee (for non-UNI alumni) is payable by credit card for on-line applications (recommended) or can be submitted with a written application.

Your application must list ALL institutions from which you have completed course work, starting with your bachelor’s degree to the present. Transcripts for your bachelor’s degree and for all course work taken after your bachelor’s degree must be sent directly to the Office of the Registrar from the granting institution in order to count as “official” transcripts. Transcripts submitted by students (even if in a sealed envelope) are not accepted as official.

In addition to the general graduate application, you will need to complete the Application to Graduate Study in Science Education

ADMISSION TO GRADUATE STUDY IN SCIENCE EDUCATION

The application to Graduate Study in Science Education can be found on the Science Education Website. Submit the application form and essay (as instructed on the form) to the Office of Admissions. Also have one letter of recommendation submitted directly to:

AdmissionsProcessing@uni.edu, cc: sciedgradcoord@uni.edu
Please note that only eight (8) credits of graduate level course work (from either UNI OR transfer credits) earned prior to admittance to the Graduate program can be applied to your program. Consequently, it is in your best interest to complete the application process soon after beginning your graduate coursework.

Teaching licensure and endorsement is a requirement of this program. If licensure is not held upon entering the program, it must be completed by the end of the program. International students returning to their home country upon completion of the degree should work with their advisor with respect to licensure and endorsement requirements.

**GRADUATE ASSISTANTSHIP**

Graduate Teaching Assistantships in Science Education are available. Applications should be completed by February 1, with letters of recommendation received by Feb. 28. Award decisions are made in early March.

If interested in a graduate teaching assistantship stipend and tuition scholarship, obtain the application forms from the [Graduate College web page](#).

**ENGLISH AS A SECOND LANGUAGE**

International students and all students for whom English is not their first language, are required to submit TESOL or IELTS exam scores. *Minimum* scores required by the graduate college are:

- paper-based TOEFL score = 550
- internet-based TOEFL score = 79
- IELTS = 6.5

However, a minimum score does not ensure admission into the Science Education program and is decided by the admissions committee on a case-by-case basis.

**ACCEPTANCE TO SCIENCE EDUCATION AND INITIAL FACULTY ADVISOR**

Please note that acceptance to graduate study at UNI does not ensure admission to the Science Education Program. You will be notified by Science Education via email and letter indicating your acceptance status into graduate study in Science Education. Once accepted, you will be assigned a faculty advisor by the [Science Education Graduate Coordinator](#) based on the information included on the Science Education application form, or you may indicate a preference of faculty advisor to the Science Education Graduate Coordinator. A list of Science Education Faculty can be found on the [Science Education web page](#).
UNIVERSITY STUDENT SERVICE (MYUNIVERSE)

Upon applying to UNI you will be assigned a student number and CatID username. If you previously attended/graduated from UNI you will reassume your previous student number and CatID, however you will need to re-set your password/passphrase. The CatID is used for a variety of campus systems including secure Wi-fi access, Email, Blackboard/eLearning and MyUNIverse.

You will be assigned an “@uni.edu” address. Since this is the address used for all University and programmatic announcements, it is highly recommended that you either check this email daily or have email automatically forwarded to another account. See the ITS website for more detailed email instructions.

Blackboard/eLearning is a course management system which you will likely use in several courses. It provides a forum for class based discussion boards, electronic access to materials, assignments, assessments, calendars, announcements, and a variety of other course tools. Check with you individual course instructors for more information.

The MyUNIverse portal allows lifetime access with a current password. See the new student information page for instructions on how to set your username and password. Call 319-273-5555 to reset an expired password. MyUNIverse can be accessed from the UNI home page. This portal provides access to countless resources and processes required for successful completion of your program including:

- UNI email access,
- Checking your University bill (U-bill), and/or financial aid
- Registration for campus-based classes,
- Accessing your Advisement Report,
- Accessing student request forms for changes in your program plan,
- Accessing transfer credit evaluation forms,
- Accessing the application to graduate form,
- Financial Aid,
- Rod Library resources, etc.

PROGRAM COMPLETION

GRADUATE PROGRAM COURSE REQUIREMENTS

The Master of Arts in Science Education has one major: MA Science Education. For more specific needs, it can be completed as one of 2 emphases – Physics Education or Earth Science
Education. All three options are available as either a Thesis or Non-thesis based program and all require the Science Education Core courses (Table 1).

**Table 1: Science Education Core (required by all programs and emphases)**

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI ED 6500</td>
<td>Research Methods in Science Education (or Educational Research)</td>
<td>3</td>
</tr>
<tr>
<td>SCI ED 6600</td>
<td>Developing Science Curricula</td>
<td>2</td>
</tr>
<tr>
<td>SCI ED 6700</td>
<td>History, Philosophy and the Nature of Science</td>
<td>2</td>
</tr>
<tr>
<td>SCI ED 6800</td>
<td>Teaching-Learning Models in Science Education</td>
<td>2</td>
</tr>
<tr>
<td>SCI ED 6900</td>
<td>Trends and Issues in Science Education</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>11</strong></td>
</tr>
</tbody>
</table>

In addition to the Science Education Core, course requirements differ slightly between Thesis and Non-Thesis options (Table 2).

**Table 2: Course requirements for Thesis vs. Non-thesis options**

<table>
<thead>
<tr>
<th></th>
<th>Thesis Option</th>
<th>Non-Thesis Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Education core (Table 1)</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Science content electives</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Education, Science, or Science Education electives</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Research (SCI ED 6299)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

Emphases in Earth Science or Physics require a total of 36 combined semester hours of undergraduate and graduate course work in Earth Science or Physics respectively. At least 8 hrs of those must be at the graduate level (and can count towards the Science content electives).

Immediately after being assigned an advisor, it is your responsibility to arrange a meeting (by phone, e-mail, skype if available, or in person) to discuss your program intentions, plans, and course schedule. This is the only way to ensure timely progression through the program. Please note that only eight (8) credits (from either UNI OR transfer credits) of course work earned prior to admittance to the Graduate program can be applied to your program.

Additionally, teaching licensure and endorsement is a requirement of this program. If licensure is not held upon entering the program, it must be completed by the end of the program. International students returning to their home country upon completion of the degree should work with their advisor with respect to licensure and endorsement requirements.
COURSE OFFERINGS AND COHORTS

REQUIRED CORE COURSE ROTATION

The five Science Education core courses are offered throughout two academic years and summer sessions (Appendix A). Course offerings vary in format and are typically “blended” between synchronous and asynchronous instruction. It is expected that all core courses will require some time on-campus in addition to the on-line component. Since most students are full time teachers, this on-campus component will be conducted on the weekends or in the summers. Currently, no core course is offered totally asynchronous and on-line although some electives might be. Consult with your advisor for the current rotation schedule.

SCIENCE EDUCATION DISTANCE EDUCATION - COHORT

Every odd numbered Summer (2013, 2015, etc.), Science Education starts a cohort program in which the five (5) core course rotation is offered via distance education. These courses are listed each semester in the Continuing Education course brochure. Distance Education registration should be done through Continuing Education and Special Programs online.

COURSE LOAD

A minimum load to be considered a full time graduate student is nine (9) hours, all of which must be 5000 or 6000 level courses. Graduate Assistants must be full time students. The maximum load for graduate students who are not on a Graduate Assistantship is fifteen (15) hours, nine (9) of which must be 5000 or 6000 level courses. Maximum load for Graduate Assistants is twelve (12) hours, nine (9) of which must be 5000 or 6000 level courses.

Full-time teachers enrolled in the program part-time are strongly encouraged not to exceed three (3) hours of graduate course work per semester. However, many teachers opt to take more during the summer months.

RESEARCH CREDIT (SCI ED 6299)

Both the Thesis and Non-thesis programs require the successful completion of a final culminating project, during which, research hours (SCI ED 6299) are earned. It is strongly recommended that SCI ED 6500 Research Methods in Science Education, (or comparable course) be completed before initiating the research project and enrolling in research hours. Research hours may be spread over more than one semester and for varying number of hours per semester, depending on individual project plans. Although research hours may be earned at any time, they are frequently taken during the last 2-4 semesters of the graduate program. No
more than the listed number of research hours is counted toward completion of the program. Requirements to be met for each number of credits are listed in Appendix B.

For projects not completed within the designated term of research registration, a designation of “Research Continuing” (RC) will be assigned as a grade until the project criteria for those credits are completed. RC designations must then be changed to a letter grade before graduation. Project completion requirements for SCI ED 6299 credits are listed in Appendix B.

CONTINUOUS REGISTRATION (CR)

Students who are not enrolled in courses or research credit will automatically be enrolled in “Continuing Registration” for a fee of $50 in lieu of regular tuition fees. This type of registration allows access to MyUNiverse and university library resources. Continuous registration only applies to Fall and Spring semester enrollment.

ADVISEMENT REPORT AND STUDENT REQUESTS

ADVISEMENT REPORT

Upon admission to the MA in Science Education Program an official Advisement Report is automatically created in MyUNiverse. It is strongly encouraged that you log into MyUNiverse and check your Advisement Report at least twice a year. Access to your Advisement Report and grade reports is available up to 180 days after your last program update/course enrollment, after which, you will no longer have access. Contact your Graduate Advisor if you cannot view your Advisement Report.

The Advisement Report (Appendix C) lists all five required core courses, research hours, and initially designates non-thesis program. Students who chose to pursue the thesis option can change this on their program through a student request. Elective courses which carry a BIOL, CHEM, EARTHSCI, ENV SCI, or PHYSICS prefix, will automatically be applied to "Science Content Electives (LN-020)." Elective courses which carry a SCI ED pre-fix will automatically be applied to "Education or Science Education Electives (LN-030)." Movement of these courses between these classifications in order to satisfy graduation requirements can be done via student request in consultation with your advisor. Student requests can be filed multiple times over the course of program completion as specific courses are taken.

Transfer courses are only applied to the advisement report after an official transcript is received and THEN a student request is filed.
STUDENT REQUESTS

Student Request forms (Appendix D) are available in MyUNIverse and are completed and submitted online. The most common student requests include Forms:

- **G**: Exception to Policy: Extension of 7-year time limit to complete degree/Waiver of recency
- **M**: Declaring electives for the degree (to move electives from one category to another)
- **N**: Change to Thesis or Non-Thesis option for MA or MS degree
- **P**: Graduate transfer course credit approval (to transfer and or apply courses from another institution)

Approvals by your advisor, the Science Education Graduate Coordinator and the Graduate College are done electronically. It is strongly recommended you discuss the details of your student request (including RQ and LN #'s) with your advisor before submission.

CREDIT LIMITATIONS (WORKSHOP, TRANSFER, AND EXPIRATION)

A maximum of six (6) hours of workshop credit and seven (7) hours of SCI ED 5500 (Techniques for Science Teachers) can be used on the program. Transfer credits from other institutions can account for up to ten (10) hours of the degree program. Only graduate level courses are accepted on graduate degree programs at UNI and only eight (8) credits (from either UNI OR transfer credits) of course work earned prior to admittance to the Graduate program can be applied to your program.

For transfer credits, it is the student’s responsibility to check the applicability of transfer courses using the “Graduate Transfer Credit Evaluation” form available on the Graduate Student Webpage. It is best to check a course from another institution before you enroll in it. Generally, courses taken through Iowa Area Education Agencies through Drake or other universities will not apply to graduate programs at Iowa Regents Universities, including UNI. Graduate-level courses taken at Iowa State University and the University of Iowa are accepted automatically at UNI once the transcript has been sent (no transfer evaluation is required). However, a student request must still be filed to apply the credit to your program. Check with your advisor regarding whether accepted graduate transfer credits will count toward science content or open electives (if at all) on your Advisement Report.

All course credits are viable for 7 years from the time of enrollment in the first course counted on a program. After 7 years those specific courses cannot be used as part of your program unless extenuating circumstances warrant the approval of an extension from both the Science Education program AND the Graduate College. Requests for extension can be filed via Student Request. For example, if a course was taken in the Spring of 2010 but the student does not graduate until Fall of 2017 that course will not count toward program requirements. However,
courses completed in Spring of 2010 CAN be applied for a Spring 2017 graduation. Required core courses older than 7 years must be retaken and content or elective courses must have more recent course work substituted.

**PROGRAM GRADUATION**

**GRADUATING**

By mid-term of the graduating semester, an “Application for Graduation” must be submitted through MyUNIverse. This adds your name to the list of graduates. Names are easily removed if plans change; however, it is nearly impossible to add a name once the mid-term deadline has passed.

There is a non-refundable graduation fee assessed at the time of the application to graduate. If graduation plans change, an Application to Graduate must be re-filed the following semester and the fee paid again. Therefore, it is in students’ best interests to work closely with their advisors to be sure they are ready to graduate before filing the application.

Those pursuing the thesis option, must meet all time lines established by the Graduate College for thesis review and submission. Dates are available directly from the Graduate College. Many of these deadlines are several weeks or months prior to commencement so plan accordingly.

Check lists for monitoring progress through your program are included under the specific guidelines for the Thesis (Appendix F) and Non-Thesis (Appendix G) options.

**THESIS VERSUS NON-THESIS OPTION**

In addition to slight differences in course requirements, the main difference between the thesis and non-thesis option is the extent of independent research and creative activity of the final product. Students choosing the thesis option are expected to do an extensive, independent and original data collection research study. Students anticipating further graduate work (such as a Doctoral degree) are advised to choose the thesis option. The Non-thesis option requires a slightly less extensive product but additional course credits.

When deciding which route to follow on your program, the main things to consider are your goals for your master's program and your own professional goals and interests. Listed below are issues to consider when choosing between the thesis and non-thesis options:
Consider the **Thesis Option** if:

- You are interested in conducting some form of research.
- You have a specific researchable question in mind.
- You are considering further graduate work (possibly toward a PhD or EdD).

Consider the **Non-Thesis Option** if:

- You are interested in a little more course work in content and electives.
- You would prefer less emphasis on research.
- One of the non-thesis project options fits your situation well.

Regardless of which option is chosen, all final products require a significant amount of writing and will be evaluated by the criteria listed on the Science Education MA Final Project Rubric ([Appendix E](#)).

**THESIS OPTION**

**THESIS COMMITTEE**

The first step in pursuing the thesis option is to file the student request that switches the Advisement Report to the thesis option. Second, in consultation with your advisor, the members of the thesis committee must be selected. The thesis committee consists of a minimum of three (maximum four) UNI Faculty members, at least two of which must be Science Education Faculty where one of them serves as the Chair of the committee and major research advisor. Additional members must be CHAS or CoE faulty and all members must be on the UNI Graduate Faculty. Your assigned graduate faculty advisor may serve as the Thesis Committee Chair and act as your major research advisor, or if the area of research warrants, a new major advisor can be selected and become the Thesis Committee Chair. Committee members must be selected **before** the research project is designed and conducted and should be chosen with the assistance of your advisor. A **thesis committee approval form** must be submitted to the Science Education Graduate Coordinator and Graduate College for approval. The thesis committee assists the student in research design and in the writing of the thesis.

The committee eventually accepts or rejects the thesis. Please note that the expected turn-around time for feedback on drafts from your advisor and readers should be no less than two (2) weeks. Be sure to plan and communicate a proposed timeline with your advisor to ensure timely completion of a quality project and paper.
THESIS PROPOSAL

It is strongly recommended that SCI ED 6500 Research Methods in Science Education (or MEASRES 6205) precede initiation of the research project. Before beginning the thesis research project, a formal written proposal of the study to be performed must be presented to the Thesis Committee. The proposal usually consists of what will become the first three chapters of the final thesis. If the study involves human participants, a form must be submitted to and approved by the Institutional Review Board at UNI before data collection begins.

SCI ED 6299 RESEARCH

The thesis option requires six (6) hours of SCI ED 6299 research credit. These six (6) hours may be taken in any combination at any time during the program, but should not be started until some direction in research has been determined by the student and the major advisor. Project completion requirements to earn SCI ED 6299 credit are listed in Appendix B.

THESIS PREPARATION AND PRESENTATION

Sample thesis products are available in the Science Education Resource Center (SERC) in MSH 160 or on-line through the Rob Library Institutional Repository. Your advisor may also have samples available for you to review. Specific requirements regarding the preparation and formatting of the thesis can be found in the Graduate College Thesis and Dissertation Manual.

Science Education uses APA style, 6th edition; however, the Graduate College manual supersedes this style in certain instances (such as margins and headings).

A public thesis presentation is required of the thesis project. This must be held before officially submitting the thesis to the graduate college. See the Important Dates for Graduate Students on the Graduate College home page for specific dates. Specific information regarding the preparation and presentation of the thesis is in Appendix F.

Once approved, one (1) electronic copy and one (1) paper copy, printed on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton paper must be submitted to the graduate college. If a hardbound copy of your thesis is desired by yourself or your advisor, additional paper copies can mailed or delivered to the Science Education secretary, McCollum Science Hall 153. These copies will be professionally bound by Science Education free of charge to the student.
Non-thesis products (called “Creative Components”) can take one of three forms:

1. Curriculum Development Project,
2. Action Research Project or,
3. Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) OR Portfolio Project based upon National Board of Professional Teaching Standards (NBPTS) certification

See Appendix G and Appendix H for a full description of each option. Samples of all options are available in the Science Education Resource Center (SERC) in MSH 160 or on-line through the Rod Library Institutional Repository. Your advisor may also have samples available for you to review. The specific choice of option should be made in consultation with your major advisor.

The major advisor acts as the supervisor of the non-thesis product. Once a non-thesis option is decided on, you and your advisor should select an Outside Reader who will serve as an additional reader of the drafts of your product. This person must be a UNI graduate faculty member and it is recommended that s/he be a Science Education faculty member.

Your major advisor and your Outside Reader must approve the final product. Please note that the expected turn-around time for feedback on drafts from your advisor and readers should be no less than two (2) weeks. Be sure to plan and communicate a proposed timeline with your advisor to ensure timely completion of a quality project and paper.

It is advisable to have decided which final product option to pursue by the time approximately one half of the program course work – including the research methods course – are completed.

Before beginning the non-thesis project, a formal written proposal of project must be presented to both the Major Advisor and Outside Reader. The proposal usually consists of what will become the first three chapters of the final paper. If the study involves human participants (often the case for Action Research and some Curriculum Development projects), a form must be submitted to and approved by the Institutional Review Board at UNI before data collection begins.
SCI ED 6299 RESEARCH

The Non-thesis option requires three (3) hours of SCI ED 6299 research credit. These three (3) hours may be taken in any combination at any time during the program, but should not be started until some direction for the project has been determined by the student and the major advisor. Project completion requirements to earn SCI ED 6299 credit are listed in Appendix B.

NON-THESIS PREPARATION AND PRESENTATION

Science Education uses the APA 6th edition style manual for all written projects.

A public presentation is required for the non-thesis project and can be conducted in person or electronically and must be completed no later than 2 weeks before the end of the graduation semester. Once the final paper has been approved and presented, the student will receive further instructions regarding submission of electronic copies and posting to the Institutional Repository. The final non-thesis paper must be submitted no later than one week prior to the date of graduation for the semester or summer session.

If a hardbound copy of your non-thesis is desired by yourself or your advisor, copies printed on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton paper can be mailed or delivered to the Science Education secretary, McCollum Science Hall 153. These copies will be professionally bound by Science Education free of charge to the student.

Specific information regarding the preparation and presentation of the non-thesis project is in Appendix G.
## APPENDICES

### APPENDIX A: TENTATIVE CORE COURSE SEQUENCE THROUGH SUMMER 2023

All courses offered on campus and via distance ed.

<table>
<thead>
<tr>
<th>Time</th>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td>2016</td>
<td>SCI ED 6600</td>
<td>Developing Science Curricula</td>
</tr>
<tr>
<td>Spring</td>
<td>2017</td>
<td>–</td>
<td>No core course offered – opportunity to take electives</td>
</tr>
<tr>
<td>Summer</td>
<td>2017</td>
<td>SCI ED 6700</td>
<td>History, Philosophy, and Nature of Science</td>
</tr>
<tr>
<td>Fall</td>
<td>2017</td>
<td>SCI ED 6800</td>
<td>Teaching-Learning Models in Science Education</td>
</tr>
<tr>
<td>Spring</td>
<td>2018</td>
<td>SCI ED 6500</td>
<td>Research Methods in Science Education</td>
</tr>
<tr>
<td>Summer</td>
<td>2018</td>
<td>SCI ED 6900</td>
<td>Trends and Issues in Science Education</td>
</tr>
<tr>
<td>Fall</td>
<td>2018</td>
<td>SCI ED 6600</td>
<td>Developing Science Curricula</td>
</tr>
<tr>
<td>Spring</td>
<td>2019</td>
<td>–</td>
<td>No core course offered – opportunity to take electives</td>
</tr>
<tr>
<td>Summer</td>
<td>2019</td>
<td>SCI ED 6700</td>
<td>History, Philosophy, and Nature of Science</td>
</tr>
<tr>
<td>Fall</td>
<td>2019</td>
<td>SCI ED 6800</td>
<td>Teaching-Learning Models in Science Education</td>
</tr>
<tr>
<td>Spring</td>
<td>2020</td>
<td>SCI ED 6500</td>
<td>Research Methods in Science Education</td>
</tr>
<tr>
<td>Summer</td>
<td>2020</td>
<td>SCI ED 6900</td>
<td>Trends and Issues in Science Education</td>
</tr>
<tr>
<td>Fall</td>
<td>2020</td>
<td>SCI ED 6600</td>
<td>Developing Science Curricula</td>
</tr>
<tr>
<td>Spring</td>
<td>2021</td>
<td>–</td>
<td>No core course offered – opportunity to take electives</td>
</tr>
<tr>
<td>Summer</td>
<td>2021</td>
<td>SCI ED 6700</td>
<td>History, Philosophy, and Nature of Science</td>
</tr>
<tr>
<td>Fall</td>
<td>2021</td>
<td>SCI ED 6800</td>
<td>Teaching-Learning Models in Science Education</td>
</tr>
<tr>
<td>Spring</td>
<td>2022</td>
<td>SCI ED 6500</td>
<td>Research Methods in Science Education</td>
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<td>Summer</td>
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<td>Spring</td>
<td>2023</td>
<td>–</td>
<td>No core course offered – opportunity to take electives</td>
</tr>
<tr>
<td>Summer</td>
<td>2023</td>
<td>SCI ED 6700</td>
<td>History, Philosophy, and Nature of Science</td>
</tr>
</tbody>
</table>

Last updated: 28-Mar-17
Basic criteria to earn graded credit in a variety of credits of SCI ED 6299

All projects (thesis or non-thesis) can be subdivided into three phases: 1) Proposal, 2) Implementation, and 3) Write-up. Each phase is worth one third of the total number of research credits required (3 credits for non-thesis; 6 for thesis). Grades are awarded when the criteria listed in each phase of the project are completed. Refer to the Science Education Graduate Student Handbook for complete details and information about the requirements for each type of final project.

*Phase 1 (credit #1 for non-thesis and #1-2 for thesis):*
  - Requirements consist of the entire project proposal:
    - Ch 1 – Introduction
    - Ch 2 – Literature review
    - Ch 3 – Proposed methods/curriculum topic/portfolio unit
    - Pass proposal presentation

*Phase 2 (credit #2 for non-thesis and #3-4 for thesis):*
  - Significant amount of the project complete
    - Thesis: collected data and analysis started
    - Non-thesis:
      - Curriculum is written, implemented and assessed
      - Action Research implemented and data collected
      - Award/portfolio application completed

*Phase 3 (credit #3 for non-thesis and #5-6 for thesis):*
  - Completion of paper, final presentation and formalities:
    - Entire paper completed and polished
    - Final presentation passed
    - Required paperwork signed by advisor
    - Final document submitted to either the graduate college (thesis) or graduate coordinator (non-thesis)
APPENDIX C: SAMPLE ADVISEMENT REPORT

Academic Advisement Report

Student Name

Program Name
Graduate Courses
Master's in Sci & Math Education
Science Education Major

Program Code
GRAD
HYMAN
S21MA

Requirement Term
SPRING 2015
SPRING 2012
SPRING 2012

THE GRADUATE ADVISEMENT REPORT

Please report any questions or concerns to the Office of the Registrar. This evaluation is provided for Advisement. It is not an official record. Federal Law prohibits transmission to a third party.

ENROLLMENT MUST BE IN A COURSE NUMBER 5000 LEVEL OR ABOVE TO APPLY, REGARDLESS IF THE UNDERGRADUATE COURSE NUMBER (4999 or less) APPEARS. (RG-50020)

COURSES IN PROGRESS

In-Progress: In-Progress / Research Continued Courses MUST BE GRADED TO EARN DEGREE. In-Progress courses will show as satisfied in program requirements. If not successfully completed they will move to Courses Not Used. (RG-50021)

In-Progress, Incomplete and Research Continued Courses (RQ-51038, LN-010)

GPA
Chemistry is Awesome
3.00 2015 SPRING

GRADUATE LIMITS

PROGRAMS MAY APPLY STRICTER LIMITS. Limits apply per major. (RG-50023)

COURSES SUBJECT TO LIMITS (RG-50056)

Satisfied: REENTRY OF CREDIT: Courses valid 7 years toward degree (LN-010)
C Grades: Max 8 units of C-, C, C+ grades (LN-020)
WORKSHOP: Max 6 units (LN-030)
Gra: Not for degree use. Exceptions: see UNI Catalog (LN-040)
CREDIT/NO CREDIT: Max 3 units (LN-050)
MAX 1/2 of degree from Transfer, GIS and Workshop (LN-060)

Satisfied: (LN-040)

Satisfied: (LN-050)

Satisfied: (LN-060)

WORKSHOP: UNI or elsewhere

Satisfied: (LN-040)

Satisfied: (LN-050)

Satisfied: (LN-060)

GRADUATE GRADE POINT AVERAGE

Average: All courses taken as graduate student. See major plan requirements for plan GPA and GPA requirements. (RG-50028)

GPA
Total GPA
Satisfied: (LN-010)
- Units: 21.00 used
- GPA: 3.881 actual

TRANSFER TOTAL GPA
Satisfied: (LN-020)
- Units: 0.00 used
- GPA: 0.000 actual

TOTAL CUMULATIVE GPA
Satisfied: (LN-030)
- Units: 21.00 used
- GPA: 3.881 actual

SCIENCE EDUCATION MA (2012-2014) (S21MA)

***Not Satisfied: This plan is available on the Non-thesis with a minimum of 32 Units Required and on the Thesis option with a minimum of 30 Units Required. (RG-50046)

- Units: 24.00 used, 8.00 needed

SCIENCE EDUCATION CORE 12
Satisfied: 8 Units Required. (LN-020)
- Units: 8.00 required, 8.00 used

SCIENCE & SCIENCE EDUCATION
Satisfied: 3 Units Required. (LN-010)
- Units: 3.00 required, 3.00 used

SCHET 6550 Research Meth Sci Educ
- Units: 3.00 required, 3.00 used

SCHET 6710 History Philosophy Nat Sci
- Units: 3.00 required, 3.00 used

SCHET 6930 Trends 4 Sci Educ
- Units: 3.00 required, 3.00 used

NON-THESIS REQUIREMENTS

***Not Satisfied: A maximum of 3 Units of 6299 credit may be applied to the Non-Thesis option. (RG-50070)

- Units: 12.00 used, 8.00 needed

Research
- Units: 0.00 required, 0.00 used

Science Content Electives
- Units: 7.00 used, 4.00 needed

Options: ANY SCHED 6299 COURSE

Science Content Electives
- Units: 7.00 used, 4.00 needed

Physics 5150 Intergrating Space Math
- Units: 3.00 required, 3.00 used

Chemistry 5165 Introduction to Biochemistry
- Units: 3.00 required, 3.00 used

Chemistry 5555 Chemistry of Medicine
- Units: 3.00 required, 3.00 used

Courses not currently counting toward program requirements; File a Student Request Form M to move.

Location of possible RQ value; required when completing student requests

Lists all program restrictions and the courses that count toward those restrictions (below)

All courses starting with BIOL, CHEM, PHYSICS, EARTHSCI automatically map here.
All courses starting with SCI ED automatically map here.

**Not Satisfied** 7 Units Required - To be selected in consultation with Advisor (LN-030)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI ED</td>
<td>5500</td>
</tr>
<tr>
<td>SCI ED</td>
<td>5200</td>
</tr>
<tr>
<td>SCI ED</td>
<td>5230</td>
</tr>
<tr>
<td>SCI ED</td>
<td>5195</td>
</tr>
<tr>
<td>SCI ED</td>
<td>5233</td>
</tr>
<tr>
<td>SCI ED</td>
<td>5133</td>
</tr>
</tbody>
</table>

PSYCH 5303 has been directed to this line.
PSYCH 5303 approved Edu/Science Edu Edstdre per SR# 62656. (12/06)

**Course Limit**
Satisfied: May apply 3 Units of 6298 to this plan. (LN-040)

**Course Limit**
Satisfied: May apply a maximum of 8 Units of Workshop to this plan. (LN-050)

**Research Paper or Project Report**
***Not Satisfied*** Satisfactory completion is approved by the Department Faculty. (LN-060)
Research Paper or Project Report

**Comprehensive Examination**
Satisfied: Satisfactory completion is approved by the Department Faculty. (LN-070)
Comprehensive Examination

**Verify 6000-Level**
***Not Satisfied*** Minimum of 14 Units at the 6000-Level at UNI. (LN-080)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI ED</td>
<td>6800</td>
</tr>
<tr>
<td>SCI ED</td>
<td>6500</td>
</tr>
<tr>
<td>SCI ED</td>
<td>6700</td>
</tr>
<tr>
<td>SCI ED</td>
<td>6900</td>
</tr>
<tr>
<td>SCI ED</td>
<td>6500</td>
</tr>
<tr>
<td>SCI ED</td>
<td>6700</td>
</tr>
</tbody>
</table>

6000-Level requirement automatically satisfied by Core courses + Research credits.

**SCIENCE EDUCATION MA GPA**
Satisfied: IN-PROGRESS COURSES NOT INCLUDED IN GPA UNTIL GRADED (RQ-900002048)

**PLAN GPA, UNI**
Satisfied: (LN-010)

- Units: 21.00 used
- GPA: 3.000 required, 3.081 actual

**PLAN GPA, TOTAL**
Satisfied: (LN-020)

- Units: 21.00 used
- GPA: 3.000 required, 3.081 actual
University of Northern Iowa – Graduate Student Academic Request

Print Date: 05/23/2016 03:19 PM

Student Request ID: 12345
Student Request Type: M - Declaring Electives for Advisement Report (Graduate)
Student Request Created By: Name, Student
Student Request Create Date: 05/01/2016
University ID: 000000
Student Name: Name, Student
Classification: Graduate
Address: 555 Cedar St., Cedar Falls, IA 50613
Major: 821MA – Science Education
Email Address: NameS@uni.edu

Electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Term</th>
<th>Credits</th>
<th>Apply to RQ#</th>
<th>Apply to LN#</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 5186</td>
<td>Su 2010</td>
<td>1</td>
<td>60579</td>
<td>030</td>
</tr>
</tbody>
</table>

Is this request increasing the total hours required for the degree? **No**

Description: I would like to move the credit for this class from "courses not used by major" to "education or science education" electives

Justification: This class is a graduate level elective class and needs to be applied toward my graduate program.

Submitted Date: 05/01/2016
Final Action Date: 05/09/2016

Processing Information:

Processed Date: 05/10/2016
Processed By: Records Analyst
Processing Notes: CS 5186 section 60 summer 2010

Approvals

<table>
<thead>
<tr>
<th>Approval Level</th>
<th>Approver</th>
<th>Approval Requested Date</th>
<th>Action Date</th>
<th>Action</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Advisor: Stone, Jody M</td>
<td>05/01/2016</td>
<td>05/05/2016</td>
<td>Approved</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Graduate Coordinator: Del Carlo, Dawn I.</td>
<td>05/05/2016</td>
<td>05/09/2016</td>
<td>Approved</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Associate Dean of the Graduate College: Coon, Shoshanna</td>
<td>05/05/2016</td>
<td></td>
<td>System forwarded to Registrar's Office</td>
<td></td>
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</table>
**APPENDIX E: SCIENCE EDUCATION MA FINAL PROJECT RUBRIC**

### Master of Arts in Science Education
Cumulative Scholarly Work Rubric

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scholarly Work: Select one</td>
<td>Advisor: Select one</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scoring Rubric</th>
<th>Score = 1</th>
<th>Score = 2</th>
<th>Score = 3</th>
<th>Score = 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aspects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Focus of the work is</td>
<td>Focus of the work is</td>
<td>Focus of the work is</td>
<td>Focus of the work is</td>
</tr>
<tr>
<td></td>
<td>broad, ambiguous,</td>
<td>thoughtful and targeted,</td>
<td>insightful and rich.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>confusing, and/or</td>
<td>including relevant details,</td>
<td>insightful and rich.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>misaligned and the</td>
<td>providing a strong, informed</td>
<td>insightful and rich.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>details are</td>
<td>base for the work.</td>
<td>insightful and rich.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>minimal.</td>
<td></td>
<td>insightful and rich.</td>
<td></td>
</tr>
<tr>
<td><strong>Connection to</strong></td>
<td>Literature review is</td>
<td>Literature review</td>
<td>Literature review</td>
<td>Literature review</td>
</tr>
<tr>
<td><strong>existing</strong></td>
<td>sketchy and vague or</td>
<td>provides a minimal</td>
<td>provides a strong</td>
<td>provides an in-depth,</td>
</tr>
<tr>
<td><strong>Literature or</strong></td>
<td>limited in significance</td>
<td>examination of the</td>
<td>theoretical framework</td>
<td>well-defined</td>
</tr>
<tr>
<td><strong>standards</strong></td>
<td>to the focus of the</td>
<td>prior research OR</td>
<td>outlining prior</td>
<td>demonstrating how</td>
</tr>
<tr>
<td></td>
<td>scholarly work.</td>
<td>although the</td>
<td>research related to</td>
<td>the focus of the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>literature review is</td>
<td>the focus of the scholarly</td>
<td>scholarly work.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>adequate</td>
<td>work.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact of</strong></td>
<td>Impact of the Master’s</td>
<td>Impact of the Master’s</td>
<td>Impact of the Master’s</td>
<td>Impact of the Master’s</td>
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<td><strong>Master’s</strong></td>
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<td>Program on the scholarly</td>
<td>Program on the scholarly</td>
<td>Program on the scholarly</td>
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<tr>
<td><strong>Program on</strong></td>
<td>work is unclear.</td>
<td>work but is not defined.</td>
<td>work is clearly defined</td>
<td>work is clearly</td>
</tr>
<tr>
<td><strong>Scholarly Work</strong></td>
<td></td>
<td></td>
<td>although not as well</td>
<td>defined although not as</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>described as a four.</td>
<td>described as a four.</td>
</tr>
<tr>
<td><strong>Quality of Work</strong></td>
<td>There is little evidence</td>
<td>There is evidence of</td>
<td>Throughout the work the</td>
<td>Throughout the work</td>
</tr>
<tr>
<td></td>
<td>of analysis or synthesis</td>
<td>accurate analytical ability</td>
<td>conclusions drawn, the</td>
<td>there are multiple</td>
</tr>
<tr>
<td></td>
<td>in the scholarly work.</td>
<td>and synthesis in certain</td>
<td>curriculum developed or</td>
<td>examples of reflective</td>
</tr>
<tr>
<td></td>
<td>The final product is</td>
<td>sections of the scholarly</td>
<td>the questions answered</td>
<td>analysis and insightful</td>
</tr>
<tr>
<td></td>
<td>simplistic.</td>
<td>work, but overall the</td>
<td>demonstrate logical analysis</td>
<td>synthesis. The</td>
</tr>
<tr>
<td></td>
<td></td>
<td>curriculum developed and/or</td>
<td>and thoughtful synthesis.</td>
<td>conclusions, curricula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the questions answered are</td>
<td></td>
<td>developed and/or questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>central.</td>
<td></td>
<td>answered provide creative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>solutions to a challenging</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>focus.</td>
</tr>
<tr>
<td><strong>Implications on</strong></td>
<td>There is little evidence</td>
<td>Implications of the</td>
<td>Implications of the</td>
<td>Implications of the</td>
</tr>
<tr>
<td><strong>Classroom</strong></td>
<td>of any implications of the</td>
<td>scholarly work on classroom</td>
<td>scholarly work on classroom</td>
<td>scholarly work on</td>
</tr>
<tr>
<td><strong>Practice</strong></td>
<td>scholarly work on classroom</td>
<td>practice are general and/or</td>
<td>practice are convincingly</td>
<td>classroom practice are</td>
</tr>
<tr>
<td></td>
<td>practice.</td>
<td>lack a connection to future</td>
<td>defined and are related to</td>
<td>effective and rich in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>use.</td>
<td>future use.</td>
<td>detail and tightly</td>
</tr>
<tr>
<td><strong>Professional</strong></td>
<td>There is little evidence</td>
<td>Significance of the</td>
<td>Scholarly work conveys</td>
<td>Scholarly work will</td>
</tr>
<tr>
<td><strong>Significance of</strong></td>
<td>of the impact of the</td>
<td>scholarly work to the wider</td>
<td>significance to the wider</td>
<td>inform the wider</td>
</tr>
<tr>
<td><strong>Work</strong></td>
<td>scholarly work on a wider</td>
<td>community is general and/or</td>
<td>professional community and</td>
<td>community and engage</td>
</tr>
<tr>
<td></td>
<td>professional community.</td>
<td>is ill defined or weakly</td>
<td>this is fully delineated.</td>
<td>them in challenging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>explained.</td>
<td></td>
<td>ways producing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>significant impact of this</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td>Sentence structure varies</td>
<td>Sentences are varied in</td>
<td>Sentences are varied in</td>
<td>Language is precise,</td>
</tr>
<tr>
<td><strong>Competency</strong></td>
<td>little, organization is</td>
<td>length or structure but may</td>
<td>length and structure. They</td>
<td>powerful and engaging.</td>
</tr>
<tr>
<td></td>
<td>confusing or grammatical</td>
<td>not show as much variety as</td>
<td>are creative and well</td>
<td>Sentences are varied in</td>
</tr>
<tr>
<td></td>
<td>errors distract from</td>
<td>a level. 2 Communication</td>
<td>connected. Communication</td>
<td>length and structure.</td>
</tr>
<tr>
<td></td>
<td>the scholarly work</td>
<td>may have less organization</td>
<td>flows and contains few of</td>
<td>They are creative and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or may have problems with</td>
<td>my grammatical errors.</td>
<td>well connected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>grammar.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product Format/</strong></td>
<td>Product format does not</td>
<td>Product illustrates</td>
<td>Product mostly illustrates</td>
<td>Product format</td>
</tr>
<tr>
<td><strong>APA Style</strong></td>
<td>conform at all to APA or</td>
<td>race or occasional, but not</td>
<td>use of APA or accepted</td>
<td>completely follows all APA</td>
</tr>
<tr>
<td></td>
<td>accepted formatting</td>
<td>consistent use of APA or</td>
<td>formatting guidelines, but is</td>
<td>and accepted formatting</td>
</tr>
<tr>
<td></td>
<td>guidelines.</td>
<td>accepted formatting</td>
<td>still somewhat inconsistent.</td>
<td>guidelines.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>guidelines.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This Rubric is meant to be formative as well as summative. A min score of “3” in each aspect is required for successful completion, and consequently is unlikely on thesis proposals or first drafts of products.

**PLEASE NOTE:** We are continually working to improve the quality of our program through the quality of products our students produce. As such, this version of rubric is currently under revision and may be updated in the course of your graduate career. You will be informed of any changes as they are approved.
SELECTING THE THESIS OPTION

"The thesis is a scholarly contribution to knowledge... The thesis may take the form of a study, an experiment, a survey... and may delve deeply into some aspect of a specialized academic field or may concern itself with methodology and materials of instruction. The preparation of a thesis should develop in the student a broader understanding of the world's knowledge and a more genuine appreciation of the research efforts of others" (UNI Graduate College Thesis Manual, p. 1-2).

The following guidelines augment the Graduate College Thesis and Dissertation Manual, addressing specific content and methodology requirements of the Science Education thesis. Students should refer to the Graduate College Website for the full UNI Graduate College Thesis Manual for stylistic requirements and deadlines (listed under “Important Dates for Graduate Students”).

The thesis should result from a rigorous experimental, quasi-experimental, or qualitative research study that adheres to the protocols used in professional science education research. Successful completion of SCI ED 6500 Research Methods in Science Education (or MEASRES 6205) will provide a solid foundation in designing a sound research project. It should focus on a problem or question which, upon completion, adds to the knowledge base in science education. The generation of a thesis topic therefore requires familiarity with the work of others as published in the science education research literature.

KEY REQUIREMENTS OF THE THESIS

THESIS COMMITTEE

The thesis committee consists of a minimum of three (maximum four) UNI Faculty members, at least two of which must be Science Education Faculty where one of them serves as the Chair of the committee and major research advisor. Additional members must be CHAS or CoE faulty and all members must be on the UNI Graduate Faculty. Your assigned graduate faculty advisor may serve as the Thesis Committee Chair and act as your major research advisor, or if the area of research warrants, a new major advisor can be selected and become the Thesis Committee Chair. Committee members must be selected before the research project is designed and conducted and should be chosen with the assistance of your advisor. A Thesis Committee Approval form must be submitted to the Science Education Graduate Coordinator and Graduate College for approval. The thesis committee assists the student in research design and in the writing of the thesis. The committee eventually accepts or rejects the thesis.
THESIS PROPOSAL

A draft of the Introduction, Cursory Literature Review and proposed Methodology (Chapters 1-3, described below) should constitute the Thesis Proposal. This Thesis Proposal is formally presented to the committee and MUST BE ACCEPTED BEFORE research starts.

HUMAN PARTICIPANTS

Student research involving human participants must be conducted in compliance with the University policy for protection of human subjects. Students planning such projects must consult their thesis advisor about University human participant regulations before beginning any research activities that involve human participants. Further information about regulations and completing a Human Subjects Review Form are available on the IRB Website.

REQUIRED STYLE AND TIME LINE


The time line for completion of thesis preview and thesis submission is not intuitive and may appear to be over zealous. For example, deadlines for a May graduation occur in March of that semester. Consequently, a greater than average level of planning and forethought is required to meet these deadlines and the writing process often takes much longer than expected. See the Important Dates for Graduate Students for exact dates.

THESIS COMPONENTS

Length and specific components of the science education master’s thesis vary depending on the nature of the study. The following are suggestions intended to guide the student:

The Title: The best title for a thesis is one that indicates its content as precisely and briefly as possible.

The Abstract: The first element of a thesis document is the abstract, however it should be written last. The abstract should present an account of the thesis that will enable an interested person to determine the desirability of reading the entire work. It needs to be dense with information but also readable, well organized, brief, and self-contained. The maximum length of the abstract is 200 words.
Chapter 1 Introduction: This is an overview of the entire study and should address the following:

1. The framework/context for the research topic; and the problem or question being addressed (including hypotheses if statistical analysis is being used).

2. A brief synopsis of existing research/literature that addresses similar problems or questions and their shortcomings (a more thorough review should be saved for Chapter 2).

3. How the resolution of that problem or question will inform the practices or knowledge of other science education professionals.

4. An overview that clarifies the basis for conducting the study, the methods for executing the study, and the means by which results of the study may be analyzed and interpreted.

Chapter 2 Literature Review: This section explores the research literature that addresses the problem or question of the thesis. All dimensions of the question should be situated within the context of a theoretical framework around which other researchers have explored the question or some facet of the question. It should culminate in a summary that situates this study atop prior works—how it is intended to advance what we know about the problem or question, i.e., how it “fills a gap” in our knowledge base. Use primary literature, including the Journal of Research in Science Teaching, the Journal of Science Teacher Education, and others as recommended by your advisor and discussed in SCI ED 6500 Research Methods in Science Education.

Chapter 3 Methodology: This section should thoroughly describe the data collection and analysis techniques used in developing an answer to the research question. Defend the chosen techniques by reference to prior studies (from the literature review) or by reference to appropriate research protocols designed for this type of study. Data collection and analysis methods (statistics or qualitative) must be defensible as valid and reliable by external standards and accepted practice in science education research.

Chapter 4 Results: This section presents the results of data collection through qualitative, quantitative, or mixed methods. Quantitative data should include tables, graphs, and figures where appropriate. Qualitative data should be logically organized and presented.

Chapter 5 Conclusion: This section is where the answer to the research question is directly addressed. Discuss your findings in the context of prior work established in the literature review. How do the outcomes of your study agree with, contradict, or in some other fashion
merge with current thinking in science education? What explanations might be proffered for reconciling your study's insights with prevailing notions? Also address shortcomings of your study—potential sources of bias, flaws, or other identifiable shortcomings of the research study to which the reader should be advised. Finally, suggest future research options related to this study.

**References:** Be sure to include all references cited.

The finished thesis study should be of sufficient rigor and design quality for the development of a publishable manuscript in a science education research journal.

**THESIS PRESENTATION**

Upon satisfactory completion of the thesis document, a public presentation must be conducted. The presentation should be ~45 min in length and summarize all elements of your project. The presentation should be done during “regular” UNI sessions and according to the [Important Dates for Graduate Students](#).

This presentation can NOT occur before the thesis document is in its final edited form. The writing and editing process often takes several drafts (and several months) during which, students will work mainly with the thesis committee chair but other committee members are available as additional resources.

Use the [Thesis Check List and Timeline](#) below to help plan your thesis.
THESIS CHECK LIST AND TIMELINE (IN ORDER)

_____ • Take SCI ED 6500 Research Methods in Science Education (or MEASRES 6205).

_____ • Meet and consult with your advisor on selection of a possible topic, committee selection and file student request to change Advisement Report to the Thesis option.

_____ • Select thesis committee members and submit Thesis Committee Approval Form.

_____ • With advisement from your Thesis Committee Chair, write the Thesis Proposal. At this point, you may start taking some of the required 6 hrs of SCI ED 6299 Research credit. All 6 hrs are expected to be spread out over the following semesters until graduation.

_____ • Formally present the thesis proposal to your Thesis Committee and obtain approval of the project from the committee before proceeding.

_____ • Obtain IRB approval (if using human participants).

_____ • Conduct your research study.

_____ • With advisement from your Thesis Committee Chair, edit the Thesis Proposal to reflect what actually occurred in your study and write the Results and Conclusions chapters. Consult with other members of your committee as needed.

_____ • Inform the Science Education Graduate Coordinator of plans to graduate by:
  a. Jan 1 for May graduation
  b. March 1 for Summer graduation
  c. Sept 1 for December graduation

_____ • File Application to Graduate and check your Advisement Report in MyUNIverse. File any necessary student requests to finalize your Advisement Report.

_____ • Schedule the Thesis Preview (contact janet.witt@uni.edu) according to the dates outlined in the Important Dates for Graduate Students.

_____ • Arrange a time when the entire thesis committee can be present (NOTE: this is often difficult during the summer months) for the public presentation of your thesis. Bring no fewer than three (3) copies of the Thesis Approval Signature page (see the Thesis Manual) printed on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton for signing.

_____ • Pay the thesis binding fee at Cashier’s window, Office of Business Operations. Save the receipt.

_____ • After the thesis has been approved by all committee members, publically presented AND previewed by the graduate college, print the thesis on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton. Deposit the thesis, the 3 copies of the signed Thesis Approval Signature page, and the binding fee receipt in the graduate college by the date listed in the Important Dates for Graduate Students.

_____ • The hard copy of the thesis will be formally previewed one last time and you will be contacted if any further changes are required (often, only 1-2 more pages need to be edited and re-printed).

_____ • After final approval from the Graduate College, submit any additional copies desired by yourself or your advisor on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton to the Science Education Office. These copies will be bound free of charge and sent to your when ready.
APPENDIX G: NON-THESIS OPTION DETAILS

SELECTING THE NON-THESIS OPTION

Students choosing the non-thesis option demonstrate their knowledge of science education concepts through completing the science education core courses AND completing a Creative Component. Options for the Creative Component include:

1) Curriculum Development Project
2) Action Research Project
3) Application for the Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) OR Portfolio Project based upon the National Board for Professional Teaching Standards (NBPTS)

Specific choice of option should be made in consultation with your major advisor. More elaborate descriptions of each option are listed below.

DESCRIPTION OF CURRICULUM DEVELOPMENT PROJECT

The curriculum development project allows graduate students the flexibility to design curriculum that has significance in a formal or informal classroom setting or provides a significant service to the professional community of science educators. Possible ideas for the curricular development project include, but are not limited to:

- Original curriculum development (not simply a compilation of other work)
- Assessment package for the classroom
- Development and/or integration of technology within an existing curriculum

DESCRIPTION OF THE ACTION RESEARCH PROJECT

The action research project option allows graduate students the opportunity to conduct a short research study that has significance to his/her classroom setting or professional community. Action research is often designed with a focus on one’s classroom/students to investigate an issue or problem. Possible ideas for the action research project include, but are not limited to:

- Impact of different pedagogies upon student achievement/attitudes
- Impact of the integration of technology upon student achievement/attitudes
- Impact of different curriculum designs upon student achievement/attitudes
- Impact of different content on student’s understanding of the nature of science
DESCRIPTION OF THE PAEMST APPLICATION AND NBPTS PORTFOLIO

The Presidential Award for Excellence in Science (PAEMST) Application allows graduate students the opportunity to fulfill the portfolio requirements to apply for the PAEMST Award, with the purpose of the graduate student applying for the award in elementary or secondary science. The requirements for the PAEMST award can be downloaded from the PAEMST website.

The National Board for Professional Teaching Standards (NBPTS) Portfolio may also be used to satisfy this non-thesis project requirement. However, due to changes in NBPTS portfolio requirements, please consult with your advisor if you wish to pursue this option. Students need not apply for NBPTS Certification or win the PAEMST Award to satisfy the requirement for the MA project.

In order to fulfill the PAEMST requirement, the graduate student must complete portions of each of the three award application components (Administrative, Narrative, and Video). The final paper must also include a literature review on the impact of the practices of PAEMST winning teachers on student achievement and motivation.

KEY REQUIREMENTS FOR THE CREATIVE COMPONENT

COMMITTEE AND PROPOSAL

Each graduate student shall propose his/her creative component via a meeting of two members of the Science Education Faculty, including the graduate student's advisor and an Outside Reader. Additional faculty can be consulted as appropriate. For this proposal the graduate student must prepare a draft of the Introduction and Framework, Relevance and Literature Review, and proposed Project Details (Chapters 1-3, described below). Once approved, the graduate student and the advisor should determine the timeline for completion of this project, so completion of degree can proceed in a timely fashion.

COMPONENTS OF THE WRITTEN DOCUMENT


The written document should include the following sections:

Chapter 1 Introduction and Framework: This section must include a statement of the project, a brief explanation of the creative component product and an explanation of the significance of the creative component to classroom and/or professional community.
Chapter 2 Relevance and Literature Review: The literature review should thoroughly describe the significant findings of the primary science education literature relevant to the chosen topic. Be sure to explain the potential impact (relevance) of the literature findings on the classroom setting and/or the professional community. Additionally, connections/mapping to the Iowa Science Standards, or District standards should be made here if appropriate to the project.

Chapter 3 Project: This section contains a more complete explanation of the project and time line. For example:

- a Curriculum Development Project would include a description of unit plans, assessment plans, or the integrated technology;
- an Action Research Project would require a description of the research question(s) and data collection and analysis methods;
- a PAEMST Project would include a summary of and artifacts for the required portfolio components (see Appendix H for a detailed list of requirements).

Actual curriculum or assessment instruments can be provided in this section or can be appended to the document. If electronic media are used, they can be included in an appropriate form (e.g. CD/DVD, flash drive, etc.).

Chapter 4 Reflection on the Project: The final section summarizes experimental results (for Action Research projects) and describes what was learned through the project. Be sure to describe and discuss:

- the impact of project on the classroom setting and/or the professional community
- how the project could be repeated, extended or continued and how the project should be revised based on what was learned
- how completion of this project led to your professional growth
- future directions for your professional growth

References: Be sure to include all works cited. If resources for curriculum development, etc. were used include a general bibliography of those resources.

CREATIVE COMPONENT PRESENTATION

The creative component presentation allows graduate students to present their work to the science education faculty, graduate students and other interested persons. The presentation should focus on four aspects surrounding the creative component:

1) a brief synopsis of the project;
2) the significance of the project to yourself and the wider professional community;
3) what you learned from the project;
4) where do you go from here?

This presentation may be made in person on campus OR on-line video conferencing and should include an electronic slide presentation and time for questions.

<table>
<thead>
<tr>
<th>NON-THESIS CHECK LIST AND TIMELINE (IN ORDER)</th>
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<tr>
<td>_____ 1. Start your science education core, science content and elective courses.</td>
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<td>_____ 2. Meet and consult with your advisor on selection of the Creative Component: Curriculum Development Project, Action Research Project, or Portfolio project AND discuss options for your Outside Reader.</td>
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<tr>
<td>_____ 3. Contact your Outside Reader for his/her acceptance and report this to your advisor and the Graduate Coordinator.</td>
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<tr>
<td>_____ 4. Present your Proposal to your Advisor and Outside Reader. At this point, you may start taking some of the required 3 hrs of SCI ED 6299 Research credit. All 3 hrs are expected to be spread out over the following semesters until graduation.</td>
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<tr>
<td>_____ 5. Conduct work on your final project and submit drafts of the written document to your graduate advisor for revisions. Consult with your Outside Reader as needed. Complete your final product according to Non-Thesis guidelines.</td>
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<tr>
<td>_____ 6. Complete your science education core classes, your science content credits, and elective credits.</td>
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<td>_____ 7. File Application to Graduate and check your Advisement Report in MyUNIverse. File any necessary student requests to finalize your Advisement Report.</td>
</tr>
<tr>
<td>_____ 8. Schedule and complete the project Presentation in consultation with your advisor.</td>
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<tr>
<td>_____ 9. Submit the final written document to your advisor and Outside Reader one month in advance of intended graduation date. Get approval from both your advisor and Outside Reader.</td>
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<tr>
<td>_____ 10. Follow instructions emailed to you by the Graduate Coordinator regarding final submission of your paper and posting on the Institutional Repository.</td>
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<tr>
<td>_____ 11. Submit any desired paper copies on 24 pound white bond paper, 8½ x 11 inch, acid free, 25% or 100% cotton to the Science Education Office for binding.</td>
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Requirements for the PAEMST award can be downloaded from the PAEMST website. All parts of the PAEMST application below would be included in Chapter 3 PROJECT, with the component headings serving as the “heading dividers” within the chapter. This includes:

- A brief introduction to the components at the beginning of the chapter.
- A description of the video including a link to the video on YouTube on a “private setting”. Alternately, a DVD can be included as part of an appendix

The PAEMST application consists of three components: Administrative, Narrative, and Video.

I. ADMINISTRATIVE COMPONENT – The administrative component includes a teacher information form, employment verification form, letters of recommendation, résumé, and a voluntary demographic information form.

- Teacher Information Form Complete form online.
- Employment Verification Form Download and print form, obtain appropriate signature, then scan and upload signed and dated form into online application.
- Letters of Recommendation Scan and upload three signed and dated letters of recommendation into online application.
- Résumé Upload file into online application. (2 page limit)
- Demographic Information (Optional) Form Complete form online.

II. NARRATIVE COMPONENT – The narrative component consists of a written response and supplemental materials. The applicant must select a mathematics or science concept that will be used in the written response to the Five Dimensions of Outstanding Teaching.

- Written Response Download template. Upload completed file into online application. (12 page limit)
- Supplemental Materials Upload files into online application. (10 page limit)

III. VIDEO COMPONENT – The video component consists of a videotaped classroom lesson that corresponds to the important concept chosen and discussed in the written response to the Dimensions of Outstanding Teaching.

- Video Upload file into online application. (Applicants are highly encouraged to upload their video well in advance of the application deadline.)