The Mallinson Institute for Science Education

Handbook for

Graduate Students

October 2020

A BRIEF HISTORY OF GRADUATE SCIENCE EDUCATION
AT
WESTERN MICHIGAN UNIVERSITY
Prepared by
Jackie Mallinson, Robert Poel, and Joseph Stoltman

When George G. Mallinson arrived at Western State College of Education in 1948, only

one master's degree was offered. And, the degree was actually awarded by the University of

Michigan, under a cooperative plan with the four state teachers Colleges. The degree was a

master of arts in education, with specialization in one of several fields. One field was "Teaching

of Science and Mathematics," with Mallinson serving as faculty advisor. Soon Mallinson

became Chairman of Graduate Advisors; then Director of Graduate Studies when Western

initiated its graduate program and began awarding masters degrees in 1952; and finally Dean of

the School of Graduate Studies, which later became the Graduate College when Western was

elevated to University status.

Throughout his tenure as Dean, Mallinson maintained a strong alliance with his major

field of interest, science education. In the 1960s the master's degree in "The Teaching of

Science" was greatly strengthened by the impact of approximately fifty National Science

Foundation sponsored Institutes for Teachers held at Western and directed by Mallinson. From

1952-1965, about 200 master's degrees were awarded in "Teaching of Science and

Mathematics." In 1965, the two fields began offering separate degrees, and in the decade from

1965-75, there were about 200 more master's degrees conferred in "The Teaching of Science."

As early as 1958, initial plans were developed for doctoral programs at Western

Michigan University. The real "push" for such programs, however, began in early 1964, and a

Ph.D. program in Science Education was one of the first five programs to be developed. The

doctoral program developed as a natural extension of the very successful master's program, both

in terms of the number of graduates and the service to practicing science teachers in content and

methodology of science instruction. And, without question, the development of the Science

Education doctorate was in part due to Mallinson's interest in this field. He was insistent that the graduate program in science education should lead to a doctor of philosophy degree (Ph.D.), with strong emphasis on scientific content. At Western, doctoral candidates completed and developed proficiency in three major fields of science, as well as proficiency in the theory and principles of teaching and learning.

In May 1965, the Board of Trustees authorized the development of doctoral programs (including Science Education); and in December 1965 the State Board of Education approved the proposals. There were four full-time students in the first group of science education doctoral candidates. The first Ph.D. degree in Science Education was awarded to Dr. Thomas VanKoevering in 1969; and the second Ph,D. was awarded to Dr. Robert H. Poel in 1970. Dr. Poel accepted a faculty position at Western and subsequently developed the Center for Science Education as an outreach program for professional and curriculum development. Since the initial degrees, a total 46 additional Ph.D. degrees in Science Education have been awarded by Western Michigan University. The record of Ph.D. awardees makes Western one of the most productive and respected Science Education doctoral programs in the United States. Throughout their careers and the first 30 years of graduate science education at Western, Dean George Mallinson and Jacqueline Mallinson, a noted science educator and author in her own right, were the primary force behind the program and were responsible for guiding, providing leadership, and energizing the programs.

Graduates of the program have gone on to contribute too many areas of society. Among the graduates are a number of college professors; public school administrators; science curriculum directors; computer experts; environmental science specialists; research scientists; city administrators; and museum directors. The program, over the years, has also enrolled and graduated highly qualified foreign students from places such as Malaysia, Belize, Liberia, Lybia,

Brazil, and Venezuela. International students returned to their countries with specialized knowledge of science education, which they apply within that national context.

In 1994 the Science Education graduate programs were assigned to the newly formed Department of Science Studies, chaired by Professor Larry Opplinger, a physicist. The new unit also had the responsibility to design a new science education curriculum for elementary education students that would demystify science and engage students in an inquiry mode of instruction. The process was partially supported with a three-year grant from the Fund for the Improvement of Post-Secondary Education (FIPSE). The important outcome for the graduate programs was that the newly planned undergraduate program would provide significant teaching professional development experiences, and research opportunities for new Ph.D. students. The practical implications of university level teaching and research were thus integrated into the experiences of graduate students in science education.

In 2000 another change occurred when the Department of Science Studies was dissolved and the Graduate Programs in Science Education were reorganized under the auspices of The Institute for Science Education. The focus of the program returned to its initial mission as an interdisciplinary program – the original vision of Dr. George Mallinson. The newly formed Institute was organized as an interdisciplinary science unit that could draw upon the faculty resources of the traditional science departments – biological sciences, chemistry, geography, geosciences, and physics. Faculty members in the science departments interested in graduate level science education were invited to apply for joint appointments in the Institute. The faculty members in the Department of Science Studies joined science departments that complemented their content specialty as their home departments in the College of Arts and Sciences. Joint appointment invitations were also extended to faculty members in the College of Education who were doing research and teaching in science education. After the reorganization, the Dr. Leonard Ginsberg (Associate Dean of Arts and Sciences) was appointed as Interim-Director of the

Institute. The Institute became responsible for the graduate level courses and science education undergraduate courses, six in number plus the methodology course in teaching science in the secondary school. A transition process began in 2001 to move undergraduate courses to the appropriate science departments. That process was well underway in 2002.

The Institute is also the host to two important service units. The first is the Center for Science Education, designed to provide professional development for science teachers and curriculum development expertise for K-12 schools. In addition, The Center provides opportunities for research into the impacts of content, curricula, and teacher education on student learning. The Center was formed in 1987, and has played a significant role in both state and national efforts to improve the scientific capacity of students and teachers. The second, Science and Mathematics Program Improvement (SAMPI), is designed to help improve educational programming and evaluation for schools, colleges, and other educational entities with a science or mathematically education mission. Both the Center and SAMPI provide specialized services that complement each other as well as other projects within and outside of Michigan.

The official name of the unit became The Mallinson Institute for Science Education in August 2002, in honor of the lifelong professional commitment to Western Michigan University by George and Jackie Mallinson. Joseph P. Stoltman, a geographer and faculty member at Western for 31 years, was named the first Director of The Institute. In 2002 the mission of The Institute, one of several degree granting institutes at the University, was to promote and extend the masters and doctoral programs. Three Ph.D. degrees have been awarded during the 2001-2002 academic year, and there are thirteen doctoral and forty-four masters students actively pursuing degrees. In the fall of 2002, the faculty members with joint-appointments in The Mallinson Institute included; two in biology education; four in physics education; one in earth science education; and two in the College of Education, and one faculty member as a visiting scholar. The Mallinson Institute for Science Education is committed to the quality graduate

programs envisioned by George Mallinson. The faculty members are dedicated to its mission and the students represent the next generation of science education leaders.

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········ Graduate School

SURVIVING & THRIVING IN GRADUATE SCHOOL
by David Rudge

"Everyone has a talent. What is rare is the courage to follow the talent to the dark places where it leads." (Erica Jong) or as I like to put it: "The world is full of smart people who never amount to anything."

As you embark on your career as a doctoral student, consider the following vision of what might happen to you:

You approach graduate school the way most approach their undergraduate degree, largely in terms of the taking of credits. You expect the department to tell you what classes to take. You choose when and what to take primarily with reference to (1) whether it will count towards the degree and (2) convenience vis a vis your other obligations. The comprehensive exams, like the dissertation, are obstacles to deal with in the future, after your course work is done. The classes you take seem to have no relevance for you, and in fact most of the time it is unclear why they are considered requirements for the degree. The instructors assign readings, but you recognize early on that you can get away without reading the articles both because you know how to bluff your way through a discussion you haven't prepared for and because the major projects for the course may not involve any evidence of this background preparation.
When course work is over, you now put your mind to passing the comprehensive exams. You suddenly realize that the papers you should have read in connection with your classes are fair game, moreover, the department expects you to have read still other papers not "covered" in these classes. It gets worse: you discover you lack the basic skills necessary to make sense of the readings you must prepare. Somehow you get through the comprehensive exams with a passing grade.
Now you have to figure out what to do for a dissertation project. You meet with the Director and decide to work with someone primarily on the basis of the fact that this person shares your science content focus or because you like the individual, not with reference to the faculty member's research interests and working style. Months go by. As you start to work with this individual, it becomes ever increasingly apparent that he/she expects you to come up with a dissertation problem. Why isn't your advisor giving you a problem to pursue? You finally decide on one and approach your advisor about it. It has nothing to do with the advisor's area of expertise, and you discover to your dismay that he/she is not particularly interested in pursuing it with you. Your advisor reluctantly agrees to help you pursue the project and you discover he/she is not able to give you expert guidance. During the months that follow your advisor seems very good at finding problems in your ideas, but isn't telling you how to solve them. Months go by and finally you have a prospectus proposal. The committee meets and has a rancorous meeting about the project. They agree to let you pursue it, but only if you address multiple problems they have identified. Months go by, perhaps years. You feel lost and frustrated, with the only thing keeping you around is thought of how much time and effort you will have wasted if you leave the program.

DON'T LET THIS HAPPEN TO YOU.

The secret to success in graduate school begins with recognition that graduate school is an opportunity, not an entitlement. Our program has been developed specifically to provide you with opportunities to develop the knowledge base and skills you will need to succeed as a science educator. *We all want you to succeed.* But whether or not you take advantage of these opportunities is largely up to you.

Start by making a list for yourself of the reasons why you have decided to embark on a career in science education, and in particular, what questions about teaching and learning you find most interesting.

STUDY SKILLS

View each class that you take as an opportunity to update and elaborate your interests, as well as a chance to learn about a faculty member's area of research. If you have an idea for a project in mind, consider pursuing it in the context of an independent study or thesis project. To the extent that you can, take every reading you are assigned seriously, even if its relevance to your dissertation project is not obvious. It may be that your interests change, and something that looks completely irrelevant will indeed be essential. It is also the case that as a future science educator, you need to have a well rounded background in the issues of our field and part of developing this background starts with some indepth studies of what are now regarded as influential papers in our field. Finally, recognize that the skills you develop as you try to make sense of each paper you read are in and of themselves valuable when it comes to taking the comprehensive exams and developing a literature review for your dissertation. Insist on feedback on papers, even when you receive a high mark. It's just as important to know why a paper is considered to be well written as it is to know how it might be improved.

TIME MANAGEMENT

Time management is, in point of fact, a misnomer. People who are efficient in their use of time have learned that the great secret of time management is to spend time in accordance with your stated priorities. While your formal responsibilities in graduate school may involve a relatively minimal number of time commitments (e.g. contact hours with students, classes, etc.), the expectation of your graduate department is that you are using the balance of your time on your studies. If the freedom to schedule your own time leads you to spend lots of time pursuing other interests, you have only yourself to blame when the process takes longer than you'd like. Don't come into graduate school with a rigid time frame for when everything must be done unless you are willing to think through (just like planning a trip) all the steps that must be taken care of to meet this self-imposed deadline. Your committee will view the project as being completed when it reaches a certain level of quality, not when a certain calendar date has arrived.

REALISTICALLY ASSESS WHAT IS AVAILABLE

The collective wisdom and experience of the small number of faculty we have here can support many, but not all possible dissertation projects. Consider soliciting the advice of others in the WMU community and also at other institutions.

COLUMN

The care and maintenance of your adviser

Graduate students bear as much responsibility as their mentors for ensuring that they are well guided through their degrees, say **Hugh Kearns** and **Maria Gardiner**.

Ever since the advent of graduate school, students have complained about their advisers. It is almost an article of faith. The adviser is never available or is too available; gives too much feedback or not enough; is too critical or isn't providing enough direction; and so on. Exchanging horror stories with other students is a great way to bond. But advising goes both ways — and if, after careful reflection on their own studies and progress, students determine that they are not getting the guidance they require, they must address the deficiencies.

It is not surprising that advisers figure large in graduate students' conversations. In 2009, the US Council of Graduate Schools in Washington DC reported survey results showing that 65% of the 1,856 doctoral students who responded identified mentoring or advising as a main factor in PhD completion. Our own research at Flinders University in Adelaide, Australia, and our experience at graduate-student workshops across the world suggest that the adviser–student relationship has a big impact on completion time. It certainly influences whether students are still smiling at the end of their degrees!

Students often assume that once they call someone an adviser, he or she automatically acquires all the skills of advising. After all, if your adviser is the world leader in stem-cell technology, he or she must excel at the seemingly simple task of advising — not to mention possess highly developed interpersonal skills and a keen interest in graduate-student development. Sadly, that is not the case.

Sometimes, advising is a weakness of an otherwise very accomplished scientist. This is not surprising. Mentoring tends to be a private business, and often the only model available is an adviser's own experience of having been advised. If it was good, they decide to copy that style and methodology; if it was bad, they do the opposite. There is no guarantee that either approach will provide the student with the guidance he or she needs.

A proactive approach is necessary. If your adviser isn't looking after you in the way you need, then you need to look after them. At some point in the PhD journey, most graduate students come to an important realization: "This is my thesis. My name is written on the front of it. I need to become the driver." The sooner the candidate does this, the better. If you're not getting feedback, clear direction or the necessary resources, then you must do something about it. What does this mean in practice? Let us take some examples.

MEETINGS

A comment we often hear at our workshops is, "My adviser is lovely but he/she is just so busy that we never get to talk about my thesis". And our response is, "Yes, your adviser is busy. All advisers are busy and will continue to be busy. Regardless, you need to organize meetings where you can get real face time and talk about your thesis." We're not recommending a quick chat in the coffee room or a brief word in the lab. Nor do we mean a lab meeting.

We mean regularly scheduled meetings focusing on your thesis. You will probably have to schedule them and follow up to make sure that they happen. And when a meeting is cancelled, you will have to reschedule it and persist until it happens.

In our experience, just scheduling the meeting isn't enough. You can't assume that your adviser hosts productive meetings or can intuit what you need to know. You need a specific, uncomplicated agenda that could include such action items as what you've done in the past two weeks; feedback on written work; what you'll do in the next two weeks; the next meeting.

This all sounds very straightforward. But if more students followed these steps, many adviser–student issues could be resolved.

FEEDBACK

Again, in an ideal world, your adviser would be skilled at providing supportive comments, delicate in pointing out areas for improvement and deft at intuitively knowing the level of feedback you seek. But this is a fantasy. One student described her feedback experience as similar to being a victim in a drive-by shooting — she handed over her work, it was riddled with bullets and she was left with a bloodied mess as the shooter drove off.

To be fair, e-mailing a chapter to an adviser and saying "Give me feedback" is like walking into a restaurant and saying "Give me food." You need to be a bit more specific. When handing over your work, identify the type of feedback you are looking for. You might say, "This is an early draft, so I just want feedback on the overall direction," or "Please focus on the discussion on page six." If the feedback you get isn't helpful, ask for more detail. Maintaining your adviser means asking for what you need rather than hoping that he or she will know what to provide.

MANAGING UP

One of the secrets of looking after your adviser is working out what they want — and what most advisers want is a student who comes to them with suggestions and solutions as well as problems, gets things done and makes the job of advising easier. In business this is called 'managing up'. When we work with graduate students we call it the 'care and maintenance' of your adviser.

So although it is natural to complain about your adviser — and can even be cathartic — it is not enough. If your adviser is not giving you what you need, you need to go out and get it. ■

Hugh Kearns and **Maria Gardiner** lecture and research in psychology at Flinders University in Adelaide, Australia, and run workshops for graduate students and advisers (see ithinkwell.com.au).

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SECTION @

During your first couple of days, you should receive the following from your department:
- Bronco NetID
- E-mail account
- WIN (Western ID Number)

The Bronco NetID and password are used for access to secure transactions within GoWMU (WMU's portal), e-mail, e-learning, file storage, computer registration and personal Web pages (homepages.wmich.edu). WMU will never ask for your username and password via e-mail. Your password should never be given to anyone, including WMU staff. Beware of phishing tactics that ask for your private information.

A WMU e-mail address is created at the time of the Bronco NetID creation. This e-mail address is in the format of firstname.lastname@wmich.edu. It is the e-mail address used for all official mailings from WMU. All e-mail to students should be sent using the student's wmich.edu address.

The Bronco Card® is the University's official identification card, and is obtained and serviced at the Bronco Card Center (located in the Bernhard Center). The Bronco Card® combines many features includng building, computer lab and library access.

View and Print Class Rosters:
1. Logon to http://gowmu.wmich.edu.
2. Enter your Bronco NetID and Password
3. On the Faculty/Staff Home tab, select "Summary Class List" in the "My Work" channel
4. Select the appropriate term from the drop down box.
5. Select the appropriate CRN/Title from the drop down box, click Submit.
6. To print the class list, use the print option in your browser, OR copy the class list to a spreadsheet.

PC Users	MAC Users
• Highlight the list of names	• Highlight the list of names
• Select Copy	• Select Copy
• Open Microsoft Excel	• Open Microsoft Excel
• Select Paste	• Select Paste/Special
• Perform a "save as" and/or print	• Perform a "save as" and/ or print

7. To choose another section, scroll to the bottom of the screen and click on "Return to Faculty & Advisor Menu".
8. Select "CRN Selection".
9. Select the appropriate CRN, click Submit.
10. Select "Summary Class List".
11. Follow steps 6 – 10 for additional courses.
12. When you have completed viewing your class rosters, log out of GoWMU and close the browser.

To Submit Grades
You can begin submitting your final grades on the Monday following the last day to withdraw. The deadline for grade submission is noon on the Tuesday following the end of the term. Grades can be changed up until the grade submission deadline. Once a grade is rolled to the student's transcript, you must use the Removal of Incomplete/Grade Change Form in order to change a grade (see Grade Changes).

1. Logon to http://gowmu.wmich.edu.
2. Enter your Bronco NetID and Password
3. On the Faculty/Staff Home tab, "Final Grade Worksheet" in the "My Work" channel

4. Select the appropriate term from the drop down box.
5. Select the appropriate CRN/Title from the drop down box, click Submit.
6. Enter a grade from the drop down list for each student (if you have a large class, you will have multiple "record sets"). It is recommended to submit each page before moving to the next.
7. Click the "Submit" button at the bottom of the page to save your grade entries. You do not have to have all grades entered before submitting. **Note**: You will not receive an e-mail confirmation.
8. To choose another course, scroll to the bottom of the screen and click on "Select a New CRN".
9. Select the appropriate CRN/Title, click Submit.
10. Select "Final Grade Worksheet".
11. Follow steps 8-10 for additional courses.
12. When you have graded all of your courses, log out of GoWMU and close your browser.

Grade Changes
Grade changes can be made within 60 business days after the end of a semester.

1. Logon to http://gowmu.wmich.edu.
2. Enter your Bronco NetID and Password
3. On the Faculty/Staff Home tab, under "My Work" click on the link "Removal of Incomplete/Grade Change Form".
4. Verify that your name and WMU e-mail are correct. Note: Only Instructors of record can make a grade change.
5. Choose the type of grade change from the drop down menu.
6. Select the term from the drop down menu.
7. Select the appropriate course from the drop down menu.
8. Select the appropriate student from the drop down menu.
9. Select the appropriate grade from the drop down menu and add any necessary comments.
10. If you are removing an Incomplete, the information will be sent electronically to the Registrar's Office. If you are either changing a grade or re-evaluating a grade, you will be required to print out the paper form, sign it, have it signed by your Chair. It will be sent to the Registrar's Office for processing.

FERPA

To avoid violations of FERPA rules, DO NOT:

- display student scores or grades publicly in association with names, SSNs, WINs (or any portion - e.g. last four digits of WINs) or any other personal identifiers. *
- put papers, exams, or any other graded student work in publicly accessible places. Students are not to have access to the scores and grades of other students.
- share student education record information, including grades or GPAs with other faculty or staff members unless their official responsibilities identify their "legitimate educational interest" in that information for that student.
- share information from student education records, including grades or GPAs with parents or others outside the institution, *including letters of recommendation*, without written permission from the student.
- * Faculty may display grades using a system of unique identifiers known only to the student and the instructor as long as these are then posted non-alphabetically.

Information may be disclosed without a student's written consent:

- To university personnel having legitimate educational interest (e.g. advisors)
- To accrediting organizations
- To comply with judicial order or subpoena
- In a health or safety emergency

Requests to disclose information should always be handled with caution and approached on a case-by-case basis.

Semester or session grades are typically available to students through their GoWMU account within a few hours of the submission deadline. Since access requires the use of the student's Bronco NetID and password, midterm and final grades can be viewed securely.

When in doubt about releasing information, please contact the Registrar's office at (269) 387-4310 or registrar-info@wmich.edu.

CONCERNED?

An online form has been developed for faculty, staff and students to share their concerns about a student whose behavior is troubling and persists despite efforts to intervene.

Information recorded on the form, which is confidential, goes to the office of the associate dean of students, who reviews the concerns and determines the next steps to take.

The link is http://www.studentworld.wmich.edu/health.html. Click on the link to 'Student Concern Form' on the upper right of this page. You will be asked to enter your Bronco NetID and password. This is the ID and password used to access GoWMU.

Instructors are strongly encouraged to report students on their class list who are not attending, or students who are attending, but not on the class list. This can be done electronically through GoWMU using the "Report Students Not Attending/Not Registered" link off the Faculty/Staff Home tab. Once this information has been reported, the Registrar's Office will attempt to contact the student to resolve the registration discrepancy.

LINKS TO NOTE:

Academic Advising
  www.wmich.edu/advising
Academic Calendar
  www.wmich.edu/registrar/calendar
Academic Catalogs
  www.catalog.wmich.edu
Academic Standards
  www.wmich.edu/registrar/AcademicStandards
FERPA
  http://www.wmich.edu/registrar/ferpa/fac-staff/index.html
Grades Policy
  www.wmich.edu/registrar/grades
Registrar's office
  www.wmich.edu/registrar

WMU NEW FACULTY

OFFICE OF THE REGISTRAR
www.wmich.edu/registrar
(269) 387-4300
registrar-info@wmich.edu

2009-10

Faculty Responsibilities for Data Security

Best Practices for Information Security for Faculty

- NEVER give your Bronco NetID/password combination to anybody else so that they can look up information for you. Doing so is too risky for you. The OIT Help Desk will never ask you for your password via an e-mail message or over the phone.

- NEVER accept someone else's Bronco NetID/password combination so you can look up, or enter information for them. Doing so is too risky for you.

- Don't use the same password for all systems. This is especially true for encrypted files. See the WMU Password Guidelines to learn how to establish strong passwords www.wmich.edu/oit/policies/password-guidelines.pdf

- Get rid of old data that you don't need, especially information that includes social security numbers. Paper copies have to be shredded or burned.

- Keep your current grades in the e-learning system and not on your laptop or other mobile device, if at all possible. Grades from prior semesters should be in encrypted files.

- Have students turn in work using the e-learning system and access it through that system. If you want to keep copies they should be encrypted.

- Delete individually-identifiable information from all research records.

- Keep personal data separate from university data. Follow the same encryption standards for personal data.

- Delete "temporary" files on your computer. These include file attachments opened in e-mail and files that you download from Cognos. If these files contain restricted/confidential information, they should be immediately removed or encrypted. The OIT Help Desk (269-387-4357) or your department's technical staff can assist.

- Use WMU e-mail for conducting University business, since we know it is secure.

- If you use protected health information, know and follow the special policies that apply.

- Attend required information security training sessions that will be offered annually to various university constituents.

Selective Summary of Key Policies for Faculty

- Restricted/confidential information is individually identifiable information about students, faculty, staff, alumni, vendors, or others that WMU is required to keep confidential by law, policy, or contract. Examples for faculty include:

  1. All grade information tied to a student including individual assignment grades and final course grades.

  2. Student work, such as drafts of papers or thesis chapters.

  3. Research data that identifies people.

  4. Social security numbers and credit card numbers, stored electronically or on paper. (Faculty usually do not have access to such data.)

- Confidential information should never be stored on a mobile computing device - personal or university owned - such as a laptop, portable hard drive, smartphone, USB key, DVD, or CD unless it is encrypted. The recommended encryption software is TrueCrypt: www.wmich.edu/oit/helpdesk/security/truecrypt.

February 11, 2011

What Happens if Data are Lost

- Notify the local police (if off-campus) and the WMU police (269-387-5555) if a device is stolen or missing. Notify OIT at oit-security@wmich.edu. Follow the same procedures for a personally-owned device if it contains university confidential information.

- Having your data encrypted means if your device is lost, the data are not lost.

- OIT will follow the WMU Information Security Incident Response policy.

- WMU will incur costs, depending on the quantity and type of data lost. These costs may include identity theft insurance. The costs can greatly exceed the cost of the lost device. The greatest cost is the loss of trust that results. Direct incident costs will be billed to the department responsible for the loss.

Know the University's Policies on Information Security

- The Office of Information Technology Policies are located at www.wmich.edu/oit/policies/index.

- The most relevant policies are:

    1. WMU Rules for Use of Computing Resources

    2. Copyright

    3. Ethical Treatment of Information Resources

    4. WMU Data Classification

    5. WMU Lost or Stolen Devices

    6. WMU Policy on Using Mobile Computing Devices

    7. Executive Summary of Proposed Mobile Computing Security

    8. TrueCrypt

    9. WMU Rules and Required Procedures for Cloud Computing

    10. WMU Information Security Incident Response

- Other relevant policies:

    1. Social Security Number Policy: www.wmich.edu/hr/ppm/20-ssn

    2. Health Information Policies: www.wmich.edu/hr/ppm/19-hipaa

    3. Family Educational Rights and Privacy Act: www.wmich.edu/registrar/ferpa/fac-staff

    4. Confidential Information Policy for Employees: www.wmich.edu/hr/handbook/10-discipline.html#confidential

    5. Research Policies: www.wmich.edu/research/policies

    6. Electronic Commerce Policies: www.wmich.edu/ecc/policy

Questions?

- Send email to oit-security@wmich.edu.

- Call the OIT Help Desk at 269-387-4357.

- Contact your college or department LAN manager:

- Contact Jim Gilchrist at james.gilchrist@wmich.edu or 269-387-3855.

- Contact Greg Lozeau at greg.lozeau@wmich.edu at 269-387-0091.

February 11, 2011

Guidelines Pertaining to the Disposition of Student Papers

The WMU policy with respect to the disposition of student work is:

Students have the right to have all their examinations and other graded material made available to them with an explanation of the grading criteria. Faculty will retain all such materials not returned to the student for at least one full semester (or through spring plus summer sessions) after the course was given. *Faculty are not required to return such material to the student, but must provide reasonable access.* Any student work to be discarded after the 1 semester time frame must be shredded.
(http://www.wmich.edu/registrar/faculty-staff/instructors/semesterwrap-up.html)

The policy is clear enough with respect to non-circulating exams. However, during the course of any semester, students complete many assignments that are submitted to the course instructor. These include, but not limited to, midterm exams, quizzes, lab reports, worksheets, and essays. Unlike non-circulating final exams, such papers are typically returned to the students. According to the WMU Registrar, "reasonable access" means that students must be given a reasonable chance to "collect" such papers. An instructor cannot simply decide to keep student papers. However, neither can students be forced to collect their papers. Uncollected papers should be treated as per policy, that is, kept for one semester and then shredded.

Guidelines pertaining to the disposition of such papers are as follows:

1) All course related papers completed by students belong to the students not the instructor.
2) Except for non-circulating exams, all student work should be returned to students in a timely fashion.
3) Course syllabi should contain a statement to the effect that students will have until the end of finals to collect their papers; after that, all uncollected student papers will be kept for one semester and then shredded.
4) Final exam papers are to be kept as per University policy, that is, kept for one semester and then shredded.
5) Graduate students who are instructors of record should turn all papers over to their supervising professor or department chair. Graduate student instructors are not to retain possession of student papers.
6) Student work can never be used for research purposes without an approved HSIRB protocol in place.
7) Even when properly obtained, student names and identifying markers must be removed from student papers.

FAQs
1) I returned papers to my students but several students failed to pick up their work. What should be done with these papers?
    "Students should be advised of the WMU policy. Any papers not collected by the end of the finals period, will be kept for one semester and then shredded. See #3 above."

2) The semester is over but I have a class set of papers that I neglected to return to my students. What should I do with the papers?
    "Same answer as for FAQ #1"

3) There are papers from a few students that I would like to keep because I can make instructional use of them. Am I allowed to keep the papers?

> "The papers must first be returned to the students and then the students must be asked for their permission for you to keep the papers. The students must be assured that they are free to agree or not agree, and if they agree, they are to be assured that their names and any identifying markers will be removed from the papers."

4) I would like to keep an entire set of class papers for instructional use. Am I allowed to keep an entire set?

> "The papers must first be returned to the entire class. The instructor can then request that the papers be returned so they can be used for future instructional purposes. There must not appear to be any coercion and the students must be assured of confidentiality, which means that all names and identifying markers must be removed from the papers."

5) There student papers from my class that I think might be useful for my research. Am I allowed to keep student papers for research purposes?

> "Student papers may not be kept for research papers unless there is an approved HSIRB protocol in place."

6) I have a few papers that in the past students allowed me to keep for instructional purposes. There are no names or identifying markers on the papers. I now find that these papers would be useful for research purposes. Am I allowed to use these papers for research purposes?

> "The papers cannot be used for research purposes without HSIRB approval. However, HSIRB approval can be requested for the use of these papers even though an HSIRB protocol was not in place at the time the papers were collected, bearing in mind that HSIRB approval is never guaranteed."

Western Michigan University

Travel Policy and Procedures & Expense Reimbursements

University Travel Site   http://wmich.edu/travel/

Travel forms and check lists   http://wmich.edu/travel/forms.html

Frequently asked questions http://wmich.edu/travel/

Payroll and Disbursements
(269)387-2154

03/19/14

OVERVIEW

Purpose and Scope

The objective of these guidelines is to provide Western Michigan University travelers with the policies and procedures for receiving authorization to travel, reporting expenses, and obtaining reimbursement when traveling on University business. This policy shall apply to all officially approved travelers (employees, students or external parties traveling on University business) of Western Michigan University.

Policy

University travelers are required to obtain prior approval whether the travel is reimbursed or not. Approval should be obtained by the employee supervisor at a minimum and should also comply with any other authorization procedures required by their departments or Grants and Contracts. Travel authorization forms are available at https://auxe.wmich.edu/travel_authorization/. University travelers should submit a travel expense voucher with original receipts for reimbursement within 30 days of return trip. The University will reimburse approved travel expenses. The extent of reimbursement will depend on budgetary procedures as determined by each department and compliance with these guidelines. Any reimbursement will be based on travel by the usual, direct route. If travelers plan to use a less direct route, or a more expensive mode of travel than may be authorized as reimbursable, the travelers must bear the extra costs. Local travel is normally not reimbursable.

All University air/rail travel will be directly billed to the department's fund and cost center. Any misrepresentation or falsification of any expenses or supporting documents, such as receipts or bills, will be pursued in compliance with the appropriate Rules of Conduct as contained in the Human Resources Policies/Procedures Manual, or the bargaining unit contract when appropriate. Employee travel reimbursements will routinely be processed through the payroll system. Non-employee reimbursements are processed through accounts payable. The Payroll and Disbursements office now offers ACH/Direct Deposit reimbursements to WMU employees through Accounts Payable. Reimbursement payments are more frequent and paid through Accounts Payable instead of through the payroll cycle.

All University travelers are responsible

- to exercise good judgment and discretion in spending University funds,
- to complete expense reports properly and within 30 days of travel return.
- Book flight through AAA.

All department heads and vice presidents are responsible

- to see that the travelers under their jurisdiction are fully aware of the University travel policy and reimbursement procedures,
- to approve only reasonable, proper, and necessary expenses.

AAA is responsible

- to book requested reservations in a prompt and accurate manner,
- to advise University travelers
- support University policy

TRAVEL PROCEDURES

Before Departure

University travelers are required as far in advance as possible:

- all purchases of tickets for air transportation must be procured through AAA. However, consistent with the philosophy of attempting to procure travel at the lowest cost, if you find a lower price from an outside source, contact AAA at (800) 854-5044 to see if they can match the price. If they are unable to match the price a waiver can be obtained by providing documentation to AAA of the lower fare as long as it is done before the tickets are purchased. ***Purchases of airline tickets from another source without a waiver will not be reimbursed.***
- complete a Travel Authorization request form. Forms must be completed online using the University Travel Authorization Online System https://auxe.wmich.edu/travel_authorization/. This should be done before booking a flight on AAA's reservation system. https://enterprise.nutravel.com/Login.aspx?WM=RESXPROD4/. AAA will hold your reservation for 24 hours. However, if a price change occurs before the authorization is received; the new flight price will be charged.
- verify that the Travel Authorization has been approved and submitted to AAA. AAA will not book ticket requests until the completed form has been submitted.

During the Trip

University travelers should:

- charge all business related expenses to their personal credit card.
- save all receipts for reimbursement with the exception of per diem meals.

Upon Return

University travelers should:

- Fill out a Travel Expense Voucher, obtain the proper signatures, and submit the completed Travel Expense Voucher with original receipts to Accounts Payable within 30 days of trip return.
- Pay off personal credit card with the reimbursement for their Travel Expense Voucher.

AIR TRAVEL

Airline Contracts

From time to time, the University may enter into contracts with air carriers. Purchasing will provide information regarding these contracts. Employees are expected to use these carriers whenever possible. If other carriers offer a better fair or more convenient itinerary, University travelers have the option to use them, as long as reservations are made through AAA.

University travelers using grant or contract funds must comply with all University policies and procedures regarding travel. There may be additional restrictions on travel when using grant or contract funds, such as Fly America Act, foreign travel and per diem restrictions. The travel should be included in the

approved budget for the grant or contract. For more information contact the Grants and Contracts department at (269) 387-4707.

Change of Plans

Changes made in travel plans after the reservations have been booked or during the trip itself should be coordinated through AAA.

Class of Service

When traveling on either domestic or international routes, University travelers should request the lowest available fare in coach class.

Fares

Travelers should notify AAA of their travel plans <u>as far in advance as possible</u> in order to take advantage of any special rates offered by the airlines.

Flight Information

After AAA receives a copy of the Travel Authorization/Reservation Request form the ticket will be booked.

Frequent Flier Mileage

University travelers are allowed to keep their own frequent flier miles. However, travelers should keep in mind the importance of obtaining the lowest available fares.

Payment

Air travel will be directly billed to your department's fund and cost center and does not get included on the Travel Expense Voucher.

OTHER MEANS OF TRANSPORTATION

Air Charter Travel

All requests for charter planes must be requested through the WMU Purchasing Department.

Car Rental

Western Michigan University has a negotiated contract with Hertz Rent-A-Car. Use of rental cars at travel destinations is limited to circumstances where other transportation is either more expensive or impractical.

Personal Car

<u>Reimbursement for travel by private car will generally be authorized under only one of the following circumstances:</u>

- when common carrier service is not available without undue loss of time,
- when two or more staff members are eligible for similar travel authorization and their driving together would mean an overall savings to the University (the department head is responsible for making such a determination before approving the travel request),
- when use of an automobile will permit the traveler to make stops en route and perform duties more effectively,
- when it will cost the University no more than by other means,

- when the use of an automobile will not require the traveler to be away from duties for a substantially longer period than travel by common carrier. Private car mileage, when authorized, will be reimbursed for either in-state or out-of-state trips at the amount specified in Internal Revenue Service regulations. If circumstances require additional driving within the vicinity, the traveler should show this mileage separately. Bridge and turnpike tolls will be reimbursed. Receipts should be obtained if possible. All mileage must be shown from point to point.

Rail and Bus

Trains and buses are acceptable optional means of transportation. In cases of long distances, time considerations are often restrictive. Travelers should use coach class unless pre-approved by the appropriate vice president. Bus reservations must be made by traveler. Reservations for rail may be made using AAA.

Taxi/Bus/Shuttle

Shuttle service should be given preference whenever available and economical. Taxi trips are acceptable when necessary to and from airports. Travelers must obtain receipts for reimbursement.

Hertz Rent-A-Car (Car Rental)

Information concerning Hertz Car Rental can be obtained by accessing the University Travel Website http://www.wmich.edu/travel/

LIABILITY AND PROPERTY DAMAGE INSURANCE

For Personal Cars Used on University Business

Liability coverage provided for the use of personal cars is excess coverage; that is, the coverage carried by the owner would apply first, in the event of an accident, with costs above those limits being covered by WMU's policy. Physical damage insurance for personal cars being used on University business is not provided.

For Rental Cars Used on University Business

Rental cars are covered under the University's coverage for both liability and physical damage. There is a $5,000 deductible for physical damage which would be the responsibility of the department. The coverage is secondary to any additional coverage either purchased or provided through a separate arrangement. Liability and damage Insurance is included with WMU rentals from Hertz Rent-A-Car. Since the $5,000 deductible for physical damage would be the responsibility of the department they may want to consider purchasing the physical damage coverage when renting from an agency other than Hertz. This cost and exposure should be taken into consideration when opting not to go with the University's contract with Hertz.

Student Travel on Field Trips and Other Outings

Student field trips, which are part of organized course instruction, may be taken to vital places of interest. Student participation in field trips is on a voluntary basis and students must cover their own costs. Students age 20 and older may drive Hertz rental vehicles on field trips. Students' ages 18-19 may drive selected Hertz rental vehicles for a fee. No insurance is provided by the University on any student-owned vehicle.

LODGING

Change of Plans

If travel plans must be changed, it is the traveler's responsibility to contact the hotel, in accordance to the hotel's cancellation policy, to cancel the reservation. Please obtain and keep the cancellation number to assure that a "no-show" charge will be avoided.

Conferences

If traveling to a conference that has prearranged hotel space, the traveler makes their own reservations. Reservations for non-prearranged hotel space can be made using AAA. All authorized hotel expenses will be reimbursed directly to the traveler.

Payment

University travelers need to provide AAA with a personal credit card to guarantee hotel reservations for late arrival. Upon departure, travelers should obtain a detailed receipt. A statement may not be used in the place of receipts.

Reservations and Reimbursement

Hotel reservations can be made using Nutravel (formerly Rex-X) or AAA. The University will reimburse authorized lodging expenses at the single occupancy business rate. Original hotel bills are required for reimbursement. The exception is tipping, which will be reimbursed if reasonable and customary.

Shared Accommodations

When an authorized traveler shares a hotel room with non-University individuals, such as family members or colleagues from other institutions, reimbursement will be as follows:

- if shared with non-University individuals, and there is no increase in cost, the University traveler will be fully reimbursed for the single occupancy rate.

- if shared with non-University individuals and there is an increase in cost, the University traveler will be reimbursed the single occupancy rate. If the cost is shared between the occupants, the traveler will be reimbursed the proportionate amount of the room cost. The receipt must show the total amount paid for multiple occupancy and that the University traveler was accompanied by one or more persons. If this information is not on the hotel invoice, a list of people who shared the room should be added.

MEALS

Meals for one day trips WILL NOT be reimbursed as the Treasury Department regulations classify meal reimbursements during day trips as taxable income. *An exception of that rule applies for hosting meals that includes non-university personnel (see Hosting Meals).*

Conference Meals

University Travelers cannot use the full day GSA per diem or the full standard daily per diem rate for meal expenses on those days that the conference/seminar is providing any meal services. Only those meals that are not being provided for by the conference/seminar presenter are reimbursable to the traveler. In this case only the portion of the full day GSA per diem or standard daily per diem rate for the uncovered meal can be used on the Travel Expense Voucher.

When attending a conference or seminar that does not require overnight travel, any costs associated with meals, not included in the conference/seminar fees, will not be reimbursed by the University. This includes both in- and out-of-town conferences and seminars.

Hosting Meals

The University welcomes visitors, guests and employment applicants and recognizes that University staff members may be required to act as host. The University recognizes hosting as an appropriate expense of University funds if hosting activities contribute to, or result from, legitimate University-related business. Each department is expected to use prudence in determining the appropriateness of the hosting function. Grant and Contract funding normally do not allow for hosting meals and any exceptions need Grants and Contracts preapproval.

Local business meals and expenses incurred by employees while hosting University guests will be reimbursed at actual cost within the constraints of good taste and reasonableness. The names and business affiliations of the guests for whom the meals were purchased and the date, location and business purpose of the meal expense must be documented on the voucher. In addition, meal receipts must be submitted with the Travel Expense Voucher. Acceptable meal receipts include charge card receipts, cash register receipts and hotel receipts with meal costs itemized. Order stubs with handwritten totals are not acceptable. Reimbursement will not be made for alcoholic beverages using fund 11 accounts or Grant funds 25-30. Reimbursement for alcohol out of other funds may be made providing there are proper VP approvals and business reasons.

When it is in best interest of the University, business meals may be purchased for customers, vendors and others with whom the University has business dealings. Examples of such situations include, but are not limited to, retreats, workshops, potential donor meals and committee meetings. All business meals are to be documented with individuals' present, business affiliation(s), the purpose of the meeting and the date and place of the meeting.

Meals – University Employees/Faculty

Meal expenditures in connection with meetings of University personnel are generally not reimbursable. However, circumstances may arise that may warrant the use of University funds for meals attended exclusively by University personnel. This is appropriate only under certain circumstances whereby the business meal is considered necessary in order to conduct University business and such business purpose is clearly stated on the voucher. Reasonable judgment, applying a conservative perspective, must be exercised when determining the appropriateness of such meals. Grant and Contract funding normally do not allow for hosting meals and any exceptions need Grants and Contracts preapproval.

When conducting employee workshops or committee and faculty/staff meetings, campus facilities should be used whenever possible. Reimbursement shall generally be limited to rolls or other low cost food and beverages.

The University may sponsor social events where only University personnel are present for staff appreciation/recognition. Since the University is a public institution, it is the fiduciary responsibility of those at the University to authorize such activities in an appropriate manner. Such activities are to be non-routine in nature and campus facilities should be used whenever possible. These events are to be authorized by the vice president in the area.

All such meals referred to above are to include on the voucher the individuals present, business affiliation(s), the business purpose, the date and place of the meeting.

Per Diems

Per Diem meals apply to individual University travelers and does not apply to hosting meals.

Continental United States

The University will reimburse overnight travelers for meals consumed during business related travel on a per diem basis. Per Diem meal allowance will be used for all days of travel. Actual receipts will not be used. Per Diem meals will be reimbursed according to the U.S. General Services Administration (GSA Per Diem) schedule of per diem rates as found at http://www.gsa.gov/perdiem . This web site lists the per diem rates by primary destination. If a city or county is not specifically listed, the Daily Standard Per Diem rate per day will be used.

The current Daily Standard per Diem rate is $46.00 per day. WMU Travelers should be aware that the per diem rates include an amount for the tip and incidentals. The first and last calendar day of travel is calculated at 75 percent which is $34.50 per GSA rate. The daily standard per diem rate will be allocated for breakfast, lunch and dinner as follows and not to exceed $46.00 per day: Breakfast $7.00; Lunch $11.00; Dinner $23.00; Incidentals $5.00. The individual meal rate for breakfast, lunch and dinner does include meal taxes and tip. The incidental rate is for expenses related to snacks, fees and other tips. When meals are provided or included in conference registration fees, the daily rate must be reduced by the applicable meal rate.

Foreign Rates in U.S. Dollars

The University will also reimburse international travel based on the U.S. Department of State Foreign Per Diem rates found at http://aoprals.state.gov/web920/per_diem.asp in effect for the days of travel. Receipts for meals and incidentals are not required when the per diem is used.

MISCELLANEOUS

Gift, Contract or Grant Funds

University travelers using gift, contract or grant funds should follow the regular University travel policy unless there are specific restrictions provided by the contract, gift or grant.

Non-reimbursable Expenses

Any expense that is not directly related to the business purpose of the trip is non-reimbursable. Examples include such items as movie rentals, personal telephone calls, laundry service, athletic facilities fees, etc.

Passport and Visa Information

Obtaining a passport and/or visa may be necessary when traveling outside the United States. Reimbursement will be made only when passport or visa is a job requirement. As the requirements and processing time can vary, it is important that University travelers submit the application well in advance of travel. AAA can provide current information about obtaining a passport, visa or required photographs. WMU's travel site also has additional information at the following link: http://www.wmich.edu/travel/abroad/documentation.html

Tax-Exempt Status

University travelers on authorized, University business are exempt from some state sales taxes. Travelers should seek to maximize this benefit to the University by showing the tax-exempting document. A copy of this form is available at: http://www.wmich.edu/businessandfinance/forms/index.html

Telephone Expenses

All business-related calls are reimbursable.

Travel Reimbursement During Hiring Process

Reimbursement or direct payment of candidate travel expenses will be made only when it becomes necessary in employment negotiations to attract highly qualified candidates. Only new hires at the senior administrative level and tenure track faculty are normally eligible. The Provost's office offers additional guidelines for academic hiring.

Reimbursement or Payment of Moving Expenses

Reimbursement or direct payment of employee moving expenses will be made only when it becomes necessary in employment negotiations to attract highly qualified candidates to regular, full-time academic and administrative positions at Western Michigan University. The Accounts Payable Procedures and Moving Expense Policy manual links are provided for the current regulations and rates.

http://www.wmich.edu/payroll/payable-docs/ap_proc.pdf

http://www.wmich.edu/payroll/payable-docs/moving_expense_policy.pdf

Export Control Laws

Travel to most countries usually does not constitute an export control problem. However, there are potential situations that may trigger the need for a license to travel to certain countries or to take items with you (or ship) to a particular country. When leaving the United States, it is important to note that taking certain items (laptop computers, encryption software, wireless network hardware/software, some GPS systems, data/technology, blueprints, schematics, and research related materials) may require a license or license exception/exemption depending on the foreign destination.

Other potential export control issues may arise from the following:

- Presentation of "controlled" technologies or data at "closed" conferences (those not open to all qualified public and note taking is not permitted).
- Money transactions and the exchange of goods and services in certain countries.
- Travel to sanctioned/embargoed countries.
- Conducting business with certain people or entities.

The Department of State, Department of Commerce, and the Office of Foreign Asset Control, have lists of individuals and entities that we are prohibited from doing business with here in the U.S. and overseas as well. In general, problematic destinations are those countries currently under U.S. embargo, sanction, or other trade restriction. A list of these embargoed countries can be found at http://www.pmddtc.state.gov/embargoed_countries/index.html . This list changes periodically and should be checked prior to travel.

If you have any questions or concerns that your travel may be in violation of export control laws you may call the Research Compliance Coordinator at (269) 387-8293.

Additionally, the U.S. State Department website for international travel also includes a list of tips for international travelers. These can be found at http://travel.state.gov/travel/tips/tips_1232.html .
A Safety and Security brochure for Business Travelers Traveling Abroad can be found at:
http://www.fbi.gov/about-us/investigate/counterintelligence/business-travel-brochure .

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Our mission

Environmental Safety and Emergency Management (ESEM), working together with the entire campus community, strives to provide a safe and healthy environment for faculty, staff, students and visitors to campus. Equally important is that the university is welcome in the community as an environmentally conscientious neighbor.

What do we do?

ESEM interprets laws and regulations and develops compliance strategies that include training, inspections, and consultations in disciplines of fire safety, industrial hygiene, safety engineering, hazardous waste management, general safety, environmental regulatory affairs, and occupational health. We place primary emphasis on programs that prevent accidents and minimize human exposure to hazardous agents and conditions; prevent degradation of the environment; and promote responsible waste management.

How to find us:

Address: Bigelow Hall Annex - Map
Kalamazoo MI 49008
Phone: (269) 387-5590

Business Hours: Monday–Friday
8:00 am–5:00 pm

Quick Links

Public Safety

Accident Injury Report

Business and Finance Office

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Alerts

Accident Injury Report

Who should fill out a WMU Accident/Injury 311 Report?

The supervisor should complete the form with input from the injured employee, student, or visitor. All accidents and injuries of visitors, students, and employees while on WMU properties or while on scheduled WMU business off campus must be documented on the ESEM 311 form. Injuries of participants of collegiate athletics are the only exception for which completion of the 311 is not required.

When should you fill out a WMU Accident/Injury 311 Report?

The accident/injury report form (311) must be completed within 48 hours of the accident or injury and sent to the Division of Environmental Safety and Emergency Management

Why should you fill out a WMU Accident/Injury 311 Report?

An investigation of the accident or injury and completion of the 311 form by the supervisor with the injured employee, visitor, or student is an important tool for the university to determine possible causes of the accident and the measures to prevent a reoccurrence of a similar accident or injury.

The information on these forms is used to track accident trends, to determine if equipment or facilities need repairs, to establish worker's compensation benefits, and to determine the safety training need for our university community.

Form and Instructions

- Click here for instructions on how to complete the Accident/Injury 311 Form
- Click here to obtain a printable copy of the Accident/Injury 311 Form
  - *Note: You will need Adobe Acrobat Reader to open and print this form.*

___WC
___SR

WESTERN MICHIGAN UNIVERSITY
ACCIDENT/INJURY REPORT FORM 311

Accident Number: _____

Name of Injured			**Western Identification # (WIN)**
(Last)	(First)	(Middle Initial)	

Was Medical Attention Received? Where?	**Hospitalized?**	**Went to Emergency Room?**
○ Yes ○ No	○ Yes ○ No	○ Yes ○ No

Injured Party Affiliation (Circle One)	**If Employee List** (Position) (Department)	**Sex**	**Date of Birth**
○ Employee ○ Student Employee ○ Student ○ Visitor		○ Male ○ Female	**Date of Hire**

Address (Work/Local)	**Phone Number (Work/Local)**

Date of Accident	**Time of Accident**	**Location of Accident** (Building) (Room/Floor)	**Time Started Work**
	A.M. P.M.		A.M. P.M.

Cause of Injury	**General Activity**	**Injury Description**

Part of Body Injured

Left _____
Right _____

Injury Agent/Contributing Factor

Briefly Describe the Accident
What was the injured party doing right before the accident and then what happened?

Action Taken to Prevent Accident/Injury Reoccurrence

Witness Name	**Witness Address and Phone Number**

*The employee's signature is required, but does not imply agreement/disagreement with the facts as presented. The supervisor attests only that the facts are accurate to the best of his/her knowledge or as reported to him/her.

*Signature of Injured Party	Date	*Signature of Supervisor	Date

Revised 04/09   **PLEASE RETURN TO ENVIRONMENTAL SAFETY AND EMERGENCY MANAGEMENT**
BIGELOW ANNEX – MAIL STOP 5418

Western Michigan University

TORNADO Safety Rules

TORNADO WATCH means tornadoes are expected to develop

TORNADO WARNING means a tornado has been sighted or is indicated by weather radar - TAKE SHELTER NOW!

- A **TORNADO WATCH** is announced over radio and television stations and by phone to key campus locations. Do not call the Weather Bureau EXCEPT to report the actual sighting of a tornado. Be prepared to take shelter.

- A **TORNADO WARNING – TAKE SHELTER NOW** condition is announced over local radio and television stations and by the sounding of a steady tone on the early warning system.

- Do not call the Department of Public Safety for information during a watch or a warning. Tune in your local radio or TV station. Incoming phone calls tie up emergency lines that may be critically needed if severe weather strikes our campus.

- Seek shelter in the basement or interior corridors, stairways, or rooms on the lowest possible floor of the building. **STAY AWAY FROM WINDOWS.**

- Do not seek shelter in large rooms with wide, free-span roofs such as gymnasiums or auditoriums.

- In open country, move away from the tornado at a right angle to its path. If this is not possible, DO NOT REMAIN IN A VEHICLE; instead find the nearest depression or ditch and lie flat, face down.

- Residents of WMU Apartments have instruction sheets that give the building or area in which to seek shelter.

- Have a severe weather action plan. Monitor local radio and TV stations during severe weather. At home, keep your family together and be ready to move to shelter. Have blankets, a working flashlight, necessary medicines, a battery operated radio, and a first aid kit to take to the shelter.

- Sirens in the City of Kalamazoo are tested at 1:00 p.m. on the first Saturday of each month.

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Critical Incident Response Plan

Emergency Procedures

Bomb Threat
Chemical Release
Fire
   Extinguisher Info.
   Additional Resources

General Safety
Shooter on Campus
Tornado/Severe Weather
Workplace Violence

Pandemic Influenza

Safety at Work

Volunteer Teams

Fire
Facts

- A fire can double in size every 30 seconds
- It can reach temperatures over 1,000 degrees in 90 seconds
- One breath of superheated 150 degree air can sear one's lungs
- Using the wrong type of fire extinguisher can make matters worse
- Approximately 85% of the time, it's the smoke inhalation that kills

Before a fire:

- Know at least two evacuation routes
- Locate fire alarm pulls/extinguishers
- Be familiar with **RED**—**R**eact, **E**valuate, **D**ecide

Responding to a fire:

1. Pull the alarm if you discover a fire.
2. When you hear the fire alarm, get out of the building using the nearest and safest exit.
3. Go to the re-assembly area and let your professor/supervisor/emergency or building coordinator know you are there.
4. Do not go back into the building until the fire department or Public Safety says it's safe to do so.

WMU General Evacuation Procedures

Emergency Management
Western Michigan University
Kalamazoo MI 49008-5418 USA
(269) 387-0678 (M–F, 8 a.m.–5 p.m.)

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Critical Incident Response Plan

Emergency Procedures

Bomb Threat
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Safety at Work

Volunteer Teams

Shooter on campus

Each situation will be different and will require you to make judgments and decisions based on the information immediately at hand. First and foremost, faculty, staff, and students must be continually vigilant to the risk of violence on campus and embrace threat assessment.

- **Be vigilant for "clues"**
  Most attackers engage in some behavior prior to the incident that causes others concern or indicated a need for help. Most school attackers will also conduct extensive reconnaissance of their target; they will analyze the availability of ingress and egress points. Don't be reluctant to alert Public Safety or someone else in authority if you have concerns about a member of the campus community.

- **If a shooting begins or you are close to an emergency situation,**
  call 911 or dial 7-5555 on any WMU campus phone or (269) 387-5555 from a cell phone. Report the location and any injuries to the police dispatcher. It maybe practical to leave the phone line open so the dispatcher can monitor the situation.

- **If the shooter is in the classroom or office**:
  everyone should attempt to get to a safe place or some type of cover and lie down as flat as possible away from windows or the field of fire. Obstructions between the person and the shooter can be used for concealment; keeping in mind the obstruction may not be bulletproof. If you reach a safe place, stay down on the floor and do not move. Do not raise your head to peek. Wait and listen for directions from the police.

- **If the shooter is not in the classroom or office:**
  everyone should stay inside the classroom or office, move behind any available cover and stay on the floor. Close and lock the door if possible, turn off the lights, and close any window blinds. Do not peek outside of the classroom or office and report the location of the shooter if known to the police dispatcher. Everyone should stay in the room until a police representative advises it is clear and safe to leave.

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Compliance
Human Subjects Institutional Review Board (HSIRB)

The Human Subjects Institutional Review Board (HSIRB) is a local review board, established by the WMU Board of Trustees in accord with federal regulations, to interpret and apply federal regulations, state law, and research sponsor requirements for the use of human subjects in research. The HSIRB is charged with the protection of the rights and welfare of human subjects in research conducted under the aegis of Western Michigan University.

The three basic ethical principles that guide the HSIRB are derived from the Belmont Report and they are respect for persons, beneficence, and justice.

People

By submitting a protocol to HSIRB:

- Investigators comply with university policy and federal regulations.
- Investigators promote the protection of the rights and welfare of research participants.
- Students learn about the ethical conduct of human research.
- HSIRB Review Process Map

HSIRB Training

- Policy for Required Training
- CITI Training Modules

Application Forms
To access HSIRB forms for your initial application, continuing review or final report, and class project registration, visit the Compliance Forms section.

Additional information, materials, and resources:

- Deadlines and Meeting Information
- Federal Regulations and Specific University Policies
- Common Practices (standard operating procedures) when conducting research that involves human subjects

Additional Requirements

- <u>Undergraduate Research</u> - Conducting Research on Human Subjects
- <u>Faculty Supervising Undergraduates</u>
- <u>Instructions for Collecting Blood</u>
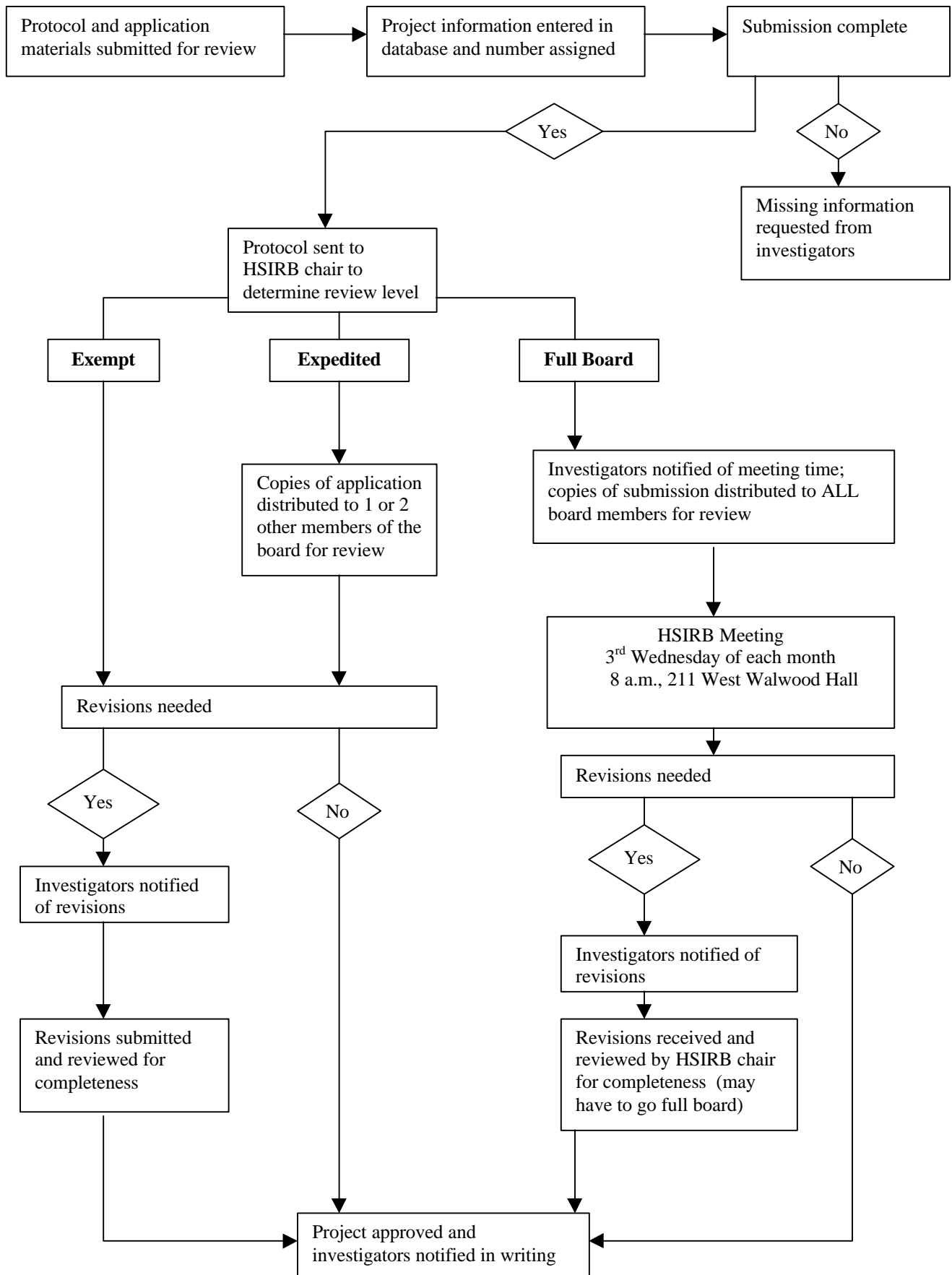- <u>Instructions for Recruiting Subjects</u>

Frequently Asked Questions

- <u>General Questions about HSIRB</u>
- <u>Specific Questions About Human Subject Research</u>

Questions? Email the <u>research compliance coordinator</u>

HSIRB Review Process

Protocol and application materials submitted for review → Project information entered in database and number assigned → Submission complete

Yes / No

No: Missing information requested from investigators

Yes: Protocol sent to HSIRB chair to determine review level

Exempt | **Expedited** | **Full Board**

Expedited: Copies of application distributed to 1 or 2 other members of the board for review

Full Board: Investigators notified of meeting time; copies of submission distributed to ALL board members for review

Revisions needed (Exempt/Expedited)

HSIRB Meeting
3rd Wednesday of each month
8 a.m., 211 West Walwood Hall

Revisions needed (Full Board)

Yes (Exempt): Investigators notified of revisions → Revisions submitted and reviewed for completeness

No (Expedited): → Project approved

Yes (Full Board): Investigators notified of revisions → Revisions received and reviewed by HSIRB chair for completeness (may have to go full board)

No (Full Board): → Project approved

Project approved and investigators notified in writing

SUBJECT: Required Training for Human Subject's Researchers

Human Subjects Researchers:

The Human Subjects Institutional Review Board, in conjunction with the Office of the Vice President for Research, has initiated a policy for researcher human subjects training.   Our policy to assure that all researchers are trained in human subjects protections issues is necessary for the university's compliance with federal requirements. As a researcher using human subjects in your research, it is important that you follow this policy and associated procedures.

Our policy requires training of all faculty, staff, and students involved with human subjects research. The procedure is to use a web-based training program. Training must occur prior to the final approval or annual renewal of a protocol. The policy is effective June 1, 2005.

The materials offer researchers the opportunity to complete training at their convenience. The modules can be accessed directly at www.citiprogram.org or through the WMU HSIRB web site at http://www.wmich.edu/research/hsirb.html

CITI Course in Protections of Human Research Subjects
Required Modules for Human Subjects Researchers:

Social and Behavioral Researchers (SBR) (12 + required modules)
Introduction
History & Ethical Principles – SBR
Defining Research with Human Subjects – SBR
The Regulations and the Social & Behavioral Sciences – SBR
Assessing Risk in Social & Behavioral Sciences – SBR
Informed Consent – SBR
Privacy and Confidentiality – SBR
Records-Based Research
Workers as Research Subjects – A Vulnerable Population
Group Harms: Research with Culturally or Medically Vulnerable Groups
Conflicts of Interest in Research Involving Human Subjects
Western Michigan University Information

If your research involves children add:
Research with Children – SBR
Research in Public Elementary and Secondary Schools – SBR
Vulnerable Subjects – Research Involving Minors

If your research involves prisoners, incarcerated individuals, or the prison system add:
Research with Prisoners – SBR
Vulnerable Subjects – Research with Prisoners

Medical Model Researchers (12 + required modules (Protocols from the following units may follow a medical model: Alcohol and Drug Abuse, Biology, Biometrics, Chemistry, Exercise Physiology, Music Therapy, Nursing, Occupational Therapy, Physician Assistant, Physics, Psychology, Speech Pathology & Audiology, Unified Clinics, etc.)

Introduction
History and Ethical Principles
Basic Institutional Review Board (IRB) Regulations and Review Process
Informed Consent
Social and Behavioral Research for Biomedical Researchers
Records Based Research
Research with Protected Populations – Vulnerable Subjects: An Overview
Group Harms: Research with Culturally or Medically Vulnerable Groups
HIPAA and Human Subjects Research
Workers as Research Subjects – A Vulnerable Population
Conflicts of Interest in Research Involving Human Subjects
Western Michigan University Information

If your research includes prisoners add:
Research with Prisoners – SBR
Vulnerable Subjects – Research with Prisoners

If your research includes children:
Research with Children – SBR
Research in Public Elementary and Secondary Schools – SBR
Vulnerable Subjects – Research Involving Minors

If your research includes genetic information:
Genetic Research in Human Populations

If your research includes pregnant women and/or fetuses:
Vulnerable Subjects – Research Involving Pregnant Women and Fetuses in Utero

If you are doing research at a VA hospital:
Human Subjects Research at the VA

If your research includes drugs or medical devices:
FDA-Regulated Research

Suggested Modules for Administrators:
Introduction
History & Ethical Principles – SBR
Defining Research with Human Subjects – SBR
The Regulations and the Social & Behavioral Sciences – SBR
Assessing Risk in Social & Behavioral Sciences – SBR
Informed Consent – SBR
Privacy and Confidentiality – SBR
(Please review other modules as they relate to research being done in your department or college)

Required Modules for HSIRB members:
All 29 modules

If you have questions, please contact the Research Compliance Coordinator, at 387-8293 or ovpr-hsirb@wmich.edu.

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For Future Students

For Current Students

For Faculty and Staff

About the Graduate College

Directory

Graduate Center for Research and Retention

Theses and Dissertations

Events

Forms

Have a Question?
Ask the Graduate College at our new email address:
GRAD-Info@wmich.edu

Graduate Catalog

Related Topics

Graduate College Funding Opportunities

Career & Student Employment Services

Online Application Form

Office of Student Financial Aid

For Current Students

Academic, Program, General Information:

- Academic Programs
- Graduate Catalog
- Deadlines for Dissertations
- Policies for Students and Advisors

Conflict Resolution and Mentoring:

- Graduate Center for Research and Retention

Funding Opportunities:

- Graduate Assistantships
- Funding: Assistantships, Fellowships, Awards, Scholarships through The Graduate College
- Graduate Student Appointment Information

Health Insurance Information for Graduate Appointees:

- Aetna Student Health

Please Note: Graduate appointees do not enroll on the Aetna site for GA health insurance. GA health insurance enrollment is only at designated times (early in Fall and Spring semesters) from the Graduate College home page only.

Research Support:

- HSIRB Mandatory Training
- Graduate Center for Research and Retention
- Forms related to Research Compliance and Policies
- Policies in Research for Compliance to Regulations
- Research Ethics
- Theses and Dissertation Information and Support
- WMU Library Graduate Student Research Support
- WMU Library Services for Graduate Students

Writing Support:

- Dissertation Funding
- Dissertation Process Information
- FAQs for Theses, Projects and Dissertations
- Graduate Center for Research and Retention

- [Word Processing and Editorial Services](#)
- [Templates for Formating Theses and Dissertations](#)
- [Theses and Dissertation Information and Support](#)
- [WMU Academic Skills Center](#)
- [WMU Library Services for Graduate Students](#)

Teaching Support

- [WMU Library Graduate Student Support for Teaching](#)
- [Teaching Assistants Union](#)

Graduation Information:

- [Master's](#)
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- [Doctoral](#)

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GRAD-Info@wmich.edu

Graduate Catalog

Related Topics

Dissertation Defenses

**Templates for
formatting theses
& dissertations**

**WMU Academic
Skills Center**

**Word Processing
and Editing Sources**

**Graduate College
Financial Aid**

**Career & Student
Employment Services**

**Research & Service
Assistantships**

**Online Application
Form**

**Office of Student
Financial Aid**

Dissertation and Thesis Process

Libretto III by Lucas Blanco

"Libretto III" by Lucas Blanco

Dissertation Defenses

(click here for current Doctoral Dissertation Defenses & Archives)

Doctoral Dissertations, Master's Theses, and Specialist Projects

Links to information regarding the process and the forms needed for master's theses, specialist projects, and doctoral dissertations at WMU.

FAQs for Dissertations, Theses, and Projects

Research Protocol

Research Ethics

[Research Policies](#)

[Research Protocol approval](#)(Compliance to research regulations of all types)

[Conflict Resolution through the Graduate Center for Research and Retention](#)

Forms

[Permission to Elect 7000, 7200, 7300 courses](#)(pdf)

[Committee Appointment](#)

[Graduation Audit application](#) (Office of the Registrar)

[Dissertation Defense scheduling](#)(pdf)

[Theses, Specialist Project, and Dissertation approval](#)

[Theses and Specialist Project check-in](#)(pdf)

[Dissertation check-in](#)(pdf)

Other forms are available on the Graduate College [Forms](#) page

Submission Requirements

[Calendar of Deadlines](#)

[Graduation Process and Information](#)

Writing Support

[The Graduate Center for Research and Retention](#)

[Dissertation Formatting Workshops](#)

[Dissertation Support Page](#)

[Copyright Guide](#) (external link)

Editing and Formatting

[Dissertation Formatting Workshops](#)

[2011 Guidelines for the Preparation of Dissertations and Theses](#)(pdf)

[Word Processing and Editorial Services](#)

[MS Word Tutorial](#)

[Templates](#)

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The Graduate College
Western Michigan University

Western Michigan University

POLICY ON SEXUAL HARASSMENT AND SEXISM

Western Michigan University is committed to an environment which encourages fair, humane, and beneficial treatment of all faculty, staff, and students. In accordance with that fundamental objective, the University has a continuing commitment to assure equal opportunity and to oppose discrimination because of race, color, sex, sexual orientation, age, religion, national origin, handicap, height, weight, or marital status. Therefore, in that same perspective, neither sexual harassment nor sexism will be tolerated behavior at Western Michigan University. It is expected that each member of the University community will consider himself/herself responsible for the proper observance of this policy.

Definitions:

Sexual Harassment: Sexual harassment is defined as unwelcome sexual conduct which is related to any condition of employment or evaluation of student performance. This definition is intended to include more than overt advances toward actual sexual relations. It applies as well to repeated or unwarranted sex-related statements, unwelcome touching, sexually explicit comments, and/or graphics. All persons should be sensitive to situations that may affect or cause the recipient discomfort or humiliation or may display a condescending sex-based attitude towards a person. Sexual harassment is illegal under both state and federal law. In some cases, it may be subject also to prosecution under the criminal sexual conduct law. Unwelcome sexual advances, requests for sexual favors, and other visual, verbal or physical conduct of a sexual nature constitute sexual harassment when:

- Submission to such conduct is made either explicitly or implicitly a factor in academic or employment decisions or evaluation, or permission to participate in a University activity; or

- The conduct has the purpose or effect of unreasonably interfering with an individual's academic or work performance; or

- The conduct creates an intimidating or hostile work, academic, or student living environment.

Sexual harassment is often rooted in disrespect. It frequently occurs in the context of power when a person with actual or apparent authority, such as a supervisor or faculty member, abused that hierarchical relationship. Sexual harassment may also occur between peers as a result of misunderstanding, intimidation or exploitation. Sexual harassment can be directed towards and affect many individuals, not just a single person. It can occur between men and women and between persons of the same gender.

Sexism: Sexism is defined as the perception and treatment of any person, not as an individual, but as a member of a category based on sex. Whether expressed in overt or subtle form such as sex-related jokes or materials, sexism in the classroom or workplace is unacceptable at the University and its elimination shall be the responsibility of the entire University community. Depending upon the seriousness of the misconduct, informal corrective action may be adequate.

Complaint Procedure:

The Office of Institutional Equity is available for discussion concerning any complaint of alleged sexual harassment. Complaints are reviewed on an informal and/or formal basis.

Procedure:

Individuals are encouraged to make an appointment to discuss their concerns on an informal basis with an OIE staff member. OIE staff members are available, by appointment, to counsel such individuals and provide information to help resolve the problem and/or determine the appropriate next actions.

To lodge a formal complaint, the individual should provide a document to OIE describing the alleged harassing behavior and schedule an appointment with an OIE staff member.

Privacy:

All efforts will be made to respond to your complaint in a manner that maintains privacy and upholds the rights of all involved. ▲ CONTINUE

9/1/2009

The Writing Center

The Writing Center provides writing assistance for students, faculty, staff, and other members of the WMU community. The Writing Center exists for all WMU students (graduate and undergraduate) who choose to work on their writing. Because writing is such a complex act, students often concentrate on particular aspects of writing with each visit. They may work with a tutor on organization or focus; they may want to hone their style or find new ways to come up with topics or ideas for development; they may also work on the conventions of English.

Writers may schedule appointments for Mondays - Fridays in advance by calling 387-4615. On Sunday evenings, they offer walk-in sessions only on the 3rd floor of Waldo Library. Students may choose to have a conference report sent to their instructors detailing their visit. The Writing Center tutors are glad to work *with* students on their papers; however, they will not copyedit or proofread papers. The Writing Center can be found at 1071 Moore Hall, (269) 387-4615, or by e-mail at writing-center@wmich.edu

Sindecuse Health Center

All students enrolled at Western Michigan University, Kalamazoo College, Kalamazoo Valley Community College and Davenport College are eligible to receive health care services at Sindecuse Health Center. In addition, spouses of WMU students and their children 12 years of age or older may access many professional services. Campus visitors and camp participants are also welcome for acute care needs.

All Western Michigan University employees, spouses and dependents 12 years and older are eligible to use our cost-effective and convenient services, regardless of eligibility status for other University employee benefits. In addition, they may use our comprehensive pharmacy, sports medicine and physical therapy services. All services are offered on a fee-for-service basis at a cost savings to faculty and staff and to the University.

Western Michigan University students enrolled in seven or more non-exempt credit hours for Fall/Spring Semester (four or more credits during Summer I/Summer II Session) are automatically assessed a Student Health Fee as part of the University's Enrollment Fee.

Western Michigan University students enrolled for fewer credit hours, students from Kalamazoo College, Kalamazoo Valley Community College, Ferris State University pharmacy residents and Davenport College, eligible spouses and children may buy-in on their first professional visit to the Health Center each semester or session or opt to pay non-member rates. Health care coverage runs from the first day of classes of one semester or session to the first day of classes the following semester or session.

The Center is open as follows: Regular Clinic Appointments--M, T, W, F 8:00-5:00, Thursday 9:00-5:00; Urgent Care, M, T, W, F 8:00-5:00, Thursday 9:00-5:00; Saturday, 9-11:30. The Center provides laboratory services, Xray, orthopedics, medical services, pharmacy, laboratory services, allergy injection, immunization, TB testing, HIV testing, sports medicine clinic, physical therapy services, and nutritional counseling, and has a staff of psychiatrists, psychologists, physicians, physician assistants, nurses, health educators, physical therapists, and a medical social worker.

University Counseling and Testing Center

Many important decisions and situations will confront students while they are at Western Michigan University. They will need to make decisions regarding courses, curricula, and career exploration. They may become involved in social and personal situations that leave them feeling confused and upset. In

addition, it may be likely that the inherent stresses of university life will at some time interfere with academic achievement and personal growth. The University Counseling and Testing Center, located on the main floor of the Faunce Student Services Building, exists to help students deal effectively with such concerns.

The Center is staffed with professionally licensed counselors and psychologists and is accredited by the International Association of Counseling Services.

Counseling and Testing Center Services consist of the following:

• Personal counseling,
• Educational counseling,
• Career counseling and testing,
• The career exploration/media center,
• Training and internship programs,
• National standardized testing,
• Test scanning services.

Appointments may be requested by calling (269) 387-1850 or by stopping at the Counseling and Testing Center at 2513 Faunce Student Services Building reception desk between 8 a.m. and 5 p.m., Monday through Friday. Students unable to utilize the Center's services during regular hours may make requests for evening appointments. The Center attempts to service as many students as possible within staffing limitations. More information can be found at http://www.uctc.wmich.edu/services/default.html.

Search WMU

Guidelines for Instructors

The Academic Honesty Policy is created and defined by members of the academic community, recommended by the Faculty Senate and adopted by the Board of Trustees. The process is explained in detail on pages 268-270 in the Undergraduate Catalog and pages 24-25 in the Graduate Catalog. The processes necessary to support this policy are managed and facilitated by the Office of Student Conduct (OSC). If you have any questions, please call the OSC at 387-2160.

ACADEMIC INTEGRITY PROCESS AT A GLANCE

STEP 1: CHARGING A STUDENT WITH ACADEMIC DISHONESTY: Faculty are asked to complete the Academic Dishonesty Charge form. After completion of this form, deliver or fax it to the OSC with a copy of the course syllabus and the original exam/paper upon which the charge is based. Upon receipt of your forwarded materials, the OSC Office Assistant will place a conduct hold on the student's account and schedule an appointment for the student to meet with an OSC staff member. During the meeting with the student, an Academic Dishonesty Process Form will be completed.

STEP 2: IF THE STUDENT ADMITS RESPONSIBILITY FOR ACADEMIC DISHONESTY: The faculty member will be contacted by an OSC staff member and apprised of the student's admission. The faculty member may determine the grade penalty (if any), which includes a reduced or failing grade for the assignment as well as any grade penalty up to and including an E for the course. The OSC may also assess non-grade related sanctions.

STEP 3 (if needed): IF THE STUDENT DOES NOT ADMIT RESPONSIBILITY FOR ACADEMIC DISHONESTY: A hearing will be held between the student and the instructor, with the instructor serving as the hearing officer or with the student, instructor, and an Academic Integrity Hearing Panel (AIHP), with the AIHP serving as the hearing body. OSC will contact the faculty member to determine the type of hearing preference. An AIHP consists of three faculty members and two students. Panel members are selected using procedures established by the Professional Concerns Committee of the Faculty Senate. At the conclusion of either type of hearing, a determination of responsible or not responsible will be made by the hearing officer or hearing body. The AIHP does not determine any outcome beyond the finding of responsible or not responsible.

ADDITIONAL INFORMATION:

IF A FINDING OF NOT RESPONSIBLE HAS BEEN MADE: All charges are dismissed and no penalties are assessed.

IF A FINDING OF RESPONSIBLE HAS BEEN MADE: A finding of responsible occurs based on a student's admission or as the result of a hearing with the instructor or AIHP. The faculty member may impose an academic penalty up to failure for the course. Grade decisions based on a finding of responsible for academic dishonesty may not be appealed. Once a finding of responsible has been determined, further class attendance depends on the penalty imposed by the instructor and/or OSC. If the instructor decides to fail the student in the course, the student is not permitted to continue attending class. Additional penalties ranging from a reprimand to dismissal from the university may be assessed by the OSC.

IF THE STUDENT WANTS TO APPEAL A FINDING OF RESPONSIBILITY AFTER A HEARING WITH THE INSTRUCTOR: A student may appeal the decision resulting from a hearing with the instructor to an AIHP within five (5) university business days.

WHILE A CASE IS PENDING: A case is considered pending until one of two events occurs: (1) the student admits responsibility or (2) the hearing process is completed. While a case is pending, the student has the right to attend and participate in the class. If the case is pending at the end of the semester, the instructor must assign an incomplete grade and submit a change of grade form to the Registrar's office once the process is complete.

CHECKLIST OF ITEMS TO BE FORWARDED TO OSC

1. Completed charge form (retain a copy for your records)
2. Copy of course syllabus
3. Original Exam/Paper upon which the charge of academic dishonesty is based and any other pertinent information (retain a copy for your records)

TOP

Western Michigan University Academic Dishonesty Charge Form

PLEASE PRINT OR TYPE

Student Name _____Student ID#_____

Student Email _____

Course Name and #_____

Person Reporting _____Date_____

I.   CHARGE

I am charging the above named student with an alleged violation of the University Academic Honesty Policy as specified below. (Definitions are printed on the back of form.) Check all that apply.

❑ Cheating   ❑ Plagiarism
❑ Fabrication, Falsification and Forgery   ❑ Complicity
❑ Multiple Submission   ❑ Academic Computer Misuse

The student is charged with violating the University Academic Honesty Policy in the following manner: (Please use additional sheets if needed.)

_____

_____

_____

_____

_____

A representative from the Office of Student Conduct will meet with the above named student. If the student admits responsibility, the Office of Student Conduct will contact the faculty member for consultation regarding further action.   If the student denies responsibility, the Office of Student Conduct will contact the faculty member to ascertain the preferred hearing type and arrange the date, time and location of the hearing.

Reporting Person's Signature _____

Reporting Person's Telephone Number_____

Reporting Person's Email Address _____

(Mail or fax to the Office of Student Conduct. The fax number for the Office of Student Conduct is 387-2554.)

Academic Honesty

If a student is uncertain about an issue of academic honesty, he/she should consult the faculty member to resolve questions in any situation prior to the submission of the academic exercise. Violations of academic honesty include but are not limited to:

Cheating

Definition: Cheating is intentionally using or attempting to use unauthorized materials, information, notes, study aids or other devices or materials in any academic exercise.

Clarification

1. Students completing any examination are prohibited from looking at another student's examination and from using external aids (for example, books, notes, calculators, conversation with others) unless specifically allowed in advance by the faculty member.
2. Students may not have others conduct research or prepare work for them without advance authorization from the faculty member. This includes, but is not limited to, the services of commercial term paper companies.

Fabrication, Falsification and Forgery

Definition: Fabrication is the intentional invention and unauthorized alteration of any information or citation in an academic exercise. Falsification is a matter of altering information, while fabrication is a matter of inventing or counterfeiting information for use in any academic exercise or University record. Forgery is defined as the act to imitate or counterfeit documents, signatures, and the like.

Clarification

1. ``Invented'' information shall not be used in any laboratory experiment, report of results or academic exercise. It would be improper, for example, to analyze one sample in an experiment and then ``invent'' data based on that single experiment for several more required analyses.
2. Students shall acknowledge the actual source from which cited information was obtained. For example, a student shall not take a quotation from a book review and then indicate that the quotation was obtained from the book itself.
3. Falsification of University records includes altering or forging any University document and/or record, including identification material issued or used by the University.

Multiple Submission

Definition: Multiple submission is the submission of substantial portions of the same work (including oral reports) for credit more than once without authorization.

Clarification

Examples of multiple submission include submitting the same paper for credit in two courses without the faculty member's permission; making revisions in a credit paper or report (including oral presentations) and submitting it again as if it were new work. Different aspects of the same work may receive separate credit; e.g., a report in history may receive credit for its content in a history course and for the quality of presentation in a speech course.

Plagiarism

Definition: Plagiarism is intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper acknowledgement of the source). The sole exception to the requirement of acknowledging sources is when the ideas, information, etc. are common knowledge.
Instructors should provide clarification about the nature of plagiarism.

Clarification

1. *Direct Quotation:* Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged, in the text by citation or in a footnote or endnote.
2. *Paraphrase:* Prompt acknowledgement is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment,..." and then conclude with a footnote or endnote identifying the exact reference.
3. *Borrowed facts:* Information gained in reading or research which is not common knowledge must be acknowledged.
4. *Common knowledge:* Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials which add only to a general understanding of the subject may be acknowledged in the bibliography and need not be footnoted or endnoted.
5. *Footnotes and endnotes:* One footnote or endnote is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgement made. Similarly, when a passage is paraphrased, acknowledgement is required.

Faculty members are responsible for informing students concerning appropriate formats for handling quotations, footnotes, endnotes, and bibliographic references.

Complicity

Definition: Complicity is intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Clarification

Examples of complicity include knowingly allowing another to copy from one's paper during an examination or test; distributing test questions or substantive information about the materials to be tested before the scheduled exercise; collaborating on academic work knowing that the collaboration will not be reported; taking an examination or test for another student, or signing another's name on an academic exercise.

(NOTE: Collaboration and sharing information are characteristics of academic communities. These become violations when they involve dishonesty. Faculty members should make clear to students expectations about collaboration and information sharing. Students should seek clarification when in doubt.)

Computer Misuse

Definition: Academic computer misuse is the use of software to perform work the instructor has told the student to do without assistance of software.

ACADEMIC DISHONESTY CHARGE FORM INSTRUCTION SHEET
(Please complete the enclosed Charge Form per the following instructions)

The Academic Honesty Policy is created and defined by members of the academic community, recommended by the Faculty Senate and adopted by the Board of Trustees. ***The process is explained in detail on pages 268-270 in the Undergraduate Catalog and pages 24-25 in the Graduate Catalog.*** The processes necessary to support this policy are managed and facilitated by the Office of Student Conduct (OSC). If you have any questions, please call OSC at 387-2160.

ACADEMIC INTEGRITY PROCESS AT A GLANCE

STEP 1: CHARGING A STUDENT WITH ACADEMIC DISHONESTY: Faculty are asked to complete the attached charge form. After completion of this form, deliver or fax it to OSC with a copy of the course syllabus and the original exam/paper upon which the charge is based. Upon receipt of your forwarded materials, the OSC Office Assistant will place a conduct hold on the student's account and schedule an appointment for the student to meet with an OSC staff member. During the meeting with the student, an Academic Dishonesty Process Form will be completed.

STEP 2: IF THE STUDENT ADMITS RESPONSIBILITY FOR ACADEMIC DISHONESTY: The faculty member will be contacted by an OSC staff member and apprised of the student's admission. The faculty member may determine the grade penalty (if any) which includes a reduced or failing grade for the assignment as well as any grade penalty up to and including an E for the course. OSC may also assess non-grade related sanctions.

STEP 3 (if needed): IF THE STUDENT DOES NOT ADMIT RESPONSIBILITY FOR ACADEMIC DISHONESTY: A hearing will be held between the student and the instructor, with the instructor serving as the hearing officer or with the student, instructor, and an Academic Integrity Hearing Panel (AIHP), with the AIHP serving as the hearing body. OSC will contact the faculty member to determine the type of hearing preference. An AIHP consists of three faculty members and two students. Panel members are selected using procedures established by the Professional Concerns Committee of the Faculty Senate. At the conclusion of either type of hearing, a determination of responsible or not responsible will be made by the hearing officer or hearing body. ***The AIHP does not determine any outcome beyond the finding of responsible or not responsible.***

ADDITIONAL INFORMATION:

IF A FINDING OF <u>NOT</u> RESPONSIBLE HAS BEEN MADE: All charges are dismissed and no penalties are assessed.

IF A FINDING OF RESPONSIBLE HAS BEEN MADE: A finding of responsibility occurs based on a student's admission or as the result of a hearing with the instructor or AIHP. **The faculty member may impose an academic penalty up to failure for the course. Grade decisions based on a finding of responsibility for academic dishonesty may not be appealed**. Once a finding of responsibility has been determined, further class attendance depends on the penalty imposed by the instructor and/or OSC. If the instructor decides to fail the student in the course, the student is not permitted to continue attending class. Additional penalties ranging from a reprimand to dismissal from the university may be assessed by the OSC.
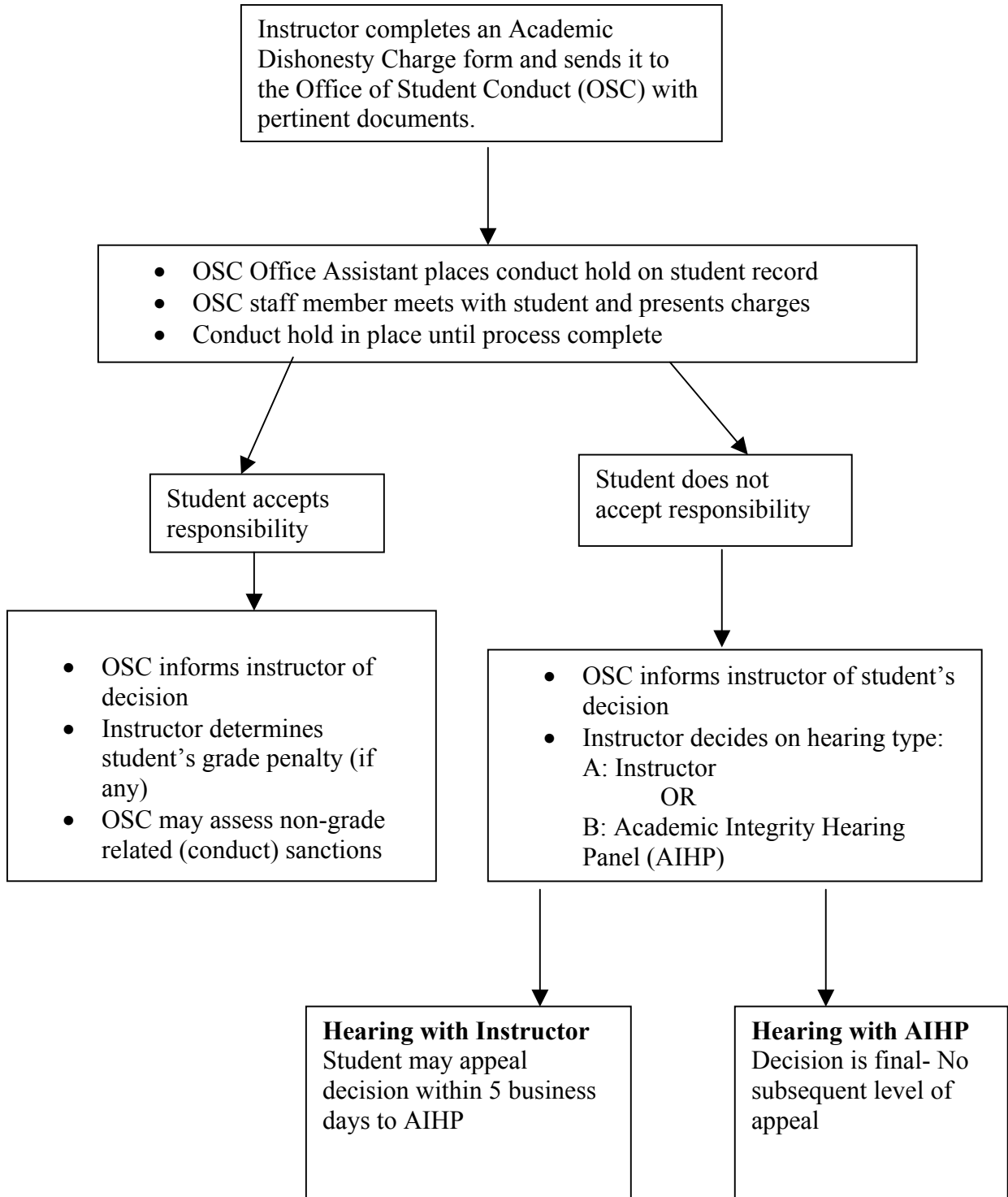
IF THE STUDENT WANTS TO APPEAL A FINDING OF RESPONSIBILITY AFTER A HEARING WITH THE INSTRUCTOR: A student may appeal the decision resulting from a hearing with the instructor to an AIHP within five (5) university business days**.**

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<u>CHECKLIST OF ITEMS TO BE FORWARDED TO OSC</u>

1. Completed charge form (retain a copy for your records)
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3. Original Exam/Paper upon which the charge of academic dishonesty is based and any other pertinent information   (retain a copy for your records)

Academic Dishonesty Flow Chart

Instructor completes an Academic Dishonesty Charge form and sends it to the Office of Student Conduct (OSC) with pertinent documents.

- OSC Office Assistant places conduct hold on student record
- OSC staff member meets with student and presents charges
- Conduct hold in place until process complete

Student accepts responsibility

Student does not accept responsibility

- OSC informs instructor of decision
- Instructor determines student's grade penalty (if any)
- OSC may assess non-grade related (conduct) sanctions

- OSC informs instructor of student's decision
- Instructor decides on hearing type:
  A: Instructor
  		OR
  B: Academic Integrity Hearing Panel (AIHP)

Hearing with Instructor
Student may appeal decision within 5 business days to AIHP

Hearing with AIHP
Decision is final- No subsequent level of appeal

Basic Advice on How to Cite Sources

"plagiarize... [definition]: to steal and pass off (the ideas or words of another) as one's own use (a created production) without crediting the source ~ vi to commit literary theft: present as new and original an idea or product derived from an existing source..." (Anonymous (1977) Webster's New Collegiate Dictionary. G. & C. Merriam Company, Springfield, MA: p. 877)

1. Anyone who turns in an assignment that involved consulting references without identifying them has committed plagiarism.
2. Anyone who turns in an assignment that involves consulting references *without adequately citing them* has also committed plagiarism.
3. Anyone who turns in an assignment in which it is claimed an author is summarized, but in fact the author is quoted or paraphrased has also committed plagiarism.
4. It is not the job of a graduate-level course instructor to teach you how to cite your sources! Take it up with your elementary and high school teachers if they never held you to learning how to cite your sources.

Rules of thumb

In general, don't turn in papers at the graduate level that have no sources cited. (The only exception is if your instructor tells you that the assignment involves no outside research and has no expectation that you should track down the sources of information that you know that are not common knowledge. This almost never happens.)

Everything that is not common knowledge should be cited. Common knowledge refers to what the intended audience for your essay can presumably be expected to already know and/or what a reasonable person would not dispute.

Undergraduates begin and end their research using sources such as Wikipedia. As graduate students, we expect the bulk of your research will come from articles in peer reviewed journals and respected authorities (e.g. the *Encyclopedia Britannica*).

Citations should be "idiot proof", i.e. a reasonably intelligent person should be able to find the source you provide based upon your reference. If you quote or paraphrase specific wording, you need to identify exactly where in the reference the quoted words come from, i.e. a page number. (The only exception is a web source for which there are no page numbers.)

Appending a list of references at the end of a paper does NOT constitute adequate citation. You must give your reader some idea of how they were used, which ideas came from which sources.

If your entire paper is based on a single source, use a footnote on the title to clarify your debt, e.g. "1. This essay is paraphrased from source X, unless otherwise indicated." (Some journals will not allow authors to use footnotes – if this is the case, begin the first paragraph by stating in the text that the following essay has been paraphrased from source X unless otherwise noted (X). Then provide the complete citation at the end of the essay in the section identified "References".)

If the information in a paragraph is based on a single source, use a footnote at the end of the paragraph to indicate your debt to that source. You can sometimes get away with citing the reference at the end of the paragraph (Smith 2002), provided a complete reference to the source is provided in a list of references AND a reasonable person would recognize upon reading the paragraph that indeed the claims in the preceding sentences all came from the one source identified at the end of the paragraph.

If a single sentence within a paragraph cites information from a single source, cite the source you consulted (e.g. "(Smith 2002)") and provide a full citation to the source on a list of references at the end.

Unless the exact wording is crucial (or the claim highly controversial) do <u>not</u> quote from sources. Quoting is the only time when your source should be out in front of you when you write the sentence, paragraph, etc.

In general, the best way to avoid misrepresenting a sentence as merely summarizing when in point of fact it represents a paraphrase or direct quote is to close the source before you write the sentence (paragraph, etc.) *in your own words*.

There are multiple reference styles –e.g. the Chicago Manual of Style, APA. Whichever one you use be consistent.

After all this, you might be tempted to simply add a footnote with a reference to each paragraph, regardless of whether you have actually consulted that source. DO NOT DO THIS! It is intellectually dishonest to claim you consulted a work that you did not actually consult. It is also plagiarism if the view you attribute to the author is not one he or she holds in the work cited, i.e. it misrepresents the author's views as expressed in the cited source.

SUPPORTED SOFTWARE

1. EndNote – Please see Heather for purchase and download information.

2. PCQ Software – Heather has disks and codes for use

3. Ethnograph – Heather has disks and codes for use.

4. SPSS & SASS Software – See Dr.Cobern

5. Mendeley – students may choose to use the Mendeley software (see attached).

6. Hyper Research – See Dr.Cobern

7. Microsoft office. – See Heather for Disks for personal laptops.

Manage, share and discover research papers.

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Prof. William Fitzgerald, Head of Research, Signal Processing Laboratory, University of Cambridge

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- All-Optical Nanoscale pH Meter
- BMC Bioinformatics
- Identifying the fundamental units of bacterial diversity: A paradigm shift to incorporate ecology into bacterial systematics
- "This book helped me solve a Windows networking problem that I had been struggling with for a long time. This book is a must-have for anyone who is trying to implement and maintain a Microsoft file and print server environment—that even includes environme
- 16S Rrna Targeted Sandwich Hybridization Method for Direct Quantification of Mycobacteria in Soils
- Quantication of Intestinal Bacterial Populations by Real-Time PCR with a Universal Primer Set and Minor Groove Binder Probes: a Global Approach to the Enteric Flora
- Anammox bacteria: from discovery to application
- A bayesian method for calculating real-Time quantitative pcr calibration curves using absolute dna standards

SECTION III

U.S.-China Relations

Advance Schedule of Doctoral Program Graduate Courses   22 August 2016

	Academic Yr	Fall	Spring	Sum-1	Sum-2
Cycle 1.2	2015/16	6170 (Rudge) 6200 (Peasants) 6260 (Fetters) 1st students need to take R1 and R2	6150 (Henderson) 6171 (Rudge/Mentors) 6180 (Peasants) 1st students need to take R2 and R3	6160 (Cobern/Peasants) 6260 (Cobern /ONLINE)	
	2016/17	6140 (Rudge) 6170 (Petcovic) 6200 (Peasants) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection	6150 (Schuster) 6171 (Petcovic/Mentors) 6180 (Peasants) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I	6260 (Cobern /ONLINE) 1st yr students need to take R3 e.g., EMR 6480 Qualitative Resh Methods	
Cycle 2.2	2017/18	6160 (Cobern/Pleasants) 6170 (Henderson) 6200 (Peasants) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6171 (Henderson/Mentors) 6180 (Peasants) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I and R3 Qual course offered by MISE	6140 (Rudge) 6260 (Cobern /ONLINE)	
	2018/19	6150 (TBA) 6170 (Petcovic) 6200 (Peasants) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6171 (Petcovic/Mentors) 6180 (Peasants) 6260 (Cobern /ONLINE) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I	1st yr students need to take R3 e.g., EMR 6480 Qualitative Resh Methods	

Projected schedule of doctoral courses 2015-2023(2016-06-13)

	Academic Yr	Fall	Spring	Sum-1	Sum-2
Cycle 1.2	2019/20	6160 (Schuster) 6170 (TBA) 6200 (TBA) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6140 (Rudge) 6171 (TBA/Mentors) 6180 (Henderson) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I	6260 (TBA/ONLINE) 1st yr students need to take R3 e.g., EMR 6480 Qualitative Resh Methods	
	2020/21	6150 (Petcovic) 6170 (TBA) 6200 (TBA) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6171 (TBA/Mentors) 6180 (TBA) 6260 (TBA/ONLINE) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I *and* R3 Qual course offered by MISE	6160 (Peasants)	
Cycle 2.2	2021/22	6140 (Rudge) 6170 (TBA) 6200 (TBA) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6150 (Petcovic) 6171 (TBA/Mentors) 6180 (TBA) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I	6260 (TBA/ONLINE) 1st yr students need to take R3 e.g., EMR 6480 Qualitative Resh Methods	
	2022/23	6160 (Schuster) 6170 (TBA) 6200 (TBA) 1st yr students need to take R1 e.g., SOC 6060 Resrch Dsgn & Data Collection 2nd yr students need to take R4, e.g., SOC 6210 Logic & analysis Of Soc Resch II	6140 (Rudge) 6171 (TBA/Mentors) 6180 (TBA) 1st yr students need to take R2 e.g., SOC 6070 Logic & analysis Of Soc Resch I	6260 (TBA/ONLINE) 1st yr students need to take R3 e.g., EMR 6480 Qualitative Resh Methods	

Projected schedule of doctoral courses 2012-2023(2014-07-24)

	Academic Yr	Fall	Spring	Sum-1	Sum-2
Cycle 1.2	2019/20	6160 (Schuster) 6170 (Grunert) 6250 (Skjold) Other Courses: • Science content • Research Tools	6140 (Rudge) 6171 (Grunert/Mentors) 6180 (Skjold) Other Courses: • Science content • Research Tools	6260 (Cobern /ONLINE) Other Courses: • Science content • Research Tools	
	2020/21	6150 (Petcovic) 6170 (Rudge) 6250 (Skjold) Other Courses: • Science content • Research Tools	6171 (Rudge/Mentors) 6180 (Skjold) Entering Students need to take R2 and R3 Other Courses: • Science content • Research Tools	6160 (Skjold) Other Courses: • Science content • Research Tools	
Cycle 2.2	2021/22	6140 (Rudge) 6170 (Schuster) 6250 (Skjold) Other Courses: • Science content • Research Tools	6150 (Petcovic) 6171 (Schuster/Mentors) 6180 (Skjold) Other Courses: • Science content • Research Tools	6260 (Cobern /ONLINE) Other Courses: • Science content • Research Tools	
	2022/23	6160 (Schuster) 6170 (New Hire) 6250 (Skjold) Other Courses: • Science content • Research Tools	6140 (Rudge) 6171 (New Hire/Mentors) 6180 (Skjold) Other Courses: • Science content • Research Tools	Other Courses: • Science content • Research Tools	

The Mallinson Institute for Science Education – Doctoral Program

MISE offers a graduate program leading to the PhD degree in Science Education. This is a graduate program in Science Education for those with a science or science education background who wish to pursue careers as college or university science teachers, science education researchers, science teacher educators, curriculum specialists, high school science department chairs or professionals in government agencies or school districts.

The program has three tracks, viz. 1. College science teaching, 2. College science teaching with discipline research focus, and 3. Curriculum and instruction (K-12). The tracks share a common core, along with some specialization.

	Track	Program description & requirements
Track 1	**1. College science teaching** *Career goal:* Teaching undergraduate science at community colleges, liberal arts colleges, teaching-focused universities.	*Program:* Graduate study in the scientific, historical and philosophical aspects of science teaching and learning with a specific focus on the teaching and learning of science at the college level. *Requirements:* Science qualifications at master's level or equivalent.
Track 2	**2. Discipline-specific research focus** *Career goal:* Faculty in a university science department or teacher education unit, involved in both teaching and research.	*Program:* Graduate study and research in the teaching and learning of science concentrating on specific disciplines: i.e. biology, chemistry, geography, earth sciences or physics. Emphasizes pedagogical content knowledge for these disciplines. *Requirements:* Science qualifications at master's level or equivalent.
Track 3	**3. Science curriculum and instruction with K-12 focus** *Career goals:* • Science teacher educator. • Science curriculum specialist • Science education researcher • School science department chair At colleges and universities, government education agencies or school districts	*Program:* Graduate study in the scientific, historical and philosophical aspects of science curriculum and instruction with a specific focus on the teaching and learning of science at the K-12 level. *Requirements:* Masters degree in science education or equivalent.

Component	Courses			Credits
Science Content Cognate	MA in Science/Science Education (or equivalent)			24
Science Education Core	SCI 6140 Hist & philos….			3
	SCI 6150 Hist of sci ed. . .			3
	SCI 6160 Models of Learning			3
	SCI 6170 Research Traditions			3
	SCI 6180 College Science Teaching			3
Research Tools	**Research Design, Quantitative & Qualitative Research Methods, Evaluation Methods**			12
Track specializations	<u>1. CST</u> SCI 6170 SCI 6180	<u>2. CST/DRF</u> SCI 6170 SCI 6180	<u>3. C & I</u> SCI 6170 SCI 6260	6
Dissertation	SCI 7300			15
			Total credits	**72**

[2] New Course (not yet in place)
6270 (K-12 Methods):   3-credit course on the teaching of methods; coordinated with teaching 4010/4040

Research Tools Requirement for the MISE Doctoral Program

The University requires doctoral students to take 12 credits in "research tools," to be specified by each program. The basic MISE requirement is one course in quantitative methods and one in qualitative methods (e.g., SOC 6060 & 6200 or EMR 6450 & EMR 6480). Bearing this basic requirement in mind, the 12 credits of research tools can be drawn from any of the following courses on research methods. We strongly recommend, however, that you discuss your course choices with faculty and other students. Students who have already taken these courses are an important source of information for new students.

	Entry Course (Tend to be offered in the fall semesters)	Advanced Courses (Tend to be offered in the spring semesters)
Introduction to Research	SOC 6060 (covers both quant & qual research)	SOC 6200 (covers both quant & qual research)
Quantitative Research Methods	EMR 6450 Or PSY 6340 Or Stat 5670 All courses assume rudimentary knowledge of statistics	EMR 6550, 6650. 6750 PSY 6350, 6360 STAT 5610 (Spr 2008, 2010, 2012), 5630, 5680,
Qualitative Research Methods	EMR 6480	EMR 6580
Policy Research		EDLD 6810 Policy Development
Evaluation	EVAL 6000	Adv EVAL courses

EDLD 6810	Policy Development	PSY 6340	Experimental Design & Analysis I
EMR 6450	Elementary Statistics	PSY 6350	Correlation & Regression Analysis
EMR 6480	Qualitative Research Methods	PSY 6360	Experimental Design & Analysis II
EMR 6550	Research Design	SOC 6060	Research Design & Data Collection I
EMR 6650	General Linear Methods	SOC 6200	Research Design & Data Collection II
EMR 6750	Applied Multivariate Statistics	STAT 5610	Applied Multivariate Statistical Methods
EVAL 6000	Intro to Evaluation	STAT 5630	Sample Survey Methods
		STAT 5670	Experimental Design & Analysis of Experiments
		STAT 5680	Regression Analysis

Flowchart: Science Education Doctoral Program

Admission into the Ph.D. Program

Ph.D. Coursework

Science Ed. Core courses
- ✓ SCI 6140
- ✓ SCI 6150
- ✓ SCI 6160
- ✓ SCI 6180

Obtain 3.5+ GPA

All other required Coursework
- ✓ Complete all coursework

Obtain 3.0+ GPA

Fail → Can retake each class one time

Fail → Out of Standing

Early Research Requirement in conjunction with SCI 6170 or other research project
- ✓ Present to MISE
- ✓ Present at approved conference
- ✓ Submit paper to MISE faculty for approval (*Resubmit ONE TIME if not approved*).
- ✓ Submit paper to approved journal

Fail → Out of Standing

College Teacher of Science

Science Teacher Educator

- SCI 6170 – Sce Ed. Research Traditions (3 Hrs) **and**
- SCI 6180 – Teaching and Learning in College Science Classroom (3 Hrs)
(Each taken for the second time)

- SCI 6170 – Sce Ed. Research Traditions (3 Hrs) **and**
- SCI 6260 – Curriculum Studies in Science Education

Comprehensive Literature. Review
- ✓ Formal Paper
- ✓ Formal Presentation

Yes / No

No → Resubmit One time

Pass / Fail

Fail → Out of Standing

Select Dissertation Advisor w/ program Director's consent

Form Committee
Select Dissertation Topic

Committee Appointment Form

Complete Dissertation Proposal
- ✓ Formal presentation
- ✓ Formal Paper

Yes — Proposal approved Candidacy Attained — No

No → Resubmit One time

Pass / Fail → Out of Standing

Yes → HSIRB approval if needed

Graduation Auditing

Schedule Defense

Complete Dissertation Defense
- ✓ Formal presentation
- ✓ Formal Paper

Yes — Revisions Required — No

Yes → Submit One Time back to the Committee & get approval

Fail → Out of Standing

No → **Dissertation Approval Form**

Dissertation Check-in Form

Submission of Electronic Thesis Dissertation (ETD)

Refer to the Graduate College

Graduation

Go to Narrative   **Go to Time to Degree**

1. Admission into the Ph.D. program.

2. Complete Prerequisites if applicable.

3. Start the Ph.D. course work Take at least 48 hours of graduate work beyond the courses counted toward a Master's Degree. Courses consist of:

   - SCI 6140 - Science: Historical and Philosophical Perspectives Credits: **3 hrs.**
   - SCI 6150 - Science Education: Historical and Philosophical Foundations Credits: **3 hrs.**
   - SCI 6160 - Science Education: Models of Learning and Teaching Credits: **3 hrs.**
   - SCI 6170 - Science Education: Research Traditions Credits: **3 hrs.**
   - SCI 6180 - Teaching and Learning in the College Science Classroom Credits: **3 hours**

   AND

   For The College Teacher of Science Curriculum select:

   - SCI 6170 - Science Education: Research Traditions Credits: **3 hrs. AND**
   - SCI 6180 - Teaching and Learning in the College Science Classroom Credits: **3 hours**
   (Each taken for a second time)

   For The Science Teacher Educator Curriculum select:

   - SCI 6170 - Science Education: Research Traditions Credits: **3 hrs. AND**
   - SCI 6260 - Curriculum Studies in Science Education Credits: **3 hours**

4. Complete early research requirements: Comprehensive Literature Review requirements and Dissertation Proposal requirements

5. Meet with the Director of the Program to establish a Dissertation Committee

6. Select a dissertation Topic

7. Oral Presentation of Dissertation Proposal

8. Register for Dissertation Credit (15 hrs of SCI 730)

9. Complete the Residency enrollment requirement, which includes two consecutive semesters of full-time study on campus. Complete the approved Research Tools by the advisor

10. Candidacy is established after students complete Coursework, Research Tools, Comprehensive Exam and a Teaching Experience.

11. HSIRB Approval

12. Collect Data

13. Complete The Graduate College (TGC) forms.

14. Schedule the Defense and apply for the Graduation Audit.

15. Complete the Oral Dissertation Defense.

16. Finish the required revisions.

17. Submit back to the Committee & get approval.

18. Submit the Electronic Thesis Dissertation (ETD)/ Submit Standard Dissertation.

19. Graduation.

WESTERN MICHIGAN UNIVERSITY

Admission into Program —3.22 Years— Comprehensive Exam —2.89 Years— Dissertation Defense —0.30 Years— Graduation

Phase 1 **Phase 2** **Phase 3**

Average Completion Timeline: Doctoral Degree in Science Education (6.41 years)
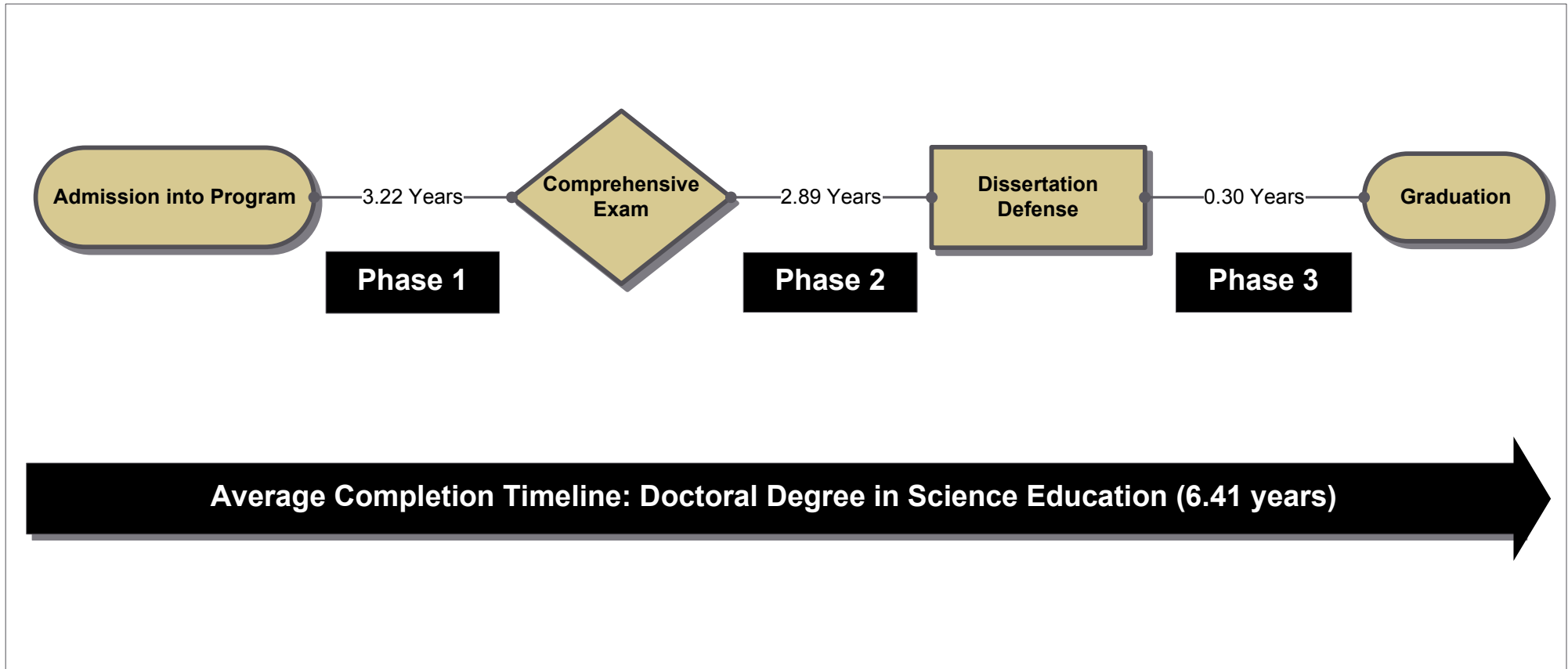
Note: Information above is based on data collected from WMU Profiles of Graduated Doctoral Students AY: 2000 - 2006

Go to Narrative   Go to Flowchart

PROGRAM REQUIREMENTS FOR THE MISE PH.D. PROGRAM

This document summarizes what is required for successful student completion of the MISE Ph.D. Program in terms of both student and faculty responsibilities. Exceptions to any policy item can only be granted by a majority vote of the MISE faculty. As with all requirements, the faculty will discuss any exceptions or problems as a group and come to a unified consensus that is in the best interest of the student. Topics are presented in the following order:

1. Program Elements
2. Definition of Advancement to Candidacy
3. Research Committee Formation
4. SCI 6170-6171 Early Research Experience I & II
    A. Memorandum of Understanding (MOU)
    B. Research Proposal
5. Early Research Requirement (ERR)
    A. MISE Presentation
    B. Conference Presentation
    C. MISE Faculty Review of ERR Manuscript
    D. Journal Submission of ERR Manuscript
6. Comprehensive and Critical Literature Review (CCLR)
    A. The CCLR Document
    B. The CCLR Presentation
7. Dissertation Proposal
8. Dissertation Defense
9. Table Summarizing Major Requirements of the MISE Ph.D. Program
10. Appendix I. Feedback for MISE ERR Presentations
11. Appendix II. Approved ERR External Research Conferences
12. Appendix III. Directions for the Submission of ERR Manuscripts for Review by MISE Faculty
13. Appendix IV. Rubric for Review of ERR Manuscripts
14. Appendix V. Approved ERR Journals
15. Appendix VI. Rubric for Review of the CCLR
16. Appendix VII. Article Dissertation Policy (an alternative to the traditional dissertation structure)

1. Program Elements
The following describe the required components of the MISE Ph.D. Program
A. *Core Coursework Grade Requirement:* The student must pass SCI 6140, 6150, and 6160 with an average GPA of 3.5 or better; each course can be taken one additional time to improve GPA, if needed. The highest grade received for each course will be used in the GPA calculation.

A	=	4.0
BA	=	3.5
B	=	3.0
CB	=	2.5
C	=	2.0

B. *SCI 6170-6171 Early Research Experience I & II:* The student must pass this two-course series that provides experience in critical evaluation of the research literature and experience in conducting mentored research. In SCI 6170, students develop a Memorandum of Understanding with their faculty mentor that describes the faculty and student responsibilities for the research to be carried out. The SCI 6170 course culminates in a Research Proposal which is then carried out under the faculty mentor's supervision in SCI 6171.

C. *Early Research Requirement (ERR):* An original research study is designed and carried out by the student with faculty mentorship. Our program is designed such that the SCI 6170-6171 course sequence leads to the ERR. However, students may fulfill the ERR with a different project. The ERR has four requirements:
- Present the completed study in a MISE symposium,
- Present the completed study externally at a professional conference ,
- Prepare a manuscript describing the completed study that is reviewed and approved by MISE faculty (can be re-submitted one time with revisions if needed), and
- Submit the completed manuscript to a peer-reviewed journal for publication review.

D. *Comprehensive and Critical Literature Review (CCLR)*: Upon successful completion of the core coursework and the ERR, the student prepares a comprehensive and critical literature review in an area pertaining to the student's intended dissertation research. The CCLR is supervised by a 3-member committee. The CCLR has two requirements:
- Present the approved CCLR at a MISE symposium, and
- Approval of the final written document by the CCLR committee.

E. *Dissertation Proposal*: Upon successful completion of the CCLR, the student's dissertation committee is officially formed and the student develops a dissertation research proposal. The proposal has two requirements:
- Present the approved dissertation research proposal at a MISE symposium, and
- Approval of the final written proposal by the committee.

F. *Dissertation Defense:* Upon successful completion of the dissertation proposal, the student works on his/her dissertation research. The finished dissertation has three requirements:
- Defend the approved dissertation at a MISE symposium,
- Approval of the final written dissertation by the committee, and
- Submission of the approved dissertation to the Graduate College.

2. Definition of Advancement to Candidacy

Candidacy is defined as having completed program requirements (A) through (E), above. A student is permitted to enroll in dissertation credits (SCI 7300) after these are completed.

3. Research Committee Formation

A faculty research committee that will guide a student's research can be formed at any time, but no later than the time that the CCLR is started. A research committee could be formed early such that this committee works with the student through the ERR, CCLR and dissertation processes. Or, formation of this committee could be delayed until the start of the student's CCLR. Committee membership may change through ERR, CCLR, and dissertation process.

Committees are formed through consultations involving the student, the MISE Director, and interested faculty. Committees must be chaired by a MISE faculty member. Although students and faculty have input into committee membership and who will serve as Committee Chair, the MISE Director will make final decisions regarding committee composition. Both CCLR and Dissertation committees must include a second MISE faculty member (in addition to the Chair) and at least one additional member from outside MISE. CCLR committees are limited to 3 members. Dissertation committees can have additional members. Documentation on committee formation, changes to committee membership, and faculty agreement to serve, are placed in the student's file. Committees are not official until all appropriate documentation has been approved and filed at the MISE office.

4. SCI 6170-6171 Early Research Experience I & II

This two-course series is designed to give science education doctoral students direct experience in the process of designing and conducting original research in science education. Note that research in science education may be of various types, e.g. empirical, conceptual, theoretical, historical or philosophical, or a combination, and may thus use a variety of methods.

In the first course (SCI 6170) students conceptualize and design their own research projects, gather and critically appraise the relevant literature, and write a formal Research Proposal. In the second course (SCI 6171) the student carries out this research under the guidance of a faculty mentor, and writes a Research Report. These two courses and their rationale and requirements are described in more detail below. Specific assignment information and grading criteria are available in the SCI 6170 and 6171 syllabi.

A. **SCI 6170 Early Research Experience I.** In SCI 6170, each student conceptualizes and designs a suitable research project, in consultation with the course instructor and a faculty mentor under whose guidance the research will be conducted. Each student's developing research ideas and progress is presented and discussed by the group as part of the weekly class sessions, providing ongoing feedback for change and improvement. At the same time students will be seeking relevant literature and compiling and critically appraising work pertinent to the project. In weekly classes, students report both on their progress in designing the project and on valuable ideas from literature pertinent to their research. Some of this literature may become part of assigned readings for class discussion where appropriate.

- *Memorandum of Understanding.* During 6170 a Memorandum of Understanding (MOU) will be drawn up and signed jointly by the student, the 6170 instructor, and the mentor (and committee members if a committee has already been formed at this stage). This memorandum may be regarded as an agreed 'contract', and outlines in some detail the nature and extent of the work that will be undertaken on the particular research project by the student during 6170 and 6171, with a reasonable timeline for each stage. It also specifies the student and mentor responsibilities on the project and what is required of both. The 6170 instructor and the mentor should consider a MOU carefully to ensure it involves a viable project and a reasonable amount of work for a student during the 6171 semester. It is understood that research projects differ, may involve different amounts of work and time, and that not all students will begin or end at the same place. Thus MOUs must be worked out to ensure that all students will be doing appropriate and equitable amounts of work on their projects. If a student's research proposal or MOU seems over- or under-ambitious, the 6170 instructor, student and mentor should meet to further discuss reasonable expectations.

- *Research Proposal.* The eventual outcome of the research development and literature aspects together is each student's production of a formal Research Proposal for their chosen project during 6170. This proposal should outline the entire research project, as it is intended to be fully enacted. It should describe and motivate the proposed project, its context, purpose, conceptual framework, theory base, research goals, stages, methods, data sources, proposed analyses, etc., and should include a corresponding focused literature review for the area of interest. The proposal document should be written along the lines of formal proposals submitted for research grants, and the faculty instructor and mentor can advise in this regard. Besides a comprehensive account of the proposed research the document should also include a timeline and estimated budget.

        Note that SCI 6170 is a class with grades assigned by the 6170 instructor of record for work done, assignments, contributions, and progress achieved during the course. As such, the learning objectives of the assignments, including the MOU and Research Proposal, are tied to the overall course goals. The Research Proposal may be used as the starting point for the CCLR and/or dissertation proposal (see below), however students should expect substantial refinement and revision as the scope of dissertation research will be more significant than the 6170-6171 project.

B. **SCI 6171 Early Research Experience II.** In SCI 6171, the second course in the sequence, students will carry out their proposed research, under the guidance of their faculty mentor, and in accordance with the MOU. Students will keep a full Research Record of all stages of the project as carried out, including work done, ideas, modifications, improvements, literature, data, analyses, interpretations, conclusions, etc., even dead-ends and lessons learned. This work will culminate in a formal Research Report for 6171. Students will continue to meet weekly as a group with the former 6170 instructor, however, all work should be submitted to the 6171 faculty mentor and the grade will be assigned by the faculty mentor.

        Given the nature of research, the project may extend beyond the 6171 semester, in which case this will be agreed by student and research mentor and the MOU updated accordingly. If all stages of the research are not complete by the end of the semester, the 6171 Research Report should give a full account of the work and stages achieved so far, with plans for completion.

    The SCI 6170-6171 course sequence is typically used by a student to fulfill the MISE Early Research Requirement (ERR, see 5 below). Students who enter having largely completed their ERR requirement in another way should use the courses to start developing their CCLR document (section 6) and/or dissertation proposal (section 7), and the MOU and Research Proposal should be written to reflect this. Having fulfilled the Early Research Requirement with a different research project does not exempt the student from any requirements in the SCI 6170-6171 course sequence.

5. Early Research Requirement (ERR)

    The goal of the ERR is for (i) students to experience the full research process, and (ii) to demonstrate competence with specific aspects of the research process. All parts of this process are to be carried out under the guidance of a faculty mentor or research committee.

    Under (i), students are expected to lead a research project from conceptualization to publication, including specifically:

- Design a study (e.g., identify research goals or questions, review appropriate literature, identify a theoretical framework, choose methods, obtain HSIRB approval, etc.)
- Conduct the study (e.g., collect, analyze, and interpret data)
- Communicate the research in a presentation external to MISE
- Communicate the research in a manuscript submitted to a peer-review journal

    The purpose of (ii) is for students to demonstrate sufficient mastery of research skills to continue in the doctoral program, and for students to obtain formative feedback to improve their external presentations and publications. Students are expected to demonstrate the following aspects of research competence as evaluated via the associated rubrics and additional feedback:

- Communicate the process and results of the research project in an internal MISE presentation
- Communicate the research in a manuscript suitable for peer-review, submitted to the MISE faculty

    Our program is designed for students to begin their early research as part of the SCI 6170-6171 course sequence (see section 4, above). However, it is also possible for students to complete these requirements with a project undertaken outside of SCI 6170-6171 (for example, grant-related research).

Regardless of the source of the research, these requirements can only be met with a project *for which the student has substantial intellectual ownership*. In other words, a project in which the work has been completed by a faculty member and a student name has simply been added to it, is not acceptable. Likewise, work on a grant that was written and conceptualized by a faculty member in which the student is simply doing research already thought through by the faculty member is not acceptable. A grant project undertaken by a faculty member can, of course, represent an opportunity for a student to do his or her ERR project—the point is that the student's ERR project must be in some sense distinct from the original grant, i.e., involve the development of research questions that are distinct from those originally proposed in the grant and include a critical appraisal by the student of additional literature.

By the completion of the ERR project, all students must get to the point where they have analyzed a set of data and drawn conclusions from that analysis. Once they have reached this point they will be able to complete the following four requirements (not necessarily in this order):

A. **MISE Presentation**. Students should schedule a 40-45 minute block (20 minute presentation and 20 minutes of discussion/feedback) to present their ERR project to the MISE community. This presentation is meant as an opportunity for students to present their work in a safe and constructive environment before presenting at a state or national conference. The presentation allows faculty and other student to learn about the presenting student's research interests, and to provide critical and constructive feedback that improves the work. Feedback will be provided orally and via rubric (see Appendix I). Students should submit a 3-5 page executive summary of their research and schedule the presentation with the MISE office *with the permission of their mentor* at least 14 days prior to the presentation date.

B. **Research Conference Presentation**. Students will present their work at a research conference (see Appendix II for recommended conferences) at the state, national or international level. The faculty prefer that the conference be competitive, such that students would need to submit a presentation proposal to the organization, have it reviewed and selected on merit. The conference and presentation must be research-oriented. Both oral and poster presentations are acceptable to fulfill this requirement. Students should copy their acceptance notification and relevant conference program page to include in the yearly SPAR.

   It is possible that a student may have done research prior to their early research requirement and that they would have already presented either orally or through a poster at a qualifying event. These presentations may count for the early research requirement, but it must be clear that the student was the sole or primary author of the talk or poster. The student and faculty mentor must request post-hoc approval from the MISE faculty. MISE faculty will consider each request individually. Presentations in which students' names were added, but for which most of the work was conducted by a faculty member or another student do not qualify.

C. **MISE Paper Submission**. The student must formally write up a publishable manuscript and submit it to the MISE faculty for review. The student will submit this paper and a cover letter to the *current* 6170 instructor, who will serving as MISE Editor, then disseminates it to a committee of at least two MISE faculty (not the student's research mentor or mentors). These faculty will act as reviewers of the work and submit an evaluation of either "Pass" or "Revise and Resubmit" plus recommendations for changes or improvements. Faculty may choose whether or not to remain anonymous during the review process. The MISE Editor will summarize the reviews and forward the decision and recommendations to the student. (More detailed directions guiding the submission of manuscripts are provided in Appendix III. The rubric faculty will use to evaluate manuscripts is provided in Appendix IV.) In the event that the student's faculty mentor happens to be the MISE editor, a different faculty member (usually the previous editor) will be assigned the role of editor for that student.

If the student is required to revise and resubmit, the student and mentor may request a meeting with the MISE editor and reviewers. Such a meeting would be for formative purposes so that the student better understands what revisions are needed and why. The meeting would also give the student the opportunity to clarify possible misunderstandings about the paper. The resubmitted paper should be accompanied by a cover letter that point-by-point addresses each of the MISE editor and reviewer concerns. Students are encouraged to work closely with their mentor during this review process, and must obtain his/her approval prior to the resubmission. The resubmitted paper may be sent to the same faculty reviewers, or may be sent to one or more new reviewers who will be asked to check that all of the prior concerns have been addressed.

Failure to submit a suitably revised paper or a paper that receives a recommendation of "Not Pass" on the second attempt may result in the student's dismissal from the doctoral program. A "Not Pass" will trigger a MISE faculty review of the student's entire record in MISE. Based on this review and on the findings of the ERR review process, the MISE faculty will determine whether the student will be allowed to continue in the doctoral program and on what conditions, or dismissed.

D. **Journal Submission.** The student is required to submit his/her manuscript to a peer-reviewed journal (see Appendix V for recommended journals) after submitting the manuscript for review by the MISE faculty. Ideally this will take place after the student has received comments from the MISE reviewers. This, therefore, requires that the students seriously discuss with their ERR advisor the type of journal that would fit best with their research and would be most likely to publish it. The student should maintain a copy of the submission confirmation provided by the journal, and include the confirmation in the yearly SPAR, along with a copy of the submitted manuscript. It is not necessary for the manuscript to be accepted for completion of this ER requirement. Students are encouraged to continue pursuing publication, considering reviewers' comments.

6. Comprehensive Critical Literature Review (CCLR)

The purpose of the CCLR is for the student to identify and critically evaluate the domains of knowledge relevant to the dissertation project. The CCLR is not a proposal designed to answer a specific research question, but should be guided by the student's intended dissertation research focus. There are four objectives within the CCLR in that students will: (1) develop expertise in relevant literature as expressed by the ability to document the breadth of the field, (2) identify and evaluate important papers in the field, (3) synthesize and identify specific needs within the relevant domains of knowledge, and (4) identify significant research questions arising from the analysis of the literature. In short, the CCLR should address the question "what does the literature say about the state of knowledge in this research field (or fields), and are these legitimate claims?"

Students can begin working on the CCLR at any time; however, the CCLR cannot be presented at MISE until the professional core courses have been completed with an average GPA no less than 3.5, four research tools courses completed, and all ERR components completed (some flexibility regarding the conference presentation of the ERR will be allowed). The CCLR may build from the student's prior work in the SCI 6170-6171 course sequence and/or on the ERR project, or may be an entirely different project. In either case, it must be directly related to the intended dissertation research.

To begin work on a CCLR requires that the student have an officially approved research committee in place. This committee of three will include a major advisor along with a second MISE faculty member and an outside member (see section 3, above). Students will work closely with their committee to set the format of the CCLR, including what general topics should be covered and how they should be arranged. It is expected that the student will work most closely with his or her major advisor, however,

the full committee should stay informed of the general progress of the CCLR and provide input on the conceptualization, format, design, and literature selection. It will be the responsibility of the committee as a whole to work together in an effective manner to ensure that the student understands their responsibilities in writing the CCLR.

The CCLR consists of two products: a written document and a public presentation.

A. **The CCLR Document**. The guidelines for this document are purposefully broad. The student should demonstrate by the end of the document that they are able to meet the four objectives stated above:

- The term "comprehensive" in the CCLR addresses objective (1). Within the CCLR, the student should document the breadth of literature, both historical and current, within specific research fields that are pertinent to the intended dissertation research project. Note that a clear and coherent rationale for the identification of the relevant research fields, as well as for the inclusion and exclusion of specific literature, is to be provided.
- The term "critical" in the CCLR addresses objective (2). A selection of important ("critical") papers from the relevant literature fields should be critically analyzed. These should include seminal works in the research field, as well as papers that are immediately relevant to the student's intended dissertation topic. Note that "critical" does not merely mean that the student should find fault with these papers - strengths, weaknesses, and contributions of this research should be examined.
- The term "critical" also related to objective (3). To address this objective, the student should effectively integrate the literature that she or he has reviewed, identify the major findings associated with the research fields explored, and evaluate the status of work within these fields. This synthesis should lead to the identification of demonstrable needs in the field, which may be an absence of literature, flawed or incomplete methods used, inconsistent or weak claims within the field, or even incomplete or inconsistent theoretical frameworks within the field. All of these issues should be considered as the student evaluates the status of knowledge within the identified research fields.
- This synthesis of the state of knowledge in the relevant research domains lead to objective (4). Here the student should recommend potential future directions of research and identify significant potential research questions that arise from the analysis of literature. One or more of these research questions should be directly related to the intended dissertation project.

It is important to note that not all faculty will ask students to format their CCLR in exactly the same way. Students should understand that these differences reflect differences in the science education community as a whole. The faculty are committed to working together and respecting differences in approach, while upholding the high standards they have set for students.

There is a rubric to consider when preparing the CCLR (see Appendix VI). It outlines the expectations the faculty have of the students. The rubric is meant for formative purposes only and will NOT be used to score a student's CCLR, because of the difficulty in setting a fair quantitative measure of passing. Furthermore, the rubric categories should not be thought of as headings or chapters for the CCLR. If students are unsure of what any of the categories or criterion mean, they should consult their major advisor for clarification.

The final CCLR document should be submitted to the student's committee for review. The student will continue to work on the CCLR until the committee is satisfied with the written document. If a student feels that his or her progress on the CCLR is being hindered by the committee, he or she may appeal to the MISE Director.

B. **The CCLR Presentation**. Once the student's committee has approved the written document, the student my schedule his/her CCLR presentation. A 1.5 hour block should be scheduled to accommodate the 40 minute presentation and 45-50 minutes of faculty and student questions. Students should submit a 5-8 page (not including references) executive summary of their CCLR to their committee chair at least two weeks prior to the presentation date, and schedule the presentation with the MISE office at least 14 days prior to the presentation date.

   The presentation should demonstrate the student's ability to both critically review and synthesize the literature contained within the CCLR. The presentation has multiple purposes: (a) for students to gain practice in scholarly presentations, (b) for faculty and other students to become informed about student work, and (c) for faculty and students to provide critical feedback intended to shape and improve the project. It will not be possible for the student to present the full scope of the CCLR document in the time allotted, therefore, the student should work closely with his/her committee to determine the best structure for the presentation and the most appropriate literature to highlight.

   At the conclusion of the CCLR presentation, the MISE faculty will remain in a closed session with the CCLR committee members (excluding the student presenting). Faculty at this point may share any concerns about the student's presentation and intended work. This faculty feedback may necessitate additional revision to the CCLR document. However, the final decision as to when a student's work passes the CCLR is at the discretion of the committee.

7. Dissertation Proposal

   Once the CCLR is passed, the Graduate College document on dissertation committee formation is to be filed. It is expected that the student and committee chair will keep in regular communication with the full committee about student progress. If a student feels that his or her progress on the dissertation proposal is being hindered by the committee, he or she may appeal to the MISE Director.

   The dissertation proposal is a research proposal and should at minimum contain the following elements: abstract, context and problem statement, theoretical framework, research goals and/or questions, literature review, and methods. The exact structure of the document is at the discretion of the committee. It is possible for the student to draw from their prior 6170-6171 coursework, ERR, and the CCLR for the dissertation proposal. The CCLR, however, may need modification to fit the research goals and/or questions; thus additional literature may need to be included or tangential research eliminated to align this document with the research objectives. Second, the dissertation proposal will describe a research project that is more substantial than in the 6170 proposal (and the ERR), as well as one that is originally designed by the student, rather than designed co-constructively with faculty.

   The written dissertation proposal should be submitted to the student's committee for review. The student will continue to work on the proposal until the committee is satisfied with the written document. Once the student's committee has approved the written proposal, the student may schedule his/her proposal defense. A 1.5 hour block should be scheduled to accommodate the 40 minute presentation and 45-50 minutes of faculty and student questions. Students should submit a 5-8 page (not including references) executive summary of their dissertation proposal to their committee chair, and schedule the presentation with the MISE office at least 14 days prior to the presentation date.

   As with the CCLR, the dissertation defense serves to both inform MISE faculty and other students about a student's research, and provides an opportunity for critical feedback that can improve the intended project. At the conclusion of the defense presentation, the MISE faculty will remain in a closed session with the dissertation committee members (excluding the student presenting). Faculty at this point may share any concerns about the student's presentation and intended work. At this point, students may be asked to revise or re-conceptualize the written document to take into account any questions or concerns raised in the oral defense. Faculty input will be considered, but the final decision

as to accepting the dissertation proposal is at the discretion of the committee. Once the final proposal has been approved by the committee, the student is able to complete the dissertation research and move onto their dissertation defense.

8. Dissertation Defense

The final dissertation describes the full extent of the student's research and is expected to include the following elements: abstract, context and problem statement, theoretical framework, research goals and/or questions, literature review, methods, results, discussion, limitations of the study, implications for future work, and conclusions. The exact organization of the dissertation is at the discretion of the student's committee. The student is encouraged to make use of the dissertation proposal in writing some of the final dissertation, however, it is quite likely that revisions will be required as the research takes shape and conclusions emerge.

It is the shared responsibility of the student and the committee chair to keep all committee members informed of research progress as the student works on his/her dissertation. This regular communication will ensure that the committee has a shared vision of the project and can give the student consistent and timely feedback. Students should expect there to be multiple revisions to the written document until the committee is fully satisfied.

Once the student's committee has approved the written document, the student may schedule his/her dissertation defense. A 1.5 hour block should be scheduled to accommodate the 40 minute presentation and 45-50 minutes of faculty and student questions. Students should submit an 8-10 page (not including references) executive summary of their dissertation to their committee chair, and schedule the presentation with the MISE office at least 2 weeks prior to the presentation date.

The presentation is an oral defense of the dissertation research. As with the CCLR and the dissertation proposal, it serves to inform other faculty and students about the student's research and as a final opportunity to gather feedback that can refine the work. As such, a student may be asked to make revisions to the written document based on feedback received at the defense. Faculty input may be solicited, but the final decision to approve the dissertation lies solely with the committee. Once the written dissertation is approved by the committee, it may be submitted to the Graduate College.

To be clear the goals and mode of evaluation for each of the major requirements are outlined in Section 9 (Table). If students have any questions, they are encouraged to first look at the supplemental documents provided in the handout and then speak with their advisor. If faculty have any questions, they should raise these at a faculty meeting or via email, so that students receive consistent and accurate messages from all faculty.

9. Table Summarizing Major Requirements of the MISE Ph.D. Program

Major Requirement	Sub-Requirement(s)	Goal(s)	Evaluation
Core Coursework	SCI 6140 SCI 6150 SCI 6160	• Provide students with foundational knowledge of science education • Evaluate student readiness to complete the PhD program	Grade given in each course by course instructor. Students must have BA (3.5) or higher grade point average across all courses.
SCI 6170	MOU	• Provide students with an appropriate guide for reasonable research goals • Set a contract to outline responsibilities of both students and faculty in completing the stated research goals	Grade given by SCI 6170 Instructor (First Semester)
	Research Proposal	• Provide students the opportunity to develop their ERR project* • Provide students practice in writing a research grant proposal	Grade given by SCI 6170 Instructor (First Semester)
SCI 6171	Early Research	• Carry out research project in alignment with the MOU	Grade given by SCI 6171 Instructor (Second Semester)
Early Research Requirement (ERR)	MISE Presentation	• Give students formative feedback on their ERR project before presenting at a conference.	N/A (Presentation counts as Pass)
	Outside Presentation	• Give students experience presenting at a professional conference	N/A (Presentation counts as Pass)
	MISE Paper	• Provide students with formative feedback intended to improve their work • Ensure students have appropriately written up their ERR before submitting to a peer-reviewed journal	"Pass" or "Revise & Resubmit" awarded by committee made up of the MISE editor (current SCI 6170 instructor) and two MISE faculty reviewers. Second "No Pass" triggers faculty review of student's record and possible dismissal from the program.

	Journal Submission	• Give students experience submitting to peer-reviewed journals • Give students an opportunity to get a publication	N/A (Submission counts as Pass)
Comprehensive Critical Literature Review (CCLR)	Written document	• Students learn to focus their dissertation research ideas to formulate sound projects • Demonstrates student's ability to effectively integrate and critically analyze literature into one document	Continual revision until approved by 3-member CCLR committee.
	Oral presentation	• Demonstrates student's ability to orally present the synthesized and analyzed literature • Provides opportunity for feedback to improve the student's work	Faculty feedback after presentation may be considered in committee review of the written document
Dissertation Proposal	Written proposal	• Write a proposal for the dissertation research • Demonstrates student's capacity to independently design a research study	Continual revision until approved by dissertation committee, of at least 3 members.
	Oral defense	• Defend proposed research study to faculty and students • Provides opportunity for feedback to improve the research	Faculty feedback after presentation considered in committee's review of the written proposal
Dissertation Defense	Written dissertation	• Present the research in a written format • Demonstrates student's capacity to design and carry out independent research	Continual revision until approved by dissertation committee, of at least 3 members.
	Oral defense	• Defend completed research study to faculty and students	Committee feedback after presentation may be incorporated into final written dissertation

*Students who have already completed their ERR may use SCI 6170 to begin preparation of their CCLR and dissertation proposal.

10. Appendix I. Feedback for MISE ERR Presentations

Aspect for Evaluation With suggested questions to guide evaluation	Rating	Comments
Substance		
1. Nature and significance of the project Is the essence / purpose of the project clearly described? Is the problem that the study addresses clearly outlined? Is the originality, importance and significance of the study clearly established?	Excellent Good Fair Poor Not Applicable	
2. Relevant Literature Is the study adequately grounded in literature relevant to the project? Is the literature cited clearly and critically appraised?	Excellent Good Fair Poor Not Applicable	
3. Research Goals/Questions Are the research goals / questions of the study clear and appropriate? Are the goals and questions well motivated with reference to the cited literature?	Excellent Good Fair Poor Not Applicable	
4. Research Design and Methodology Is the design of the study appropriate to tackle the research goals / questions? Are the methods, procedures, research design and instruments suitable and aligned with the goals?	Excellent Good Fair Poor Not Applicable	
5. Research procedures, Data Collection and Analysis Has the research been conducted appropriately? Was data collection careful and adequate? Are the data-analysis methods explicit, suitable and well motivated? Are all concepts, constructs and methods involved clearly explained?	Excellent Good Fair Poor Not Applicable	
6. Results, Interpretation, and Discussion of Findings Are the data analyzed correctly and interpreted appropriately? Are the research results clear and well presented? Are findings and insights well argued and discussed? Are suitable examples and/or data extracts provided? Are the conclusions and/or implications appropriate and related to the research goals? Are implications for instruction, limitations, and future work discussed?	Excellent Good Fair Poor Not Applicable	
Style		
7. Organization Is the overall organization of the presentation logical and coherent? Is the structure and flow of the talk easy to follow? Is the talk given at an appropriate level for the topic and intended audience?	Excellent Good Fair Poor Not Applicable	
8. Visuals Are the font sizes adequate for audience viewing? Does the presentation make good use of color schemes? Are the graphics uncluttered and clearly labeled? Are the visuals free of typos and grammatical errors?	Excellent Good Fair Poor Not Applicable	
9. Speaking Does the presenter speak clearly? Does the presenter speak at an appropriate volume for the room? Does the speaker avoid verbal tics ("um," "like," etc.)? Is the pace of the presentation appropriate?	Excellent Good Fair Poor Not Applicable	

11. Appendix II: Recommended ERR External Research Conferences

American Association for the Advancement of Science National Meetings (AAAS)
American Association of Physics Teachers National Meetings (AAPT)
American Education Research Association National Meetings (AERA)
American Geophysical Union (AGU) National or Regional Meetings
Association for Science Teacher Education National Conferences (ASTE)
Association of American Geographers (AAG) East or West Lakes Division Conferences
Association of American Geographers (AAG) National or Regional Conferences
Biennial Conference on Chemical Education (BCCE)
Earth Educators Rendezvous (EER)
Geographic Education National Conferences
Geological Society of America (GSA) National or Section Meetings
Gordon Research Conference: Chemical Education Research and Practice
International Geoscience Education Organization (IGEO) Conference
International History, Philosophy and Science Teaching Group Meetings (IHPST)
Michigan Academy of Science, Arts and Letters
National Association for Research in Science Teaching National Meetings (NARST)
Physics Education Research Conferences

This list is not exhaustive.

12. Appendix III. Directions for the Submission of ERR manuscripts for Review by MISE Faculty

Submitting your Early Research Paper for MISE faculty review:
When submitting your early research requirement (ERR) paper for internal review, please provide a cover letter (email or document attachment) that includes the following:

1. A few sentence overview of the purpose of the study and study design (e.g., purpose, research design, and main findings).

2. The name of the journal that you are submitting to. If there are any specific journal or review requirements that you'd like the faculty to know about, feel free to include these. Also keep in mind that the faculty members reviewing your paper may not be specialists in your research area, so feel free to also include any specialized terminology that might help with the review.

3. The name of your mentor and any other coauthors. Use the cover letter to draw attention to your role on the project, in particular, your role in conceptualizing the research, performing a critical review, analyzing and interpreting the data you collected, and writing up the study. Please distinguish between your contributions and those of your mentor and/or coauthors. You should also indicate the role of anyone who assisted with you on your project, particularly MISE faculty members. If your project was part of a larger study, please indicate how your project relates to the goals and purpose of the larger study.

Be sure to include the name of your mentor and any other coauthors in your cover letter only. (The manuscript should only have your name.) MISE faculty members who assisted you on your project cannot serve as reviewers of your paper. You and your mentor are free to recommend specific faculty who would make appropriate reviewers for your paper, or note faculty members whom you would prefer not to review the paper. These recommendations will be taken into consideration, but the editor will make the final decision assigning reviewers.

The information you provide serves two purposes: (1) to allow the MISE editor to identify faculty members who have the appropriate areas of expertise to provide a relevant review, and (2) to establish the context of the study and audience of the paper for the reviewers, so that they can provide a review that will improve your paper for external submission.

Your ERR paper and accompanying cover letter should be submitted to the current SCI 6170 instructor. Please allow 4-6 weeks for the review process.

The Review Process:
Two MISE faculty members plus the MISE editor will provide written reviews of your paper. Anonymity is at the discretion of the individual reviewers. At the conclusion of the review process, the two reviewers and editor will reach a consensus as to whether your paper has passed the Early Research Paper Requirement. Both you and your mentor will receive notification of the final recommendation and copies of the reviews. Two outcomes are possible:

1. A "Pass" indicates that your paper demonstrates a capacity to pursue original research and write the results in a manner suitable for submission to a peer-reviewed journal. You are encouraged to consider the reviewer and editor comments in revising your paper for external submission. No further action with the MISE internal review is required.

2. A "Revise and Resubmit" indicates that your paper does not meet these expectations. You are allowed to submit a suitably revised version of your paper only once in order to pass the paper requirement. The resubmitted paper should be accompanied by a cover letter that point-by-point addresses <u>each</u> of the MISE editor and reviewer concerns. You and/or your mentor may request a meeting with the MISE editor (and reviewers) to further discuss the feedback on your paper. You are encouraged to work closely with your mentor during this review process, and must obtain his/her approval prior to the resubmission. The resubmitted paper may be sent to the same faculty reviewers, or may be sent to one or more new reviewers who will be asked to check that all of the prior concerns have been addressed.

If you receive a "Revise and Resubmit" on the first attempt, two outcomes are possible on the second attempt:

1. A "Pass" indicates that the paper has been suitably revised to address the reviewer concerns, and that it now demonstrates your capacity to pursue and write up original research. No further action with the MISE internal review is required.

2. A "Not pass" indicates that your paper is insufficiently revised to address the reviewer concerns. At this point, a full review of your progress in the program will be conducted by the MISE faculty. Based on this review and on your performance during the ERR process, the MISE faculty will determine whether you will be allowed to continue in the doctoral program and on what conditions, or dismissed.

<u>What will happen if your mentor is serving as editor at the time you submit your ERR paper</u>
The procedure is the same, except that when you submit your paper to the current editor, he or she will direct it to the immediate past editor, who serves as a "back-up" editor. Your mentor will neither serve as editor nor as a reviewer.

13. Appendix IV. Rubric for the Review of ERR manuscripts

There are many types of research in science education, as there are in research generally. Thus research may be empirical, conceptual, theoretical, historical or philosophical, and often a combination. Papers arising from research will reflect this, and the rubric below provides a reviewing guide that should be interpreted flexibly in this light; not all aspects will apply in all cases.

Aspect for Evaluation With suggested questions to guide evaluation	Rating	Comments
1. Nature, purpose and significance of the project Is the essence and purpose of the project clearly described along with suitable background, rationale and context? Are the issues that the study addresses clearly outlined? Have the authors adequately demonstrated the originality, importance and significance of the study?	Excellent Good Fair Poor Not Applicable	
2. Relevant background and literature Is the background and literature cited clearly related and relevant to the various aspects of the project, critically appraised, and reasonably complete/comprehensive?	Excellent Good Fair Poor Not Applicable	
3. Research goals/questions Are the research goals and/or questions clearly stated and appropriate? Are the goals and questions well motivated with reference to the relevant literature?	Excellent Good Fair Poor Not Applicable	
4. Research design and methodology Are all concepts, constructs and methods clearly articulated and defined? Is the design of the study appropriate to tackle the research goals? and Are the methods, procedures, research methodology and instruments suitable, motivated, and aligned with the goals?	Excellent Good Fair Poor Not Applicable	
5. Research procedures, data and analyses Has the research been conducted appropriately? For an empirical study, was data collection careful and adequate using appropriate methods and instruments? Are the analysis methods explicit, suitable and well-motivated? Where applicable, are data analyzed correctly and interpreted appropriately?	Excellent Good Fair Poor Not Applicable	
6. Results, interpretation, argumentation and discussion of Findings Are the research results clear and well presented? Are findings and insights well argued and discussed? Are suitable examples and/or data extracts provided? Are the conclusions and/or implications appropriate, and is their relation to the research goals clear? Are implications for instruction discussed, within sections or separately?	Excellent Good Fair Poor Not Applicable	
7. Presentation, writing and readability Does the overall organization of the manuscript make sense, with an internal logic easy to follow? Is the structure and flow of the manuscript easy to navigate, under appropriate headings and subheadings? Is the manuscript well written and concise without unnecessary repetition or redundancy, and free of typos and grammatical errors? Is the manuscript written appropriately for the topic and intended audience? Are the tables and figures adequate, appropriate and well presented?	Excellent Good Fair Poor Not Applicable	
8. Appendices Where applicable, are there suitable appendices providing relevant material not in the main manuscript?	Appropriate Not Appropriate	
9. Style and formatting Does the manuscript conform to the stylistic guidelines of a proposed journal, including conventions for heading structure and references?	Excellent Good Fair Poor Not Applicable	

14. Appendix V: Recommended ERR Journals

Canadian Journal of Science, Mathematics and Technology Education
CBE Life Sciences Education
Chemistry Education Research and Practice
Cognition & Instruction
Cultural Studies of Science Education
European Journal of Science and Mathematics Education
Higher Education
International Journal of Biology Education
International Journal of Environmental & Science Education
International Journal of Science Education
International Journal of Math and Science Education
International Journal of STEM Education
International Research in Geography and Environmental Education
Journal of Astronomy and Earth Sciences Education
Journal of Biological Education
Journal of Chemical Education
Journal of Curriculum Studies
Journal of Engineering Education
Journal of Geoscience Education
Journal of Geography and Higher Education
Journal of Research in Science Teaching
Journal of Science Education and Technology
Journal of Science Teacher Education
Journal of the Learning Sciences
Physical Review Special Topics - Physics Education Research
Research in Science Education
Research in Science and Technology Education
School Science and Mathematics
Science & Education
Science Education
Science Education International
Studies in Science Education

This list is not exhaustive.

15. Appendix VI. Rubric for Review of CCLR Documents

Table 1
Literature Review Scoring Rubric

Category	Criterion	1	2	3	4
1. Coverage	A. Justified criteria for inclusion and exclusion from review.	Did not discuss the criteria inclusion or exclusion	Discussed the literature included and excluded	Justified inclusion and exclusion of literature	
2. Synthesis	B. Distinguished what has been done in the field from what needs to be done.	Did not distinguish what has and has not been done	Discussed what has and has not been done	Critically examined the state of the field	
	C. Placed the topic or problem in the broader scholarly literature	Topic not placed in broader scholarly literature	Some discussion of broader scholarly literature	Topic clearly situated in broader scholarly literature	
	D. Placed the research in the historical context of the field.	History of topic not discussed	Some mention of history of topic	Critically examined history of topic	
	E. Acquired and enhanced the subject vocabulary.	Key vocabulary not discussed	Key vocabulary defined	Discussed and resolved ambiguities in definitions	
	F. Articulated important variables and phenomena relevant to the topic.	Key variables and phenomena not discussed	Reviewed relationships among key variables and phenomena	Noted ambiguities in literature and proposed new relationships	
	G. Synthesized and gained a new perspective on the literature.	Accepted literature at face value	Some critique of literature	Offered new perspective	
3. Methodology	H. Identified the main methodologies and research techniques that have been used in the field, and their advantages and disadvantages.	Research methods not discussed	Some discussion of research methods used to produce claims	Critiqued research methods	Introduced new methods to address problems with predominant methods
	I. Related ideas and theories in the field to research methodologies.	Research methods not discussed	Some discussion of appropriateness of research methods to warrant claims	Critiqued appropriateness of research methods to warrant claims	
4. Significance	J. Rationalized the practical significance of the research problem.	Practical significance of research not discussed	Practical significance discussed	Critiqued practical significance of research	
	K. Rationalized the scholarly significance of the research problem.	Scholarly significance of research not discussed	Scholarly significance discussed	Critiqued scholarly significance of research	
5. Rhetoric	L. Was written with a coherent, clear structure that supported the review.	Poorly conceptualized, haphazard	Some coherent structure	Well developed, coherent	

Note: The column-head numbers represent scores for rating dissertation literature reviews on 3-point and 4-point scales (endnote 4 explains our choice of the two types of scales). Adapted from *Doing a Literature Review: Releasing the Social Science Research Imagination* (p. 27), by Christopher Hart, 1999, London, SAGE Publications. Copyright 1999 by SAGE Publications. Adapted with permission.

16. Appendix VII. Article Dissertation Policy (an alternative to the traditional dissertation structure)

1. **The article dissertation will be comprised of a minimum of three articles**. The articles should form a cohesive body of work that supports a theme or themes that are expressed clearly in the introduction to the dissertation (Chapter 1).

2. **A maximum of one article published or accepted for publication prior to the *proposal defense* may be included**. This article must represent work undertaken while the student is enrolled in the PhD program at WMU and be approved by the committee at the time of the student's proposal defense. This article must be connected to the theme or themes of the dissertation. If a previously published article is approved by the committee, the student will be responsible for securing necessary permissions from the copyright holder and other authors. Students must have their dissertation committee's permission to use their ERR paper to fulfill this requirement.

3. It is expected that the articles submitted for the defense are of publishable quality **as decided by the committee**. The committee's judgment on the publishability of the articles shall be the only judgment that impacts the decision to approve the student's dissertation.

4. **The student will submit at least one article to a science education journal agreed upon by the committee prior to the dissertation defense.** The committee and the student will agree on the topic of the article and the journal to which the article will be submitted. The article need not be accepted for publication prior to the student's graduation, so long as the committee determines that the article is of publishable quality

5. Articles may have been published before the defense. However; if so, the student must obtain copyright permission from the publishing journal to include the article in his/her dissertation. Doing so is required by U.S law. When asking for permission to include the article in the dissertation, students should notify the journal editor that the dissertation will be made available on-line. All doctoral dissertations will be made available online in ScholarWorks at WMU and through ProQuest.

   Doctoral dissertations written at Western Michigan University are published by ProQuest, where each dissertation is reviewed for possible infringement of copyright. ProQuest offers guidelines for common uses that may exceed fair use. Please refer to and see especially beginning on page 5 in: "Copyright and Your Dissertation or Thesis: Ownership, Fair Use, and Your Rights and Responsibilities," by Kenneth D. Crews, J.D., Ph.D., which is used under a CC BY/NC license from the Copyright Advisory Office at Columbia University, at http://media2.proquest.com/documents/copyright_dissthesis_ownership.pdf.

   If there is any doubt about whether or not the potential use is "fair," it is best to proceed as if permission is needed. ProQuest can also provide authors with information regarding:
   (a) examples of permitted copying,
   (b) blanket licenses held by UMI that cover some commonly used materials,
   (c) copyright owners who routinely deny permission requests.

   To obtain this information, contact ProQuest's Copyright Unit at 1-800-521-0600, ext. 77020.

   For more information on Copyright Law and Graduate Research by Kenneth D. Crews is a helpful resource for copyright:

Crews, Kenneth D. "Copyright and Your Dissertation or Thesis: Ownership, Fair Use, and Your Rights and Responsibilities." Columbia University, 2013. Web. 22 Feb. 2016

(Guidelines for the Preparation of Theses, Specialist Projects, and Dissertations, Graduate School; 2016). https://wmich.edu/sites/default/files/attachments/u67/2016/2016-Guidelines.pdf

Students must secure all copyright permissions before finalizing the dissertation. Some journals might have copyright peculiarities that make it not worth the trouble to include that specific article in the dissertation. All of these issues should be considered early on in the process and be discussed in the proposal. The student should make sure that this entire process is compliant with WMU dissertation format guidelines.

6. **At least two of the articles should be based on data that are generated and analyzed by the student**. If one of the articles is conceptual in nature, or based on a synthesis of the literature, it must be connected to the theme or themes of the dissertation without overlapping heavily with the contents of other articles. A certain amount of overlap between articles is acceptable, but whether the extent of any overlap is excessive will be determined by the student's dissertation committee. Redundancy can be carefully reduced by citing one's own work. However, self-plagiarism - reusing one's own previously written work or data in a 'new' written product without letting the reader know that this material has appeared elsewhere - is prohibited.

7. **The student must be the first author on all articles**. As first author, the students is responsible for development and articulation of a concept or idea for research, development of a proposal to pursue this idea, development of a research design, conducting research and analysis, writing major portions of a manuscript, designing an intervention or assessment (if relevant), and interpreting results. Co-authors (such as committee members, other faculty, other students, or collaborators outside of WMU) must be identified at the student's proposal defense. The role of each co-author must be presented and approved by all members of the dissertation committee for each dissertation article, and any changes in co-authorship must be approved by the student's committee.

8. If journal reviewers suggest revisions to any of the submitted manuscripts prior to the dissertation defense, **your plan for addressing those suggested revisions should be shared with your dissertation committee members and approved by all of them before you enact the changes**. Changes can be made to any of the manuscripts provided that the dissertation committee members are aware of and agree to the changes being made and their rationale. Students may opt to defer changes requested by a journal to which they have submitted an article until their dissertation has been successfully defended.

9. The article dissertation must include **an abstract** that synthesizes the articles, as well as **an introduction** (Chapter 1) and **a conclusion** (Chapter 5, assuming three articles are presented in Chapters 2-4 respectively). It may also be desirable to have a separate literature review chapter, which would then be Chapter 2.

10. The **introduction should function as the cord that weaves the various manuscripts together** and describes, for the reader, their 'collective meaning' and 'combined contribution' to the field. It should include:

a. A definition or statement of the problem
b. The importance of the problem, i.e., why it is worth researching, why it matters to the field of science education.
c. The theoretical or conceptual framework(s) supporting the research.
d. An overview of the important literature that shows the main field or fields reviewed, an overview of the literature reviewed in the CCLR, and a synthesis of each area to identify knowledge gaps.
e. The research questions addressed by the student's investigations.
f. The methodology used to answer those questions.

11. The **conclusion will briefly summarize the major findings, limitations, discussion, and recommendations**. The author will also present and discuss linkages (i.e., similarities and differences) between the separate manuscripts that are included in the dissertation, striving as much as possible to present the document as representative of a coherent body of work. The conclusion chapter 'ties' everything together and helps the reader see how the various manuscripts, taken together, make a contribution to the knowledge base regarding the problem. The conclusion chapter should also present/discuss research imperatives, or knowledge gaps, not visible when each manuscript is considered individually and should articulate an agenda for future research on the issues addressed in the dissertation.

12. The **dissertation proposal for an article dissertation** must include:

a. The introductory chapter as described in item 11 (above).
b. Copies of any completed articles including the name of the journal and date of submission (or planned submission), and an indication of the status (in preparation, in review, in press, or published)
c. A written plan for any of any articles in progress, including proposed journals to which they will be submitted
d. A timeline for completion of the work.

The defense of the article dissertation proposal is expected to parallel the proposal defense for a traditional dissertation. The article dissertation alters the format, but not the content, expected in the dissertation research. The student is still expected to present the proposal at a public defense, and to submit a 5-8 page (not including references) executive summary of their proposal as with a traditional proposal defense per the MISE handbook.

13. **The final copy of the article dissertation should be formatted and bound consistent with WMU dissertation guidelines**. This includes making all text, headings, page numbers, table titles, and figure captions the same font throughout all papers included in the dissertation. Simply inserting an existing PDF of a previously published paper is not acceptable.

14. As with any other dissertation, stude**nts should be in regular communication with all committee members** to inform everyone of research progress and to obtain timely feedback.

15. **Exceptions to any of these requirements may be granted by a majority vote of the MISE faculty and Director**.

MISE SPARs

MISE graduate students must submit online an up-to-date MISE SPAR (Student Professional Activities Report) each year by **November 30**.

You can download a fresh SPAR copy (if needed) from the MISE website student page http://www.wmich.edu/science/students.html. Then you can type or cut/paste into this protected Word document, and as time goes by, just keep adding to your saved copy.

Here are links to the tutorials mentioned on the SPAR form (the first four are mandatory):

1) HSIRB Training- http://www.wmich.edu/research/hsirb.html

2) APA Tutorial- http://flash1r.apa.org/apastyle/basics/index.htm

3) Plagiarism Tutorial- http://library.camden.rutgers.edu/EducationalModule/Plagiarism/

4) WMU's Preventing Sexual Harassment Tutorial- http://training.newmedialearning.com/psh/wmichu/index.htm

5) "Right to Know" WMU training *available* to those working in labs with any potential hazards- http://www.esem.wmich.edu/hazcom.htm

When your MISE SPAR document is ready (updated through *October 31*, due by *November 30*), it should be uploaded to your personal iWebfolio account (the online portfolio that WMU provides for storing/sharing files).

iWebfolio

If you do not yet have an iWebfolio account (or if you *cannot* recall your "username" and "password"), please obtain your information by emailing Karen Stokes Chapo at: "Karen Stokes Chapo" <karen.stokeschapo@wmich.edu>

For a new account, Karen will need your name, email address, and WIN (Western Identification Number). You could simply add that information at the top of a copy of the SPARs email you will receive in early November, and forward it to her email address. Then she'll know that you are one of our authorized doctoral graduate students here at the Mallinson Institute.

(NOTE: iWebfolio accounts typically expire after one year, so it might be wise to ask if your renewal can start in November. That way, your account shouldn't expire in the following couple of months, before faculty are able to access and review your SPAR portfolio and document(s).)

When you're ready to upload/submit your SPAR Word document, go to www.iwebfolio.com and "Log In" (with username and password).

***If you already have a MISE SPAR Portfolio, you can generally "open" it from the "Home" tab (at upper left corner of page)... and you can always access it from the

"Portfolios" tab (just click on it in the <u>Portfolio Name</u> list, or <u>Open</u> from the right side of its row).

*(NOTE: if you ever [upon opening your portfolio] see a note at the top of the screen asking if you will **accept changes**... click on **yes**)*

Beginning in 2014, you should create and maintain a single <u>MISE SPAR</u> portfolio as follows: Click on the **"Portfolios"** tab, then click on **<u>Create New Portfolio</u>**

Folders are shown on the left side... click on **<u>College of Arts & Sciences</u>** then **<u>Select</u>** the **"MISE SPAR"** template. Next you'll see a list of the people who have permission to view your portfolio (do not remove anyone). Click on **"Next"** and you'll have the option of typing a description of your portfolio. Click on **"Save"** to create your **MISE SPAR** portfolio.

Once created, you can access this portfolio at any time from the opening screen of iWebfolio as described above**.*** But for now, you should be ready to edit this portfolio as follows...

At the upper left inside your portfolio you will see a list of seven categories...
    My Portfolio
    MISE SPAR Document
    Presentation
    Publications
    Course Work
    MISE Presentation Approval Forms
    ICES - Instructor and Course Evaluation System

The **My Portfolio** category will open first; it's a place for the due date and your name. But to edit, you'll need to go into edit mode...

Find the (moveable) row/dock of circular buttons in the lower left corner, and click on the blue "**Edit Mode**" button. You can then type/edit your "**Due Date of Annual Report**" and "**Student Name**" in the appropriate boxes.

*(NOTE: to exit "**Edit Mode**" just click on green magnifying glass "**View Mode**" button)*

While in "Edit Mode" you'll also see a menu list at the upper right. You will want to click on "**Files**" and then click on the green plus sign to "**Add File(s)**." "Browse" your computer and upload your new/updated **"MISE SPAR" Word document** (please put the year somewhere in your filename, e.g., **2014-BA-SPAR.doc**). Click on **"Save File(s)"**... then you should then be able to see it in your expanded list of "**Files**."

*(NOTE: the blue funnel icon will let you decide which of your saved files are visible in your list, but this private file storage is much like your Webmail Briefcase... none of those files will be inside of your shared <u>MISE SPAR</u> portfolio **until you put them there!**)*

The next step is simple but important. **Drag** your "MISE SPAR" Word document from the list of files (on the right) into the "**MISE SPAR Document**" category **(on the left!)**. You should immediately be able to see the Filename (or Display Name) of your Word document listed within/below that second *category* of your SPAR portfolio (on the left side of your screen). Instructions for "dragging" are on each page of your portfolio that accepts files.

You do **not** need to remove previous MISE SPAR Word documents from that second category on the left side of the screen (especially if the year is included in the filename). You **may** keep a whole series of yearly SPAR documents in this category (they will probably have Feedback associated with them). However, whenever you do need to remove or replace a document or file from a category on the left, simply click on the white/red X that appears when your cursor hovers over the filename. You can then drag any newly selected file into the appropriate category (same as described in red above and also on the portfolio pages).

Before leaving "Edit Mode" it is *important to save any changes* you make to your portfolio by clicking on the middle "**Save**" button. Once any/all changes have been saved, this button will be gray. Gray is good.

_____

Three other categories in your SPAR portfolio ("Presentations," "Publications," and "Course Work") allow you the option of attaching copies or scans of your work (in the same manner as described in red above).

There is also a category where you *should* save scanned copies of any "MISE Presentation Approval Forms," which are accessible from the MISE website student page (http://www.wmich.edu/science/students.html).

The seventh category is for those who have worked as a WMU Teaching Assistant (TA/instructor). Please upload and attach your teaching evaluations HTML files in the category called "ICES - Instructor and Course Evaluation System."

_____

It's not as complicated as it sounds... so *fear not*, you'll easily make sense of it while messing about within.

SPAR   through 10/31/<u>2016</u> – due 11/30/<u>2016</u>

Student Professional Activities Report – Mallinson Institute for Science Education
(Completion of this cumulative report is required for continuation in the graduate program)

<u>Student Information</u>

Name: _____

Date Enrolled in Program: _____

Date of Master's Degree Completion: _____
(or expected date of completion)

GPA – Overall, Cumulative: _____

GPA – MISE Professional Core Courses: _____
(Final professional core GPA must be 3.5 or higher)

MISE Core Course	Credits	Grade	Date Completed Semester/Year
SCI 6140	3		
SCI 6150	3		
SCI 6160	3		
SCI 6180 *or* SCI 6260	3		
SCI 6200 (1 credit 3 times)	0/3	P/F	

Training	Date Completed Semester/Year
HSIRB Tutorial (register for organization <u>Western Michigan University</u>) https://www.citiprogram.org/index.cfm?pageID=154&icat=0&ac=0	
Responsible Conduct of Research course (RCR) (WMU – available Fall 2016 to new grad students on Elearning)	
APA Tutorial http://flash1r.apa.org/apastyle/basics/index.htm	
Plagiarism Tutorial http://library.camden.rutgers.edu/EducationalModule/Plagiarism/	
WMU Training: Title IX – Unlawful Harassment Prevention (*third module*) https://wmich.edu/hr/awareness	
Right to Know (WMU – only if required by science dept.)	

List/add conferences, meetings, seminars, and workshops attended, and all other professional activities since last November 1ˢᵗ (excluding MISE functions)
 Provide date, title, and location

List papers, posters, workshops presented

1

Provide date, title, co-authors, and location

_____

Papers submitted for publication review
Provide date, title, and journal

_____

Papers accepted for publication
Provide date, title, and journal

_____

Academic progress in science discipline (master's level)
Provide details (for concurrent enrollments, upload copy of "Permanent Program" to iWebfolio)

_____

Awards and recognitions, including grants
Provide details

_____

MISE Functions
Provide date and description (e.g., potlucks, award luncheons, seminars, presentations/defenses)

_____

Other MISE Course Work

MISE Course	Credits	Grade	Date Completed Semester/Year
SCI 6170	3		
SCI 6171	3		
SCI			
SCI			
SCI			

Research Tools

Course	Credits	Grade	Date Completed Semester/Year

Teaching Requirement

Observation semester:

Sem/year _____
Course _____
First Teaching semester:
Sem/year _____
Course _____

Further Teaching Experience
Summarize the teaching you have done since the first teaching semester (list/describe courses).

Student Reflections on Progress

Early Research Requirement (ERR)

Faculty Mentor: _____

Research Abstract:

Dates of Research (mm/dd/yyyy)

_____ Present paper at MISE
Title of paper: _____

_____ Present paper at approved conference
Conference name: _____

_____ Submit paper to MISE faculty

_____ Paper approval by MISE faculty

_____ Submit paper to approved journal
Journal name: _____

Comprehensive Critical Literature Review (CCLR) Requirement

Committee Chair: _____

Committee Member: _____

Committee Member: _____

CCLR Title:

Dates of CCLR Approvals

_____ Presentation at MISE

Faculty Decision Status (mark with X):

Passed……………………..… ____

Passed with Conditions…. ____

Not Passed……………..…… ____

_____ Faculty Approval

Dissertation Committee

Date Set: _____

Committee Chair: _____

Committee Member: _____

External Committee Member: _____

Committee Member: _____
(4th member optional)

Dissertation Title

Dissertation Proposal

_____ MISE Presentation Date

_____ Committee Approval Date

Dissertation Defense

_____ MISE Presentation Date

_____ Committee Approval Date

TO BE COMPLETED BY THE MISE DIRECTOR

Continuation……………………… ___

Continuation with Cautions….. ___

Dismissal………………………….. ___

Comments:

Graduate Students' Reading List (August 2006)

History & Philosophy of Science and Science Education

Sociology of Scientific Knowledge

Religion & Science

Issues of Diversity

Science Teacher Education

Learning Theory

Research

Curriculum and Instruction

Handbooks

Discipline Specific Readings (Choose one area)

    Biology Education

    Chemistry Education

    Earth Science Education

    Geography Education

    Physics Education

History & Philosophy of Science Education

<u>Required</u>

DeBoer, G. E. (1991). *A history of ideas in science education: Implications for practice.* New York: Teachers College Press.

Rudolph, J. L. (2002). *Scientists in the classroom: The cold war reconstruction of American science education.* New York: Palgave.

<u>Strongly recommended</u>

Duschl, R. (1990). Restructuring Science Education: The Importance of Theories and their Development. New York: Teacher's College Press.

Elliot, D.L. (1990). "Textbooks and the Curriculum in the Postwar Era: 1950-1980" in Elliot, D. L. and Woodward, A. (eds.) *Textbooks and Schooling in the United States* (Chicago: University of Chicago Press).

Keeves, J. & Aikenhead, G. (1995). "Science Curricula in a Changing World," in Fraser, B.J. and Walberg, H.J. (eds.) *Improving Science Education* (Chicago: National Society for the Study of Education).

Krajcik, J., Mamlok, R., & Hug, B. (2001). "Modern Content and the Enterprise of Science: Science Education in the Twentieth Century" in Como, L. (ed.) *Education Across A Century: The Centennial Volume* (Chicago: University of Chicago Press).

Sociology of Scientific Knowledge

<u>Required</u>

Barnes, B., Bloor, D., & Henry, J. (1996). *Scientific Knowledge: A sociological analysis,* Chicago, Chicago Univ. Press.

Belenky, M. F., Clinchy, B. M., Goldberger, N. R., & Tarule, J. M. (1996). *Women's ways of knowing: The development of self, voice and mind.* New York: Basic Books.

Shapin, S., & Schaffer, S. (1989). *Leviathan and the air-pump.* Princeton, New Jersey: Princeton University Press.

<u>*One* of the following:</u>

Desmond, A., & Moore, J. (1991). *Darwin - The life of a tormented evolutionist.* New York: Warner Books.

Harding, S. (1991). *Whose Science? Whose Knowledge?* Ithaca, NY: Cornell University Press.

Harding, S. (1998). *Is Science Multicultural?* Bloomington, IN: Indiana University Press.

Knorr-Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge.* Cambridge: Harvard University Press.

History & Philosophy of Science and Science Education

Required

1. Chalmers, A. F. (1982). *What is this thing called science?* Victoria, Australia: University of Queensland Press.

2. Duschl, R. A., & Hamilton, R. J. (1992). *Philosophy of Science, Cognitive Psychology and Educational Theory and Practice*. SUNY Press: Albany, NY.

3. Kuhn, T. (1996). *The Structure of Scientific Revolutions*. 3rd. ed. University of Chicago Press: Chicago.

4. Matthews, M. (1994). *Science Teaching: The Role of History and Philosophy of Science*. Routledge Press: New York.

5. Popper, K. (1963). "Science: Conjectures and Refutations" From *Conjectures and Refutations*, p. 33-41, 52-59. New York: Harper and Row.

Strongly Recommended for those pursuing research in NOS issues in science education

Allchin, D. (1999). Values in science: An educational perspective, *Science & Education 8*, 1-12.

Bronowski, J. (1978). *Magic, Science and Civilization*. New York: Columbia University Press.

Brush, S. G. (1974). Should the history of science be rated X? *Science, 183*, 1164-1172.

Brush, S. G. (2002). Cautious Revolutionaries: Maxwell, Planck, Hubble. *American Journal of Physics, 70*, 119-128.

Feyerabend, P. (1975). How to defend society against science, *Radical Philosophy, 11*, 3-8.

Gauch, H.G. (2003). *Scientific Method in Practice*, Cambridge University Press.

Grinnell, F. (2002). Doing Science. *Knowledge, Technology & Policy, 15*(1&2), 204-210.

McComas, W. (Ed.) (2000). *The Nature of Science in Science Education: Rationales and Strategies*. Kluwer Academic Publishers, Dordrecht, Holland.

Monk, & Osborne, J. (1997). Placing the history and philosophy of science on the curriculum: A model for the development of pedagogy, *Science Education 81*, 405-424.

Schwab, J.J. (1962). *The teaching of science as enquiry*. The Inglis Lectureship. Cambridge, MA: Harvard University Press.

Latour, B. & Woolgar, S. (1979). *Laboratory Life*, Princeton, NJ: Princeton University Press.

Rudwick, M. J. S. (1985). *The great Devonian controversy: The shaping of scientific knowledge among gentlemanly specialists.* Chicago: University of Chicago Press.

Other Recommended readings

Barnes, B. (1985). *About Science*, Oxford: Blackwell.

Bloor, D. (1976/1991). *Knowledge and Social Imagery.* Chicago: University of Chicago Press.

Elkana, Y. (1970). Science, philosophy of science and science teaching. *Educational Philosophy & Theory, 2,* 15-35.

Elkana, Y. (1981). A programmatic attempt at an anthropology of knowledge. In E. Mendelsohn, & Y. Elkana (Eds.), *Sciences and cultures: Anthropological and historical studies of the sciences, Vol. V.* (pp. 1-76). Boston, MA: D. Reidel Publishing Company.

Fee, E. (1979). Nineteenth-century craniology: The study of the female skull. *Bulletin of the History of Medicine, 53,* 415-33.

Gould, S. J. (1981). *The Mismeasure of Man.* New York, NY: W.W. Norton.

Religion & Science

One of the following or consult with advisor on appropriate alternatives.

Brooke, J. H. (1991). Science and religion: Some historical perspectives. New York: Cambridge University Press.

Brooke, J. H. (1998). Science and Religion: Lessons from History? Science, 282(5396), 1985-1986.

Brooke, J. H., & Cantor, G. (2000). Reconstructing nature: the emergence of science and religion. Edinburgh: T&T Clark.

Huff, T. E. (1996). Can scientific knowledge be Islamized? Social Epistemology, 10(3/4), 305-316.

Issues of Diversity

Required Book

Cobern, W. W. (Ed.). (1998). Socio-cultural perspectives on science education (Vol. 4). Dordrecht: Kluwer Academic Publisher.

Required Articles

Aikenhead, G. S., & Jegede, O. J. (1999). Cross-Cultural education: A cognitive explanation of a cultural phenomenon. Journal of Research in Science Teaching, 36(3), 269-287.

Atwater, M. M. (1998). Science literacy through the lens of critical feminist interpretive frameworks. Journal of Research in Science Teaching, 35(4), 375-377.

Atwater, M. M., & Riley, J. P. (1993). Multicultural science education: Perspectives, definitions, and research agenda. Science Education. 77(6), 661-668.

Fetters, M. K. (2003). Making science accessible: Strategies to meet the needs of a diverse student population. Science Scope(Feb.), 26-29.

Fradd, S. H., & Lee, O. (1999). Teachers' roles in promoting science inquiry with students from diverse language backgrounds. Educational Researcher. 28(6), 14 – 21

Hewson, P. W., & Kahle, J. B. (2001). Equitable science education in urban middle schools: Do reform efforts make a difference? Journal of Research in Science Teaching, 38(10), 1130-1144.

Recommended Additional Readings – Consult with your advisor

Aikenhead, G. S., & Jegede, O. J. (1999). Cross-Cultural education: A cognitive explanation of a cultural phenomenon. Journal of Research in Science Teaching, 36(3), 269-287.

Atwater, M. M. (1996). Teacher education and multicultural education: Implications for science education research. Journal of Science Teacher Education, 7(1), 1-21.

Atwater, M. M. (1998). Science literacy through the lens of critical feminist interpretive frameworks. Journal of Research in Science Teaching, 35(4), 375-377.

Atwater, M. M. (1996). Teacher education and multicultural education: Implications for science education research. Journal of Science Teacher Education, 7(1),

Hewson, M. G., & Hamlyn, D. (1985). Cultural metaphors: Some implications for science education. Anthropology and Education Quarterly, 16(1), 31-46.

Jegede, O. J., & Aikenhead, G. S. (1999). Transcending cultural borders: Implications for science teaching. Research in Science and Technology Education, 17(1), 44 - 66.

Keller, E. F. (1985). Reflections on gender and science. New Haven: Yale University Press.

Lee, O. (1997). Scientific literacy for all: What is it, and how can we achieve it? Journal of Research in Science Teaching, 34(3), 219-222.

Lee, O. (1999). Science knowledge, world views, and information sources in social and cultural contexts: Making sense after a natural disaster. American Educational Research Journal, 36(2), 187-219.

Lubben, F., Netshisaulu, T., & Campbell, B. (1999). Students' use of cultural metaphors and their scientific understandings related to heating. Science Education, 83(6), 761-774.

Ogunniyi, M. B. (1988). Adapting western science to traditional African culture. International Journal of Science Education, 10(1), 1-9.

Ogunniyi, M. B. (1995). Nature of worldview presuppositions among science teachers in Botswana, Indonesia, Japan, Nigeria, and the Philippines. Journal of Research in Science Teaching, 32(8), 817-831.

Westby, C., Dezale, J., Fradd, S. H., & Lee, O. (1999). Learning to do science: Influences of culture and language. Communication Disorders Quarterly, 21(1), 50-64.

Science Teacher Education

Required

Lavoie, D. R., & Roth, W.-M. (eds) (2001). Models of science teacher preparation: theory into practice. Dordrecht: Kluwer Academic Publishers.

National Research Council. (2001). Educating Teachers of Science, Mathematics, and Technology. Washington, DC: National Research Council.

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. Educational Researcher, 15(2), 4-14.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. Harvard Educational Review, 57(1), 1-22.

Stigler, J & Hiebert, J. (1999). The teaching gap. New York: The Free Press.

Recommended Additional Readings

De Jong, O., Korthagen, F. & Wubbels, Th. (1998). Research on science teacher education in Europe: teacher thinking and conceptual change. In: B. J. Frazer and K. G. Tobin (Eds.), International Handbook of Science Education, Dordrecht: Kluwer Academic Publishers (pp. 745-758)

De Jong, O. & Brinkman, F. (1999). Investigating student teachers' conceptions of how to teach: international network studies from science and mathematics education, European Journal of Teacher Education, 22, 5-.

Eggen, P. D., & Kauchak, D. P. (1996). Strategies for teachers: Teaching content and thinking skills (3rd edition). Boston, MA: Allyn and Bacon.

Loucks-Horsley, S., Hewson, P., Love, N., Stiles, K. (1998). Designing professional development for teachers of science and mathematics. Thousand Oaks, CA: Corwin Press.

Tobias, S. & Tomizuka, C. (1992). Breaking the science barrier: How to explore and understand the sciences. New York: College Entrance Exam Board.

Learning Theory

Required

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. Educational Researcher, 17(1), 32-42.

Lave, J. (1988). Cognition in practice. Cambridge, UK: Cambridge University Press.

National Research Council. (2000). *How people learn*. Washington, DC: National Academy Press.

Piaget, J. (1970). Piaget's theory. In P. Mussen (Ed.) *Carmichael's manual of child psychology I.* New York: John Wiley.

Piaget, J. (1964). Development and learning. *Journal of Research in Science Teaching, 2*(3), 176-186.

Thagard, P. (1996). *Mind: Introduction to cognitive science* (Chap. 9 & 10, pp. 139-167). Cambridge, MA: MIT Press.

Vygotsky, L.S. (1978). *Mind in society: the development of higher psychological processes*. Cambridge, MA: Harvard University Press.

The readings below represent important work that students who want to pursue research in any of the very broad topics should consider.

Perspectives on the Learning of Science

Cobb, P. (1994) Where is mind? Constructivist and sociocultural perspectives on mathematical development. *Educational Researcher, 23*(7), 13-20

Cobern, W. W. (1996). Worldview theory and conceptual change in science education. *Science Education, 80*(5), 579-610.

Cobern, W. W., & Aikenhead, G. S. (1998). Cultural aspects of learning of science. In B. Fraser, & K. G. Tobin (editors), *International handbook of science education, Part Two* (pp. 39-52). Dordrecht, The Netherlands: Kluwer Academic Publishers.

Carr, M. Barker, M., Bell, B. Biddulph, F. Jones, A., Kirkwood, V., Pearson, J. and Symington, D. (1994). The constructivist paradigm and some implications for science content and pedagogy. In P. Fensham, R. Gunstone and R. White. *The Content of Science: a constructivist approach to its teaching and learning.* London: Falmer Press, 147-158.

Clement, J. (1991). Nonformal reasoning in experts and in science students: The use of analogies, extreme cases and physical intuitions. In J. F. Voss & D Perkins (Eds.) *Informal reasoning and education. Hillsdale, NJ: Erlbaum.*

Clement, J., Brown, D. and Zietsman, A. (1989). Not all preconceptions are misconceptions: Finding "anchoring conceptions" for grounding instruction on students' intuition. *International Journal of Science Education, 11*(5), 554-565.

diSessa, A. A. (1996). What do "just plain folk" know about physics? In D. R. Olson & N. Torrance (Eds.), *The handbook of education and human development : New models of learning, teaching, and schooling* (pp. 709-730). Cambridge, MA: Blackwell.

Driver, R., Guesne, E., & Tiberghein, A. (Eds.) (1985). *Children's ideas in science.* Philadelphia: Open University Press.

Driver, R. Asoko, H., Leach, J. Mortimer, E. and Scott, P. (1994). Constructing Scientific Knowledge in the Classroom, *Educational Researcher,* 23(7), 5 –1.

Driver, R., Squires, A., Rushworth, P., & Wood-Robinson, V. (1994). Making sense of secondary science: Research into children's ideas. London: Routledge.

Hatano, G., & Inagaki, K. (1996). Cognitive and cultural factors in the acquisition of intuitive biology. In D. R. Olson & N. Torrance (Eds.), *The handbook of education and human development: New models of learning, teaching, and schooling* (pp. 683-708). Cambridge, MA: Blackwell.

Hammer, D. (1995). Epistemological considerations in teaching introductory physics. *Science Education*, 79 (4), 393-413

Minstrell, J. (1989). Teaching science for understanding. In L. Resnick, & L. Klopfer (Eds.), *Toward the Thinking Curriculum*: Current Cognitive Research.

Samarapungavan, A., & Wiers, R. W. (1997). Children's thoughts on the origin of species: A study of explanatory coherence. *Cognitive Science, 21*(2), 147-177.

Smith, J.P., diSessa, A.A., & Roschelle, J. (1994). Reconceiving Misconceptions: A Constructivist Analysis of Knowledge in Transition. *Journal of the Learning Sciences, 3*, 115-163.

West, L. H. T., & Pines, A. L. (1983). How "rational" is rationality*? Science Education, 67*(1), 37-39.

Wertsch, J.V. (1985) The social origins of higher mental functions. Ch3 in Wertsch J.V. *Vygotsky and the social formation of mind*. Cambridge, MA, Harvard University Press.

Wertsch, J.V. (1984) "The Zone of Proximal Development: some conceptual issues". In Rogoff, B. and Wertsch, J.V. (Eds) *Children's learning in the zone of proximal development*. New directions for child development No 23. San Fransisco: Jossey-Bass.

Warren, B., & Roseberry, A. S. (1996). "This question is just too, too easy!" Perspectives from the classroom on accountability in science. In L. Schauble, & R. Glaser (Ed.), *Innovations in learning: New environments for education.* (pp. 97-126). Mahwah, NJ: Lawrence Erlbaum Associates.

Zietsman, A. and Clement, J. (1997). The role of extreme case reasoning in instruction for conceptual change. *Journal of the Learning Sciences, 6*(1), 61-89.

Information Processing and Cognition.

Simon, H. A. (1996). *The sciences of the artificial*. Cambridge, USA: MIT Press.

Conceptual Development: Ontological Categories

Keil, F. (1986). *Concepts, kinds and cognitive development*. Cambridge, MA USA: MIT Press.

Medin, D. (1989). Concepts and conceptual structure. *American Psychologist, 44*, 1469-1481.

Rosch, E., Mervis, C.B., Gray, W.D., Johnson, D. & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology, 8*, 382-439.

<u>Mental Models and Analogies in the Learning of Science</u>

Gentner, D. & Stevens, A.L. (Eds.) (1983). *Mental models*. Hillsdale, N.J.: Erlbaum.

Harrison, A. G., & Treagust, D. F. (1996). Secondary students' mental models of atoms and molecules: Implications for teaching chemistry. *Science Education, 80* (5), 509-534.

Vosniadou, S., & Brewer, W. F. (1992). Mental models of the earth: A study of conceptual change in childhood. *Cognitive Psychology, 24*(4), 535-585.

<u>Expert to Novice</u>

Chi, M. T. H. and Koeske, R. D. (1983). Network representation of a child's dinosaur knowledge. *Developmental Psychology, 19*(1), 29-39.

Kuhn, D. (1989). Children and adults as intuitive scientists. *Psychological Review, 96* (4), 674-689.

Hatano, G., & Inagaki, K. (1987). Everyday biology and school biology: how do they interact? *The Quarterly Newsletter of Comparative Human Cognition, 9* (4), 120-128.

<u>Conceptual Change</u>

Carey, S. (1985). *Conceptual change in childhood*. Cambridge, USA: MIT Press.

Carey, S. (1988). Reorganization of knowledge in the course of acquisition. In S. Strauss (Ed.), *Ontogeny, Phylogeny, and Historical Development* (pp. 1-27). Norwood, NJ: Ablex.

Chi, M. T. H. (1992). Conceptual change within and across ontological categories: Examples from learning and discovery in science. In R. Giere (Ed.), *Cognitive Models of science: Minnesota studies in the philosophy of science* (pp. 129-186). Minneapolis, MN: University of Minnesota Press.

Posner, G., Strike, K. A., Hewson, P., & Gertzog, W. (1982). Accommodation of a scientific conception: Toward a theory of conceptual change. *Science Education, 66*, 211-227.

Strike, K. A., & Posner, G. J. (1992). A revisionist theory of conceptual change. In R. A. Duschl, & R. J. Hamilton (editors), *Philosophy of science, cognitive psychology, and educational theory and practice* (pp. 147-176). Albany, NY: SUNY Press.

Research & Evaluation

<u>Required</u>

Bogdan, R. C., & Biklen, S. K. (1992). *Qualitative research for education: An introduction to theory and methods (2nd ed.)*. Boston: Allyn and Bacon.

Guba, E. & Lincoln, Y.S. (1985). *Naturalistic inquiry*. New York, NY: Sage.

Campbell, D.T. & Stanley, J.C. (1963). *Experimental and quasi-experimental designs for research*. Boston: Hough Mifflin Company.

Shavelson, R. J., & Towne, L. (2002). *Scientific research in education*. Washington, D.C.: National Academy Press.

McFee, G. (1992). Triangulation in research: two confusions. *Educational Researcher,* *34*(3), 215-219.

<u>Recommended Additional Readings – Consult with your advisor</u>

Borman, K. M. (1992). What Color is Your Ethnography? *Educational Researcher,* *21*(6), 27-28.

Baumgart, N., & Low, B.(1980). Reporting practical and statistical significance in science teaching research. *Journal of Research in Science Teaching, 17*(3), 269-274.

Cziko, G. A. (1989). Unpredictability and indeterminism in human behavior: Arguments and implications for educational research. *Educational Researcher*, 19(3), 17-25.

Confrey J. (1990). Review of the Research on Student Conceptions in Mathematics, Science and Programming. *Review of Research in Education, 16*, 3-56, 1990.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage.

Duckworth, E. (2001). *Tell me more.* New York, NY: Teachers College Press.

Gall, M., Borg, W., & Gall, J. (1996). *Educational Research: An introduction.* White Plains, NY: Longman Publishers.

Ginsberg, H. P. (1997). *Entering the child's mind: The clinical interview in psychological research and practice.* New York: Cambridge University Press.

Good, R. (1984). A problem of multiple significance tests. *Journal of Research in Science Teaching, 21*(1), 105-106.

Herron, J. D., Luce, T. G., & Weie, V. E. (1976). The proper experimental unit: Comparative analysis of empirical data. *Journal of Research in Science Teaching, 13*(1), 19-22.

Hopkins, K. (1982). The unit of analysis: Group means versus individual observations. *American Educational Research Journal, 19*(1), 5-18.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Thousand Oaks, CA: Sage

Novak, J. D. (1963). A preliminary statement on research in science education. *Journal of Research in Science Teaching, 1*(1), 3-9.

Pines, A. L., & West, L. H. T. (1986). Conceptual understanding and science learning: an interpretation of research within a sources-of-knowledge framework. *Science Education, 70*(5), 583-604.

Strauss, A. & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques.* Newbury Park, CA: Sage Publications.

Wandersee, J. H., Mintzes, J. J., & Novak, J. D. (1994). Research on alternative conceptions in science. In D. Gabel (Ed.), Handbook of research on science teaching and learning (pp. 177-210). New York: MacMillan.

Worthen, B.R., J.R. Sanders, and J.L. Fitzpatrick. (1997) *Alternative Approaches and Practical Guidelines Second Edition.* Longman: New York 1997 Chapters 1, 4, 5, 10, 17, 18, 19.

Wilson, S. M., Shulman, L. S., & Richert, A. (1987). 150 ways of knowing. In J. Calderhead (Ed.), *Exploring teacher thinking* (pp. 104-124). Sussex: Holt, Rinehart and Winston.

Curriculum and Instruction

Required

Brophy, J. (Ed.). (2000). Subject-specific Instructional Methods and Activities. Oxford: Elsevier Science. (Chapter 1 and pertinent Science Education Chapters)

Novak, J. D. (1990). Concept mapping: A useful tool for science education. Journal of Research in Science Teaching, 27(10), 937-949.

National Research Council. (1996). National science education standards. Washington, DC: National Academy Press.

Posner, G. (1994). Analyzing the curriculum (2nd ed). New York: McGraw-Hill.

Stevenson, H. & Stigler, J. (1992). The learning gap. New York: Touchstone.

Be familiar with the following:

AAAS. (2001). Atlas of Science Literacy. Arlington, VA: National Science Teachers Association.

AAAS. (1993). Benchmarks for Science Literacy. Washington, DC: Association for the Advancement of Science.

Michigan Department of Education. (2000). Michigan Curriculum Framework Science Benchmarks. Michigan Department of Education.

Michigan Department of Education. (2001). MI CLiMB.

National Research Council. (2001). Classroom assessment and the National Science Education Standards. Washington, DC: National Academy Press.

National Research Council. (2000). Inquiry and the National Science Education Standards: A Guide for Teaching and Learning. Washington, DC: National Academy Press.

Additional Readings

Bloom, B.S. (Ed.) (1956). Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain. New York; Toronto: Longmans, Green.

Bruner, J. (1960). Process of education. Cambridge: Harvard University Press.

Bybee, R., Harms, N., Ward, B., & Yager, R. (1980). Science, society and science education. Science Education, 63, 95-109.

Duckworth, E. (1987). The having of wonderful ideas. New York: Teachers College Press.

Duckworth, E. (1988). Teaching as Research. In M. Broderick & D. I. Chazan & S. M. Lawrence & P. A. Naso & B. A. Starnes (Eds.), For Teachers About Teaching (pp. 73-87). Cambridge, MA: Harvard Educational Review.

Duckworth, E., Easley, J., Hawkins, D., & Henriques, A. (1990). Science Education: A Minds-On Approach for the Elementary Years. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Gage, N., & Berliner, D. (1998). Educational Psychology (6th ed.). Boston, MA: Houghton Mifflin Company.

Layman, J. (1996). Inquiry and learning: Realizing science standards in the classroom. NY: College Entrance Exam Board.

Michigan Department of Education. (2000). Michigan Curriculum Framework Science Benchmarks. Michigan Department of Education.

Michigan Department of Education. (2001). MI CLiMB.

Minstrell, J., & van Zee, E. H., (Eds.), (2000). Inquiring into inquiry learning and teaching in science. American Association for the Advancement of Science, Washington, DC.

National Science Foundation, (1996). Shaping the Future: New expectations for undergraduate education in science, mathematics, engineering, and technology. Report on the review of undergraduate education by the Advisory Committee to the National Science Foundation Directorate for Education and Human Resources.

Posner, G. (2000). Course design. New York: Pearson/Addison-Wesley.

Raizen, S. A. (1998). Standards for Science Education. Teachers College Record, 100(1), 66-121.

Roth, K. (1989). Science education: It's not enough to "do" or "relate." American Educator, 13(4), 16-22, 46-48.

Rutherford, F., & Ahlgren, A. (1989). Project 2061: Science for all Americans. Washington, DC: Author.

Schwab, J. J. (1962). The teaching of science as enquiry. In J. J. Schwab and P. F. Brandwein (Eds.), The teaching of science (pp. 1-103). Cambridge, MA: Harvard University.

Schmidt, W. H., McNight, C. C., & Raizen, S. A. (1996). A splintered vision: An investigation of U.S. science and mathematics education. Boston: Kluwer Academic Press.

Schwab, J. J. (1978). Science, curriculum and liberal education. Chicago: University of Chicago Press.

Shamos, M. H. (1995). The myth of scientific literacy. New Brunswick, NJ: Rutgers University Press.

Stevenson, H. W., & Stigler, J. W. (1992). The learning gap. New York: Simon and Schuster.

Handbooks

<u>Familiarity with:</u>

Fraser, B., & Tobin, K. G. (1998). <u>International handbook of science education.</u> Dordrecht, The Netherlands: Kluwer Academic Publishers.

In D. Gabel (Ed.) (1994). <u>Handbook of research on science teaching and learning.</u> New York: MacMillan.

Kelly, A. E. & Lesh, R. (Eds.) (2000). <u>Handbook of Research Design in Mathematics and Science Education.</u> Erlbaum, NJ: Lawrence.

Readings from Specific Science Disciplines
(Students are responsible for only one area)

Biology Education

<u>Required</u>

Darwin, C. ([1859] 1964) *On The Origin of Species.* (Reprint of the first edition) Cambridge, MA: Harvard University Press.

Mayr, E. (1982). *The growth of biological thought: Diversity, evolution, and inheritance.* Cambridge, MA: Harvard University Press, Chapters 1-3.

National Academy of Sciences (1998) *Teaching About Evolution and the Nature of Science.* Washington, D.C.: National Academy Press.

Numbers, R. L. (1992). *The Creationists.* New York: Alfred A. Knopf, Inc.

Peterson, N. S., & Jungck, J. (1988). Problem-posing, problem-solving, and persuasion in biology education. *Academic Computing,* Win/Spr (14-17), 48-50.

<u>Strongly Recommended for those pursuing research in biology education</u>

Allard, D.W. and C.R. Barman. 1994. The learning cycle as an alternative method for college science teaching. *BioScience, 44*:99-101.

Biological Sciences Curriculum Study (BSCS). 1993. *Developing Biological Literacy.* BSCS Press, Colorado Springs, CO.

Crick, F. (1988) *What Mad Pursuit.* New York: Basic Books.

Desmond, A., & Moore, J. (1991). *Darwin - The life of a tormented evolutionist.* New York: Warner Books.

Moore, J.A. (1993) *Science as a way of knowing: The foundations of modern biology.* Cambridge, MA: Harvard University Press.

Ruse, M. (ed.) (1998) *Philosophy of Biology.* Amherst, NY: Prometheus Books.

Sayre, A. (1975). *Roslind Franklin & DNA.* New York: W.W. Norton & Company.

Watson, J. (1980) *Race for the Double Helix.* (ed. Gunther S. Stent) New York: Norton Books.

Chemistry Education (consult with advisor)

De Jong, O., Schmidt, H. J. & Zoller, U. (1998). Chemical Education research in Europe. *International Journal of Science Education,* 20, 253-256.

De Jong, O. (2000) Crossing the borders: chemical education research and teaching practice. *University Chemistry Education,* 4, 29-32.

Gabel, Dorothy. Improving Teaching and Learning through Chemistry Education Research: A Look to the Future *J. Chem. Educ.* 1999 (76) 4 548- 554.

Johnstone, A. H. Chemistry Teaching--Science or Alchemy? 1996 Brasted Lecture *J. Chem. Educ.* 1997 (74) 262.

Gilbert, J.K. de Jong, O, Justi, R., Treagust, D.F. and van Driel, J.H. (Eds). *Chemical Education: Towards Research-based Practice,* Dordrecht: Kluwer

Hoffman, R. *The Same and not the Same,* New York: Columbia Press

Gabel D. & Bunce D. (1994). Research on Problem Solving: Chemistry *Handbook of Research on Science Teaching and Learning.* Gabel, D. ed. MacMillan Publishing. New York. p. 301-326. Note: this is as much about student conceptions in chemistry as it is about problem-solving.

Earth Science Education

Required

Ault, Jr., C.R. (1994). Research on problem solving: earth science. *Handbook of Research on Science Teaching and Learning.* Gabel, D. (ed.), MacMillan Publishing, New York: 269-283.

Bezzi, A., and Happs, J.C., (1994). Belief systems as barriers to learning in geological education. *Journal of Geological Education, 42:* 134-140

Dodick, J., and Orion, N. (2003) Geology as an historical science: its perception within science and the education system. *Science and Education 12(2):* 197-211.

Dove, J., (1998). Students alternative conceptions in earth science. *Research Papers in Education 13(2):* 183-201.

Ishikawa, T., and Kastens, K.A., (2005). Why some students have trouble with maps and other spatial representations. *Journal of Geoscience Education 53(2):* 184-197.

Libarkin, J.C., Anderson, S.W., Science, J.D., Beilfuss, M., and Boone, W., (2005). Qualitative analysis of college students' ideas about the earth: interviews and open-ended questionnaires. *Journal of Geoscience Education, 53(1)*: 17-26.

National Science Education Standards. Be familiar with topics related to Earth Science. http://www.nap.edu/readingroom/books/nses/

Orion, N., and Hofstein, A., (1994). Factors that influence learning during a scientific field trip in a natural environment. *Journal of Research in Science Teaching, 31(10)*: 1097-1119.

Sell, K.S., Herbert, B.E., Stuessy, C.L., and Schielack, J., (2006), Supporting student conceptual model development of complex earth systems through the use of multiple representations and inquiry. *Journal of Geoscience Education, 54(3)*: 396-407.

Strongly Recommended for those pursuing research in earth science education

Mayer, V.J. (Ed.), (2002). *Global Science Literacy*. Science & Technology Education Library, Vol. 15. Kluwer Academic Publishers, Dordrecht, The Netherlands.

Journal of Geoscience Education, 53(4), (2005). Special issue on conceptual change in earth science.

Journal of Geoscience Education, 54(2), (2006). Special issue on place-based learning.

Geography Education

Required

Bednarz, R. S., & Peterson, J. F. (1994). The Reform Movement in Geographic Education: A View from the Summit. In R. S. Bednarz & J. F. Peterson (Eds.), A Decade of Reform in Geographic Education: Inventory and Prospect (pp. 3 - 9). Indiana, PA: National Council for Geographic Education.

Fraser, R., & Stoltman, J. (2000). Teaching Methods in Physical Geography: Bridging Tradition and Technology. In J. Brophy (Ed.), Subject-specific Instructional Methods and Activities. Oxford: Elsevier Science.

Geography Education Standards Project. (1994). Geography for Life: National Geography Content Standards 1994. Washington, DC: National Geographic Society.

Gerber, R., & Chuan, G. K. (Eds.). (2000). Fieldwork in Geography: Reflections, Perspectives, and Actions. Dordrecht: Kluwer Academic Publishers.

Hardwick, S. W., & Holtgrieve, D. G. (1996). Geography for Educators. Upper Saddle River: Prentice Hall.

National Research Council. (1997). <u>Rediscovering Geography</u>. Washington, DC: National Academy Press.

Stoltman, J. P. (1991). Research on Geography Teaching. In J. Shaver (Ed.), <u>Handbook of Research on Social Studies Teaching and Learning</u> (pp. 437-447). New York: Macmillan.

Physics Education (consult with advisor)

Arons, A. (1990) *A Guide to Introductory Physics Teaching*. John Wiley & Sons.

di Sessa AA. Toward an Epistemology of Physics. Cognition and Instruction. 10 (2 & 3) 1993. And responses by F Marton and Chi M and Slotta J.

Gabel, D. & Bunce, D. (1994). Research on Problem Solving: Chemistry *Handbook of Research on Science Teaching and Learning*. Gabel, D. Ed. MacMillan Publishing. New York. p. 301-326.

Hammer, D. (1996). More than misconceptions: Multiple perspectives on student knowledge and reasoning, and the appropriate role for education research. <u>American Journal of Physics. 64</u>, 1316-1325.

Knight, R. (2002). <u>Five easy lessons: Strategies for successful physics teaching</u>. San Francisco: Addison Wesley.

Maloney, D. (1994). Research on Problem Solving: Physics. *Handbook of Research on Science Teaching and Learning*. Gabel, D. ed. MacMillan Publishing. New York. p. 327-354.

Mazur, E. (1997). <u>Peer instruction: A user's manual</u>. Upper Saddle River, New Jersey: Prentice Hall.

Perkins, D. & Salomon, G. (1989). Are cognitive skills context-bound? *Educational Researcher*, Jan-Feb, 16-25.

Polya, G. (1957). *How to Solve It*. Anchor Books. 2nd edition. 254 p.

Reif, F. (1995). Millikan Lecture 1994: Understanding and teaching important scientific thought processes. <u>American Journal of Physics, 63</u>, 17-32.

Reif F, Understanding and Teaching Problem-solving in Physics. Research on Physics Education: International Summer workshop, La Londe les Maures 1983

Stewart, J. & Hafner, R. (1994). Research on Problem Solving: Genetics. *Handbook of Research on Science Teaching and Learning*. Gabel, D. ed. MacMillan Publishing. New York. p. 284-300.

Van Heuvelen, A. (1991). Learning to think like a physicist: A review of research-based instructional strategies. <u>American Journal of Physics, 59</u>, 891-897.

Graduate Students Copy Policy

The Following Policies were put into effect on August, 2014

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    b. You must get the proper code for the grant you are copying for from the PI of the grant.
    c. Only this code should be used for making copies related to the grant.
7. Copying for a Course you are taking
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Ph.D., University of Colorado (Boulder)
3245 Wood Hall

Professor Cobern began his academic career as an undergraduate student in biology and chemistry at the University of California, San Diego. He later taught high school science for several years and at the same time completed a Master's degree program involving biology, anthropology, and education graduate courses. In 1976, he enrolled in the science education doctoral program at the University of Colorado, Boulder. There he worked on secondary and middle school science curricula at BSCS, studied philosophy of science and research methods. His doctorate degree was awarded with a cognate in quantitative research methods. Professor Cobern then spent the next four and a half years at the University of Sokoto, Nigeria, where he developed greater interest in the non-quantitative disciplines of the philosophy and sociology of science. His work at Sokoto was divided between teaching courses to students from both urban and rural homes and supervising undergraduate honors research. His personal research focused on the development of relevant formal education for Fulani pastoralists that would be consistent with their traditional ways of life. From these experiences grew the conviction that science educators must understand the fundamental, culturally based beliefs about the world that students, teachers, and curricula bring to class, and how these beliefs are supported by culture; because, science education can be successful only to the extent that science can find a niche in the cognitive and socio cultural milieu of students. Since those days in Nigeria his research has developed from this conviction. While continuing work related to culture and religion, Dr. Cobern has in recent years expanded his research by quantitatively addressing instructional efficacy in science education and science teacher education. He is also investigating new mixed methods approaches to the study of cultural issues. Dr. Cobern has held several academic appointments and is currently the Director for The Mallinson Institute for Science Education in Michigan where he is conducting both qualitative and quantitative research. Professor Cobern has over 60 professional publications and has served on the boards of major science education research journals. He has been the PI or co-PI on over $5M in externally funded R&D grants. He has been a guest lecturer in Australia, Brazil, Egypt, Japan, Lebanon, Malawi, New Zealand, Norway, Sweden, South Africa, Taiwan, and Turkey. In 2009, he was named a WMU Distinguished Professor. He is a Fellow of the American Association for the Advancement of Science, a Fellow of the American Scientific Affiliation, and a Fellow of the American Education Research Association.

Marcia Fetters
Associate Professor Teaching, Learning & Leadership
B.S., M.A. Ed., and Ph.D. (Michigan State University)
2438 Sangren Hall
Phone; (269) 387-3538
Fax: (269) 387-2882

Marcia Fetters has a dual appointment in the Department of Teaching, Learning & Leadership and the Mallinson Institute for Science Education. Her primary undergraduate teaching assignment is secondary science methods. At the graduate level she teaches a variety of courses for science teacher professional development and growth. Her research interests focus on the needs of individuals marginalized from the science education community, with a special focus on individuals with learning disabilities, and science in informal settings. Related to this interest she has explored, written about, and published on the use of toys to teach science concepts. See her homepage for additional information. Check it out! http://homepages.wmich.edu/~mfetters/

Megan Grunert
Assistant Professor of Chemistry
B.S., University of Indianapolis
M.S., Ph.D., Purdue University
Office: 3425 Wood Hall
Phone: (269) 387-2909

Dr. Grunert joined the WMU faculty in 2011, with a joint appointment in the Chemistry Department and the Mallinson Institute for Science Education. Her research interests include diversity in chemistry and other sciences, motivational theories, educational psychology, and curriculum development to foster inclusive education.

Charles Henderson
Associate Professor of Physics
BA Macalester College
M.S., Ph.D. University of Minnesota
Office: 1129 Everett Tower
Phone: (269) 387-4951

Charles Henderson is an Associate Professor in the Physics Department and the Mallinson Institute for Science Education at Western Michigan University. His current work is focused on the development of theories and strategies for promoting change in the teaching of STEM subjects. This includes issues related to the diffusion and adoption of research-based instructional strategies. Two current projects include 'Facilitating Change in Undergraduate STEM' and 'Understanding Instructor Practices and Attitudes Toward the Use of Research-Based Instructional Strategies (RBIS) in Introductory College Physics'. Both projects are funded by NSF. The goal of the former

project is to articulate models for promoting changes in STEM instructional practices in higher education. The latter seeks to understand the level of knowledge about, attitudes towards and use of RBIS by introductory physics instructors. Dr. Henderson is the editor of Physics Education Research Section of the American Journal of Physics and former chair of the American Association of Physics Teachers (AAPT) Committee on Research in Physics Education. He has been awarded a Fulbright Scholar grant to conduct research and work with graduate students at the University of Jyväskylä in Jyväskylä, Finland from January to June, 2010. His primary work will be with the University of Jyväskylä Institute for Educational Research. Dr. Henderson earned his Ph.D. in Physics Education Research from the University of Minnesota, Twin Cities Campus.

Mark Jenness
Director, The Science and Mathematics Program Improvement Center (SAMPI)
Ed.D., M.A., Western Michigan University;
B.S., Nazareth College

The primary goal for SAMPI is education improvement by helping K-12 schools, institutions of higher education, non-profit organizations, and other educational entities improve their educational programming. With an emphasis on science, mathematics, technology, and general school reform, SAMPI employs a variety of strategies to assist clients with their improvement efforts, including evaluation, research, professional development, materials development, and consultation.

Heather Petcovic
Assistant Professor Geological Sciences
PhD, Oregon State University

Heather Petcovic has a joint appointment in the Geosciences Department and the Mallinson Institute for Science Education. Her geology research has focused on a combined field, analytical, and numerical modeling approach to understand how dikes fed lava flows of the Columbia River flood basalts, which include the Earth's largest lava flows. She also has classroom experience as a NSF Teaching Fellow, and experience in informal science education and outreach. Her science education research interests include the role of field experience in geoscience education, and alternative conceptions in earth sciences, particularly those involving earth materials, volcanoes, and plate tectonics. She is also interested in the role of informal education programs in promoting scientific literacy in the general public, enhancing formal K-12 learning, and encouraging underrepresented students to pursue careers in the sciences.

David Rudge
Associate Professor of Biological Sciences
B.S., Duke University
M.S., M.A., Ph.D. University of Pittsburgh
3134 Wood Hall; (269) 387-2779

Dave Rudge researches how the history and philosophy of science (particularly evolutionary biology) can be used to inform the teaching of science. After completing his doctoral degree in the University of Pittsburgh's Department of History and Philosophy of Science, he taught at both Texas A&M University and Iowa State University. Dr. Rudge is a published scientist and philosopher, and is coeditor, with Elmer D. Klemke and Robert Holligern, of Klemke, E.D., Hollinger, R. and Rudge, D.W. (eds.) (1998) Introductory Readings in the Philosophy of Science.(3rd.ed.) Buffalo, NY: Prometheus Books. He is currently writing a book on H.B.D. Kettlewell's famous experiments on industrial melanism, with special attention to how the episode has been portrayed in science textbooks. His web page is located [http://homepages.wmich.edu/~rudged/].

David Schuster
Assistant Professor of Physics
B.Sc.(Honns.) University of the Witwatersrand
M.Sc., Ph.D. University of Wisconsin, Madison

Research and teaching interest in physics education include: cognition, conceptual understanding, problem-solving, assessment, epistemology, educational design and curriculum development.

Brandy A. Skjold
Faculty Specialist II
B.S., M.S., Northern Michigan University
Ph.D., Western Michigan University
3140 Wood Hall
(269) 387-3336

Research interests focus on the teaching of science at the college level and the process learners go through as they learn to become scientists. She is interested in the explicit teaching of Nature of Science.

Joseph P. Stoltman
Distinguished Professor of Geography and Science Education
B.A., Central Washington State
M.S., University of Chicago
Ph.D., University of Georgia
Phone; (269) 387-3407
Fax; (269) 387-3442

Joseph P. Stoltman has been a faculty member since 1971 in the Department of Geography, Physical Sciences Division, College of Arts and Sciences. His research has focused on the teaching and learning of geography, global change education, and the spatial analysis of educational reform in Michigan. He is a member of AAAS, NSTA, NCGE, AAG, SSEC, and MCSS, each a professional society devoted to improving scientific knowledge and teaching in the earth and social sciences. He serves as co-coordinator of the Michigan Geographic Alliance, which has as its objective the enhancement of geographic literacy in Michigan among students and young adults.

Dr. Mary Anne Sydlik
Adjunct Assistant Professor and Senior Researcher
Mallinson Institute for Science Education
Co-Director of Science and Mathematics Program Improvement (SAMPI)
B.A., Clarion State College
M.A., Western Michigan University
Ph.D., Syracuse University
Office: 3231 Wood Hall
Phone: (269) 387-3791
http://www.wmich.edu/sampi/

Dr. Sydlik is an Adjunct Assistant Professor and Senior Researcher in the Mallinson Institute for Science Education as well as Director of the Science and Math Program Improvement (SAMPI) Center, an outreach division of the Institute specializing in evaluation, research, and technical assistance for K-12 schools and higher education institutions. Mary Anne joined SAMPI in 2009, and is serving as a lead investigator on national, statewide, and local educational improvement efforts. In addition to evaluation, her research areas include behavioral ecology and animal behavior; faculty development; using technology in the classroom; and science and technical writing, especially for the general audience and for children.

Adjunct Professor

Dr. Herb Fynewever
Associate Professor of Chemistry at Calvin College
B.S. Calvin College
Ph. D. University of Wisconsin--Madison
Email: <herb.fynewever@calvin.edu>

Dr. Fynewever has adjunct appointments in the Chemistry Department and the Mallinson Institute for Science Education at WMU. His research interests include how students learn chemistry. In particular, they investigate how the type and timing of feedback impacts students' learning. They study how this formative assessment can be incorporated into homework assignments, peer-to-peer instruction, self/computer instruction, teacher/student interaction, classroom activities, and even testing.

SECTION 4:

WESTERN MICHIGAN UNIVERSITY

The Graduate College

Selection Criteria for Awards from the Graduate Student Research and Travel Funds

In addition to meeting eligibility criteria (regular admission to a graduate degree program, good academic standing, full-time enrollment during term(s) in which research or travel activity takes places), applicants for awards from the Graduate Student Research and Travel Fund should keep the following selection criteria in mind when preparing an application.

Graduate Student Research Fund

Criteria for selection for an award include the following considerations (in no special order):

1. Likelihood that the project will result in a peer-reviewed publication.

2. Significance of the project.

3. Student's role as sole or principal investigator.

4. Student's qualifications to conduct the project.

5. Reasonableness of the resources required and funding requested.

Graduate Student Travel Fund

Criteria for selection for an award include the following considerations (in no special order):

1. Extent of the student's participation (sole [preferred] or principal presenter, first listed author).

2. Selectivity, scope, and reputation of the conference.

3. Level and scope of the presentation (original oral communication, poster, panel presentation, etc.).

4. Significance of the project.

5. Reasonableness of the requested funding amount.

Graduate Student Research Grant

The Graduate Student Research Grant was established to support graduate students engaged in independent scholarly research, scientific inquiry, inventive technology, and original artistic activity. The grants are intended to help students pay extraordinary or unusual costs incurred in research projects. The typing of theses and dissertations and project papers, as well as the purchase of supplies and equipment commonly provided by departments or by other existing grants or funds, are not considered to be unusual expenses.

WMU graduate students on the master's level and the doctoral level have two opportunities at each degree level to secure research and travel grants. These opportunities may consist of 2 research grants or 2 travel grants or a combination of 1 research grant and 1 travel grant at each degree level.

Contact Dr. Marianne Di Pierro, Director, Graduate Center for Research and Retention, with questions or concerns.

Eligibility requirements and selection criteria are contained within the application.

Grant application deadlines are:

- Tuesday, Sept. 17, 2013

- Monday, Nov. 4, 2013

- Thursday, Jan. 16, 2014

- Monday, March 17, 2014

2013–14 Graduate Student Research Grant application

Graduate Student Research & Travel Grant (GSRTG) E-Folder Handouts

updated: 02/05/14

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Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

Graduate Student Travel Grant

The Graduate Student Travel Grant was established to support graduate students engaged in independent scholarly research, scientific inquiry, inventive technology, and original artistic activity. The grants support graduate student travel to meetings or events sponsored by professional organizations for the purpose of reporting the results of research, exhibiting or performing creative works, or otherwise disseminating results of their scholarly activity. These grants do not cover conference attendance for other purposes (e.g., as a non-presenting attendee or workshop participant), to present the findings of another's scholarly work, or for credit-generating activities such as study abroad programs.

WMU graduate students on the master's level and the doctoral level have two opportunities at each degree level to secure research and travel grants. These opportunities may consist of 2 research grants or 2 travel grants or a combination of 1 research grant and 1 travel grant at each degree level.

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2013-14 Graduate Student Travel Grant Application

Graduate Student Research & Travel Grant (GSRTG) E-Folder Handouts

updated: 02/05/14

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Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

Graduate College Dissertation Completion

Fellowship

Non-renewable Graduate College Dissertation Completion
Fellowships for up to two semesters and two sessions are awarded in
open competition and on the basis of superior scholarly achievement
to assist full time doctoral students with completion of their
dissertations. To be eligible, an applicant must be a doctoral
candidate who can demonstrate superior academic achievement and a
record of timely and steady progress toward degree completion.

Applicants must have completed all requirements for the degree
except the dissertation and must have an accepted dissertation
proposal. In addition to a stipend at the doctoral associate level, the
Fellowship pays the Fellow's tuition for 1-6 hours per semester and 1
-3 hours per session of 7300 hours only, depending on how many hours of 7300 the Fellow has yet to
complete.
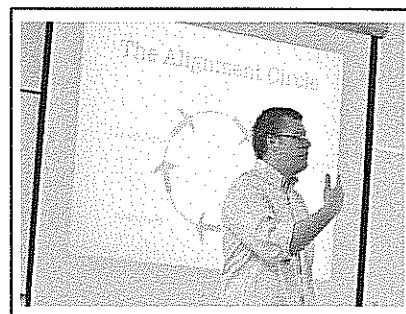
The Graduate College provides special workshops for graduate students interested in submitting
applications for the the Gwen Frostic Fellowship, Dissertation Completion Fellowship, and the Patricia
Thompson Dissertation Award. See our Events listings for workshop dates.

Next application deadline: **Friday, March 14 2014**

Dissertation Completion Fellowship Application

Gwen Frostic, Patricia Thompson & Dissertation Completion Fellowship E-Folder Handouts

Updated: 02/13/14

TOP

Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

Gwen Frostic Doctoral Fellowships

The Gwen Frostic Doctoral Fellowships are funded generously from an endowment made possible by the late poet, artist, and naturalist, Gwen Frostic, a Western Michigan University (WMU) alumna, Class of 1929. Awards are given to assist recipients with the completion of doctoral dissertations in all disciplines.

These generous and highly competitive fellowships will be awarded semi-annually by the Graduate College to doctoral students engaged in dissertation research from any field. The fellowships, in an amount to be determined by the Graduate College, will defray education expenses, including tuition and fees, materials, and travel related directly to the completion of the dissertation. Funds must be spent in the year (365 days) following the award. The award terminates when the doctoral degree has been conferred upon a Fellow.

Upon announcement of the application deadline by the Graduate College, students may be nominated by their dissertation advisor, with a letter of transmission from the department chair or program head. These letters shall indicate the significance of the dissertation research, the accomplishments of the student, and the scholarly or scientific promise of the student. The nomination must be accompanied by the student's curriculum vitae, approved dissertation proposal, and a budget of expenses.

The Graduate College provides special workshops for graduate students interested in submitting applications for the the Gwen Frostic Fellowship, Dissertation Completion Fellowship, and the Patricia Thompson Dissertation Award. See our Events listings for workshop dates.

Next application deadline: Friday, March 14 2014

The Gwen Frostic Doctoral Fellowship application

Gwen Frostic, Patricia Thompson & Dissertation Completion Fellowship E-Folder Handouts

Updated: 2/13/14

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Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

Martin Luther King/César Chavez/Rosa Parks

Future Faculty Fellowship

Martin Luther King/César Chavez/Rosa Parks Future Faculty Fellowship The Martin Luther King/César Chavez/Rosa Parks Future Faculty Fellowship Program is designed to increase the number of traditionally underrepresented candidates pursuing a teaching or administrative career in post-secondary education within the United States. KCP Fellowships are available to United States citizens with regular admission to a doctoral program. Preference is not given to applicants on the basis of race, color, ethnicity, gender, or national origin.
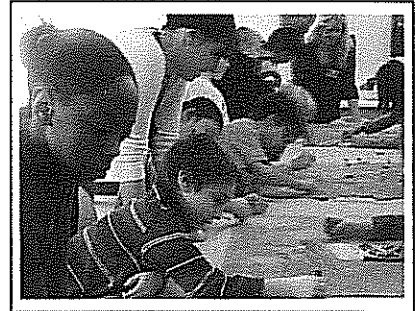
Martin Luther King/César Chavez/Rosa Parks Future Faculty Fellowships are available to U.S. citizens with regular admission to a doctoral program and who wish to pursue a full-time teaching or administrative career in postsecondary education within the United States. These KCP Fellowships are awarded to exceptional students who exemplify the life, career, and ideals of Martin Luther King, César Chavez or Rosa Parks.

The Fellowship does not require departmental service; however, students must meet other requirements as stated in the guidelines for KCP Fellowships. KCP Fellowships can be awarded in conjunction with other appointments. The KCP Future Faculty Fellowship Program is supported by the King Chavez Parks Initiative of the Workforce Development Agency, State of Michigan.

Inquiries should be sent to the Graduate College.

Next application deadline: **February 15, 2014.**

Martin Luther King/César Chavez/Rosa Parks Future Faculty Fellowship application

updated: 10/30/13

TOP

Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

WMU-GEP Fellowships

Western Michigan University (WMU) – Graduate Education and the Professoriate (GEP) Fellowship
WMU-GEP Fellowships are available to U.S. citizens who derive from African-American, Hispanic, or
Native American (with tribal affiliation) heritage and who have secured regular admission to a
doctoral degree program in a STEM (science, technology, engineering, or mathematics) or SBE
(sociology, political science, psychology, or economics) area. The GEP Fellowship is competitive and
awarded to exceptional students. For further details, contact the Graduate College.

Next application deadline: **March 1, 2014.**

WMU-GEP Fellowship application

updated: 10/30/13

TOP

Graduate College, Western Michigan University, Kalamazoo MI 49008
-5242 USA | (269) 387-8212
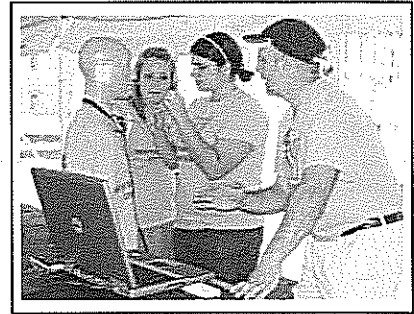
Thurgood Marshall Fellowships

The Thurgood Marshall Fellowship is a highly competitive award. Only a limited number of the Thurgood Marshall Fellowships are available. The application deadline is February 15.

Applicants must hold United States citizenship and shall exemplify the values and accomplishments of Thurgood Marshall, the first black Justice in the US Supreme Court. Son of a dining-car waiter and schoolteacher and also counsel for the NAACP beginning in 1934, Thurgood Marshall successfully argued the landmark Brown vs. the Board of Education of Topeka (1954), which nullified the legal basis for racial segregation. He held that the American Constitution, as the basis of law, permits and requires changes to accommodate a deeper understanding of human values. In his view, the noblest citizens are those who labor toward this refinement.

Thurgood Marshall applicants must have submitted an application for admission to a master's level program or a doctoral program at WMU. Thurgood Marshall Fellowships are awarded only to students who have been admitted to a master's program or a doctoral program and only to applicants who are embarking on a first master's degree or first doctoral degree. At the time of accepting a Thurgood Marshall Fellowship, a student may not have accumulated more than 9 credit hours toward a graduate degree at WMU.

There are two levels of Thurgood Marshall Fellow:

Master's level Thurgood Marshall Fellows are awarded for one full year with the possibility of renewal for one additional year. In addition to a stipend, recipients receive a tuition scholarship: Master's level recipients receive seven hours of tuition each semester (eight hours beginning Fall 2013, 9 hours beginning Fall 2014) and three hours each session while on appointment. Master's level Thurgood Marshall Fellows shall be appointees of the Graduate College, and in this capacity they shall, at the discretion of their program, work for 10 hours weekly as a graduate assistant in teaching, research, or service.

Doctoral level Thurgood Marshall Fellows are awarded for one full year with the possibility of yearly renewal up to a maximum of three additional years. The fellowship includes a salary (see details in the application) plus 24 credit hours of tuition (up to nine credit hours in the fall and spring semesters, and up to three credit hours in each of two summer sessions). Doctoral level Thurgood Marshall Fellows shall be appointees of the Graduate College, and in this capacity they shall, at the discretion of their program, work for 10 hours weekly as a doctoral associate in teaching, research, or service.

To hold a Thurgood Marshall Fellowship, a student must maintain good academic standing (GPA of 3.0 or higher) and register for at least six credit hours in each of the fall and spring semesters, and three credit hours in each of the two summer sessions. A Thurgood Marshall Fellow must also perform satisfactorily as a graduate assistant or doctoral associate.

Next application deadline: **February 15, 2014**

Thurgood Marshall Fellowship Application

updated: 10/30/13

TOP

Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

University Dames Endowed Scholarship Grant

First awarded in 1997 in accordance with an agreement made between Western Michigan University and the WMU Women's Association, the scholarship is offered on a competitive basis to exceptional graduate students enrolled in a graduate degree program at WMU. Both men and women may apply for this scholarship, but by the terms of the agreement, preference is given to women. The scholarship is provided to assist the recipient with tuition payment, fees, purchase of books.

Eligibility:

1. The nominee must have successfully completed at least 15 graduate credit hours.

2. The nominee must be in good academic standing.

3. The nominee must demonstrate financial need.
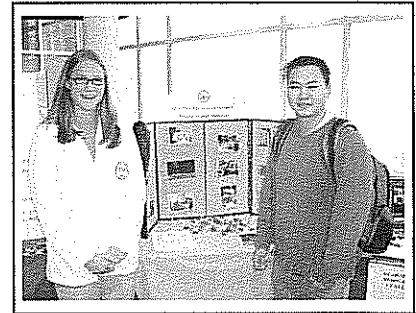
Next application deadline: **May 16, 2014.**

University Dames Application.

updated 09/10/13

TOP

Graduate College, Western Michigan University, Kalamazoo MI 49008-5242 USA | (269) 387-8212

f Research and Creative Activities

Fifth Annual WMU Research and Creative Activities Poster Day
April 15, 2011
Fetzer Center, 8:30 a.m. to 1:00 p.m.

Instructions for Having Your Poster Printed

Free printing of your posters will be provided by the College or Arts and Sciences. You will need to send your poster for printing no later than Friday, April 8 following the instructions below.

- Poster size is to be 36" x 48" (if needed, there is a PowerPoint template available at http://www.wmich.edu/cas/administration.html)
- Posters should be in PowerPoint or PDF format file and sent by e-mail to: elizabeth.roe@wmich.edu
- Your poster may be picked up the following week from 2315 Friedmann Hall across the hall from the Arts & Sciences Advising Office.

Preparation Guidelines for Designing Posters

In the matter of truth-seeking, each disciplines or academic field belongs to a distinctive culture. It is perilous to propose common guidelines for all presenters. Nevertheless, in the interest of coherence and order, four common questions should be kept in mind for a poster/static display.

The purpose of the poster should be to convey highlights of a study or project in an attractive format that can be easily read and understood in a short period of time, i.e., 3 to 5 minutes. Posters do not have to be created specifically for this event. A poster used recently at another meeting is acceptable.

We recognize that creative work in certain disciplines may not lend itself to the present guidelines. We welcome departures from presentations based on printed text (video/CD recordings, etc.). Even in such cases, we recommend following poster guidelines to the extent possible.

Content of the Poster

1. ***What*** are you researching or what is the focus of your creative activity?

   State the nature of the issue, topic or problem that you are studying. Include at least 1-2 questions your research or creative activity addresses and, if possible, state your hypotheses (tentative assumptions you are testing) or premise.

   Possible headings: Purpose, objective, issue, research questions, problem, hypothesis, thesis, major points, premises

2. ***Why*** are you researching this topic or focusing on this creative activity?

   Briefly explain what is known about the issue, topic or problem (background). Also, explain why you are researching/studying it. Why is it important? Why does it interest you? What new information can you add with your research or activity?

Possible headings: Justification, rationale, motivation, significance, background

3. **How** are you researching this topic or creating your product?

   Describe what you are doing and materials you are using, e.g., laboratory experiments (designed or conducted), field work, interviews, surveys, library research/literature review, subjects/populations studied/compared, conditions examined, etc. Indicate theories used, developed or demonstrated. (Address what applies to research in your field.)

   Possible headings: Methods, methodology, design, study population, research subjects

4. **What** is the **status** of your research?

   Describe the status of your project, e.g., your initial design/observations (if any) and future directions; or describe your results and your conclusions (e.g., supporting or not supporting your hypothesis). Have you created a product and what makes it unique? What have you learned? What do you hope to learn?

   Possible headings: Current status, progress toward results, results/outcomes/ product description or display, discussion (interpretation of results), conclusions, limitation of research, implications

Elements of the Poster

Title:

The title should be short and fit across top of poster on one line effectively highlight the subject of your research in ten words or less. Author name and department appear below the title (including anyone who has contributed to the project in a significant way). Student posters should also include name of faculty mentor.

Abstract:

A 150-200 word abstract in 28-point font that identifies the research problem studied or creative activity engaged in, the methods used the results or product obtained and the significance. Authors may decide that this space could be more effectively used for other material. If authors decide not to include an abstract on the poster, they should be sure to clearly state key items such as objectives and conclusions. Authors may provide the abstract as a handout at the poster location, if the abstract is not included on the poster.

Introduction and/or Hypothesis:

Keep this section short. Limit it to a few statements. Clearly state the objectives.

Methods or Experimental Design:

Keep text to a minimum. Use graphics where possible.

Results:

This section should take up most of the space.
Graphs (figures) are preferred over tables.
Keep graphs simple. Include captions with graphics.

Include credits on photographs taken by someone other than the authors.

Conclusions or Implications:

Limit this section to a few statements.

Creative Activities/Work:

The poster may include title and abstract or introduction. The creative work can be displayed on the tabletop or on a laptop.

Acknowledgments:

Include this section when appropriate.

Presenting Your Poster:

In advance of the meeting prepare a brief (2-3 minute) talk about your research and practice that talk. At the meeting, ask people if they would like to hear about your work. Plan to stay by your poster throughout the scheduled poster session. Don't be afraid to check out the other posters presented during your session but try to minimize the amount of time that your poster is unattended.

Design Specifications

Overall size:

The typical size of a poster is 36" x 48" in a landscape format. Poster has to be free standing using a tri-fold poster board or attached to foam board so it can lean against the wall.

Font Type and Size:

Sans serif typeface such as Arial is best for good visibility at a distance; use the same font type throughout.

Title - 72 point or larger; keep it short, not more than 80 characters including spaces

Author name and affiliation - 48 point

Section headings - 36 point, bold

Text - 28 point

Graphs and tables - all numbers and labels 28 point or larger

Graph bars and symbols – use colors; avoid cross hatching

Acknowledgments – 20 to 24 point

Materials Provided:

Push pins, a table to display poster. Please bring any other materials you may need. You may find it useful to have on hand a tablet of sketch paper and suitable drawing materials to assist in our explanation to observers.

VISITING SCHOLARS AND ARTISTS PROGRAM

Established in 1960, the Visiting Scholars and Artists Program significantly contribute to the intellectual life of Western Michigan University. This program provides funds for academic units to bring distinguished scholars and artists to campus. These visitors meet with faculty and students in their fields and address the community at large. Since the program began, it has supported over 600 visits by scholars and artists representing more than 60 academic disciplines. Following are biographical sketches of the scholars and artists participating in the 2011-2012 Visiting Scholars and Artists Program. Dates are subject to change. For information about specific topics, detailed schedules for each scholar or artist, and specific times and locations of events, please contact the sponsoring departments.

VISITING SCHOLARS AND ARTISTS PROGRAM COMMITTEE

Dr. **Error! Reference source not found.**, Chair
Mr. Igor Fedotov
Dr. Sisay Asefa
Dr. Joan Herrington
Ms. Wendy Kershner
Dr. Pavel Ikonomov
Ms. Vonceal Phillips

NEIL WHITEHEAD
Co-sponsors: English, Anthropology, Haenicke Institute and Africana Studies

Dr. Neil Whitehead (BA, in Psychology and Philosophy, Oxford University; MA, Social Anthropology, Oxford University; Ph.D., Social Anthropology, Oxford University) is Professor and Chair of Anthropology at the University of Wisconsin-Madison. He was the Chief Editor for the journal *Ethnohistory*. Dr. Neil Whitehead is one of the world's leading authorities on the history of violence and sexuality. His published research has investigated the relationships between colonialism, violence, and sexuality. Dr. Whitehead will deliver a public lecture on the influences of Classical and Enlightenment ideas on the foundation of truth in modern sciences and the pragmatic convergence between ethnography and torture in recent global attempts to weaponize culture.

DATES: October 2011
HOST: Mustafa Mirzeler

KENT G. LIGHTFOOT
Co-Sponsors: Anthropology, Foreign Languages, and History

Dr. Kent G. Lightfoot is Professor of Anthropology at the University of California, Berkeley. He received his B.A. in Anthropology from Stanford University and his M.A. and Ph.D. in Anthropology from Arizona State University. He has conducted archaeological and ethnohistorical research throughout North America and is a well-recognized expert on Russian colonialism in the Pacific Northwest. He has directed investigations of Native Californian, Native Alaskan, and Russian sites around historic Ross Colony for over two decades. This work has resulted in numerous grants, honors, and over 100 publications. He is the recipient of the 2007 Society for Historical Archaeology James Deetz Award for his book, "Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers" (University of California Press, 2005).

DATES: October 17-19, 2011
HOST: Michael Nassaney

SONDRA SHAW-HARDY
Co-sponsors: Public Affairs and Administration and Gender and Women's Studies

Known as a philanthropist, founder of women's giving organizations, county commissioner, appointee of several foundation boards, Ms. Shaw-Hardy is also an author of six books and numerous newsletters. Ms. Shaw-Hardy visualized the importance of women's philanthropy nearly 20 years ago in chairing the first national meeting on the subject, Women and Philanthropy: A National Agenda, in 1993 at the Johnson Foundation. Currently, she is a columnist to Citicorp's Women & Co website and an associate of Inspired Legacies. Her 2010 book co-authored with Martha A. Taylor titled "Women & Philanthropy: Boldly Shaping a Better World" is based on extensive interviews, and serves as the focus of her WMU presentations on nonprofit organizations' gender sensitive fundraising, women as leaders and donors, and working with women of wealth.

DATES: October 27-28, 2011
HOST: Barbara Liggett

ANNE FAUSTO-STERLING
Co-sponsors: Anthropology, Gender and Women's Studies, and College of Arts and Sciences

Anne Fausto-Sterling is Professor of Biology and Gender Studies in the Department of Molecular and Cell Biology and Biochemistry at Brown University. She is Chair of the Faculty Committee on Science and Technology Studies. A Fellow of the American Association for the Advancement of Science, author of the award winning book *Sexing the Body* and author of scientific publications in developmental genetics and developmental ecology, Professor Fausto-Sterling has achieved recognition for works that challenge entrenched scientific beliefs while engaging with the general public. Her work in progress applies dynamic systems theory to the study of human development to understand how *cultural* difference becomes *bodily* difference through case studies examining sex differences in bone development and the emergence of gender differences in behavior in early childhood.

DATES: November 3-4, 2011
HOST: Bilinda Straight

TRACY CHRISTENSEN
Co-sponsors: Theatre, Dance, Family and Consumer Sciences

Tracy Christensen's Costume Design credits include Souvenir produced at the Lyceum Theater on Broadway. She has also been an Associate Costume Designer for the Broadway productions of Shrek, A Little Night Music, The Little Mermaid, 12 Angry Men, Fiddler on the Roof, Wonderful Town, and Dance of the Vampires. Ms. Christensen has also been the Associate Costume Designer on Beauty and the Beast throughout the world in 12 cities including Melbourne, Vienna, Tokyo, Mexico City, London, Buenos Aires and Seoul. She has also designed extensively Off-Broadway and regionally at such theatres as the Kennedy Center, Hangar Theater, and The Long Wharf Theater. Ms. Christensen is currently a lecturer at SUNY Purchase. She has been a guest lecturer at SMU and Rutgers University.

DATES: November 3-6, 2011; January 23-28, 2012; March 4-15, 2012
HOST: Kathryn Wagner

RONALD MALLON
Co-sponsors: Philosophy, Ethics Center, and GSAC

Ron Mallon is an Associate Professor of Philosophy at the University of Utah. His research is in social philosophy, philosophy of cognitive psychology, and moral psychology. He has authored or co-authored papers in *Cognition, Ethics, Journal of Political Philosophy, Midwest Studies in Philosophy, Mind and Language, Nous, Philosophy and Phenomenological Research, Philosophy of Science, Social Neuroscience, Social Philosophy, and Social Theory and Practice*. He has co-directed at NEH Summer Institute in Salt Lake City, Utah, been a chair of the Society for Philosophy and Psychology Meeting, and he has been the recipient of a Charlotte W. Newcombe Doctoral Dissertation Fellowship, a Laurence S. Rockefeller Visiting Fellowship at the Princeton's University Center for Human Values, and an American Council of Learned Societies Fellowship.

DATE: December 1-4, 2011
HOST: Fritz Allhoff

FRED ANDERSON
Co-sponsors: History and Humanities Center

Fred Anderson is a professor of History at the University of Colorado. He has held fellowships from the National Endowment for the Humanities, the Guggenheim Foundation, and the Rockefeller Foundation, and is the author or editor of five books, including *Crucible of War*, which won the 2001 Francis Parkman Prize as best book in American history. Together with Andrew Cayton, he has published *The Dominion of War: Empire and Liberty in North America, 1500-2000*. His most recent book, *The War That Made America: A Short History of the French and Indian War*, was the companion volume for the PBS television series of the same title. He and Andrew Cayton are currently writing *Imperial America 1672-1764*, a volume in the Oxford History of the United States.

DATE: January 26-27, 2012
HOST: Sally Hadden

ROGER CHASE
Sponsor: Music

Roger Chase was born in London. His teachers included Bernard Shore, Steven Staryk and Lionel Tertis. He has played as a soloist throughout Europe, South Africa, the USA, Canada, Australia, New Zealand, Japan, the Middle East, India, China, and Scandinavia. He has been a member of many ensembles, the Nash, London Sinfonietta, Esterhazy Baryton Trio, Quartet of London, Hausmusik, the London Chamber Orchestra, and is invited to play as guest principal viola with British orchestras and others in North America and Europe, including with the Berlin Philharmonic. He has recorded for EMI, CRD, Hyperion, Cala, Virgin, Floating Earth, Dutton, Naxos and Centaur. Chase has taught at the

Royal College of Music, the Guildhall School and the Royal Northern College of Music, Oberlin College, and Roosevelt University. Music written for him includes concertos, chamber works and solo pieces.

DATE: February 2012
HOST: Igor Fedotov

CHANDRASEKHAR PUTCHA
Co-sponsors: Industrial and Manufacturing Engineering, and Civil and Construction Engineering

Dr. Putcha is a professor at California State University, Fullerton (CSUF) in the Department of Civil Engineering, where he has held an appointment for the last 30 years. Dr. Putcha's expertise is in the areas of Reliability, Risk Analysis, and Optimization. He has worked as a consultant for various industrial partners, such as Boeing and Northrop Grumman, and has applied his work through various engineering disciplines, including Industrial Engineering, Civil Engineering, Mechanical Engineering and Aerospace Engineering. Dr. Putcha has an extensive research record of more than 120 publications which appear in refereed journals and conference proceedings. In 2007, Dr. Putcha received the campus-wide Outstanding Professor Award at CSUF for an exemplary record of teaching, research, professional activity and service as a Professor.

DATE: February 13-24, 2012
HOST: Azim Houshyar

MUTSUO TAKAHASHI
Co-sponsors: Foreign Languages, and Soga Japan Center

Mutsuo Takahashi (1937-) is one of the most prominent contemporary Japanese writers. He is the author of nearly one hundred books, including three dozen collections of poetry, a dozen works of fiction, plus scores of books of essays and criticism. His writing is intensely philosophical, treating a broad variety of themes, including the often disastrous relationship between mankind and nature, the role of sexuality within modern life, and the role of myth within modernity. He has won many of Japan's most important literary prizes, and the Japanese government has awarded him the Kunsho for his contributions to Japanese letters. Five books of English translations of his work are available, *Poems of a Penisist (1975), A Bunch of Keys (1984), Sleeping, Sinning, Falling (1992), On Two Shores (2006), and We of Zipangu (2006),* and his memoirs about growing up during World War II are forthcoming from University of Minnesota Press.

DATE: March 2012
HOST: Jeffrey Angles

JEN BERVIN
Co-sponsors: English, Friends of the Library, Kalamazoo Book Arts Center, Humanities, Waldo Library and the Carol Ann Haenicke Women's Poetry Collection

Poet and visual artist Jen Bervin's work brings together text and textile in a practice that encompasses artist books, poetry, large-scale art works, and archival research. Her poetry/artist books include *The Dickinson Composites* (Granary Books, 2010), *The Desert* (Granary, 2008), *A Non-Breaking Space* (UDP, 2005, web only), and *Nets* (UDP, 2004), currently in its fifth printing. She recently finished a geocentric scale-model of the Mississippi River, 230 feet long, composed of hand-sewn silver sequins. Bervin's work has been shown at the Walker Art Center and the Wright Exhibition Space, and is in many special collections including at Yale University, Stanford University, the Bibliotheque Nationale de France, and the British Library. Bervin currently teaches at the Vermont College of Fine Arts and at Harvard University.

DATE: March 2012
HOST: Anthony Ellis

MELANIE DREYER-LUDE
Co-sponsors: Theatre, Foreign Languages, Haenicke Institute

Melanie Dreyer-Lude is Assistant Professor of Acting and Directing at Cornell University and the Co-Artistic Director and founder of the International Culture Lab in New York City. She is an internationally known translator of contemporary German drama, an actress and director with U.S. regional and international credits, and a leader amongst American theatre artists in creating international artistic collaborations that seek to create dialogue across cultures and share the findings with members of the community not traditionally encouraged to participate in artistic conversations, such as college and high school students, the business sector, social organizations, merchants, and politicians. She has spearheaded projects with Theater Rampe in Stuttgart, Germany; Yeditepe University and Garajistanbul in Turkey; and the Ndere Troupe, the cultural ambassadors of Uganda.

DATE: March 20-22, 2012
HOST: Lofty Durham

DAOUD AOULAD-SYAD
Co-sponsors: Foreign Languages, Francophone Film Festival, Haenicke Institute, Africana Studies, Communication, and Comparative Religion

Moroccan filmmaker Daoud Aoulad-Syad will present his movie "The Mosque" at the Francophone Film Festival of Kalamazoo on March 24, 2012. Daoud Aoulad-Syad is one of the most promising directors of the emerging Moroccan cinema and won many awards internationally, both for his previous films and for "The Mosque," which received the Best Script Award at the Francophone Film Festival of Namur, in Belgium. In this film-within-a-film, Aoulad-Syad reflects on the impact of reality and fiction upon religious practice. To make a film, a crew had built sets and a fake mosque. After the film team left, it became a real place of worship for those who live there. This created lots of problems for the owner of the land.

DATES: March 21-25, 2012
HOST: Vincent Desroches

VISITING SCHOLARS & ARTISTS PROGRAM

2011-2012

WESTERN MICHIGAN UNIVERSITY

MEMORANDUM

TO: Deans, Chairs, and Directors

FROM: Dr. Elke Schoffers, Chair, Visiting Scholars and Artists Program Committee

DATE: March 16, 2012

SUBJECT: Application Procedures for the 52nd Visiting Scholars and Artists Program
              (VSAP)

The Visiting Scholars and Artists Program committee is seeking applications for the 2012-2013
Program. This memorandum provides information about procedures. Attached are application
materials necessary to apply for an award.

Grant awards are announced during the academic year <u>preceding</u> the visit. Awards for scholars
and artists who will visit between September 2012 and April 2013 will be announced at the
beginning of June 2012. Grants generally do not exceed $1,000. Larger awards will
occasionally be considered for applications involving scholars or artists of unusually broad
appeal (those who will attract students and faculty from a variety of disciplines).

Departments that have not recently been awarded a grant are encouraged to apply. The deadline
for submitting the application to Dr. Elke Schoffers is <u>5 PM on Thursday, April 19, 2012</u>
(Department of Chemistry, 3425 Wood Hall, MS 5413).

Please follow these guidelines when submitting an application for your department/unit.

A. The scholar or artist to be invited must be contacted prior to submission of the
   application, and the applicant must verify this contact by attaching a copy of this
   communication.

B. Applications must include the signature of the chair or director of the academic unit.

C. The committee encourages applicants to include scholars and artists who reflect the
   diversity of the university community. The committee may give special consideration to
   applications with proposed activities that attract students and faculty members from a
   variety of disciplines.

(OVER)

D.   The committee encourages joint sponsorship of a visitor by two or more departments/units to attract broad appeal within the university.

E.   Many applications are submitted for the fall semester. The committee suggests that applicants consider visits during the spring semester when possible.
IMPORTANT: The cover letter should highlight significant accomplishments of the visitor and assess the impact and appeal of the proposed activities.

F.   The committee regards the <u>program</u> scheduled for the visitor as an important component of the application. In deciding who will receive the award, the committee will consider the amount of time planned for the visitor to spend on campus, the number of presentations, the types of anticipated audiences, and the unique benefits offered to students, faculty, and the university community.

G.   In order to be considered, applicants must submit a complete and accurate application by the deadline (5 PM, Thursday, April 19, 2012).

The members of the VSAP Committee look forward to receiving your application.

Visiting Scholars and Artists Program Committee

Dr. Elke Schoffers (Chair)
Dr. Sisay Asefa
Mr. Igor Fedotov
Dr. Joan Herrington
Dr. Pavel Ikonomov
Ms. Vonceal Phillips

Please note that the application procedure has changed and carefully review all instructions.

SECTION †:

‡ ˙8

Guide for Writing
a
Funding Proposal [i]

S. Joseph Levine, Ph.D.
Professor Emeritus
Michigan State University
East Lansing, Michigan USA
(levine@msu.edu)

This Guide for Writing a Funding Proposal was created to help empower
people to be successful in gaining funds for projects that provide worthwhile
social service. A major theme that runs throughout the Guide is a concern for
the development of meaningful cooperative relationships - with funding
agencies, with community organizations, and with the people you are serving -
as a basis for the development of strong fundable initiatives. The Guide is built
on the assumption that it is through collaboration and participation at all levels
that long term change can be affected.

Each of the headings used in this Guide are suggested as meaningful ways to
organize your own funding proposal and were identified through an
examination of a number of different proposal writing formats. The comments
and suggestions that follow each heading are presented to help you prepare a
strong and fundable proposal.

The complete Guide is available on the worldwide web and consists of not only
the ideas and suggestions in this paper, but also includes examples of actual
funding proposals, suggested published materials, and links to numerous other
proposal writing websites. This paper includes only the Hints section from the
web-based Guide. (To view the complete Guide for Writing a Funding Proposal
please go to: **http://learnerassociates.net/proposal/**)

Good luck in the preparation of your funding proposal!

Joe Levine

Key Sections of a Funding Proposal

      1. Project Title/Cover Page
      2. Project Overview
      3. Background Information/Statement of the Problem
      4. Project Detail
            a. Goals and Objectives
            b. Clientele
            c. Methods
            d. Staff/Administration
      5. Available Resources
      6. Needed Resources
            a. Personnel
            b. Facilities
            c. Equipment/Supplies/Communication
            d. Budget
      7. Evaluation Plan
      8. Appendices

Proposal Writing Hints

1. Project Title/Cover Page

√ Check to see if the agency you have in mind has any specifications for the Title/Cover Page (often they have a required format).

√ Usually the Title/Cover Page includes signatures of key people in your organization (Department Head, Supervisor, Contracts Officer, etc.).

√ If your proposal is built on collaborating with other groups/organizations it is usually a good idea to include their names on the Title/Cover Page.

√ Your cover should look professional and neat. However, do not waste time using fancy report covers, expensive binding, or other procedures that may send the wrong   message to the potential funding agency. You are trying to impress the potential funding agency with how you really need funding, not the message that you do things rather expensively!

√ The title should be clear and unambiguous (do not make it "cute").

√ Think of your title as a mini-abstract. A good title should paint a quick picture for the reader of the key idea(s) of your project.

√ The words you use in your title should clearly reflect the focus of your proposal. The most important words should come first, then the less important words. Notice that both of the following titles use basically

the same words, except in a different order. The project with Title #1 appears to be focused on Red Haired Musicians. The project with Title #2 appears to be focused on Musical Style Preference. However, both projects are the same! Make sure your words are in the correct order.

Title #1 - **Red Haired Musicians and their Preference for Musical Style**

Title #2 - **Music Style Preference of Red Haired Musicians**

√ Try to remove words from your title that really are not necessary for understanding. Title #1 has too many words. Title #2 is just as clear but with fewer words.

Title #1 - **The Systematic Development of a Local Initiative to Create a Learning Center for Community Education**

Title #2 - **A Local Learning Center for Community Education**

√ Try and use only a single sentence for your title. If the sentence is getting too long try removing some words. When all else fails try using a two part title with the parts separated by a colon (use only as a last resort!). Do not attempt to use the title as an abstract of your entire proposal.

2. Project Overview

√ Think of the Project Overview as an Executive Summary (the busy executive probably only has enough time to read your Overview - not the entire proposal). Be specific and concise. Do not go into detail on aspects of your proposal that are further clarified at a later point in your proposal.

√ The Project Overview should "paint a picture" of your proposal in the mind of the reader. It should establish the framework so that the rest of the proposal has a frame of reference.

√ Use the Project Overview to begin to show your knowledge of the organization from which you are requesting funds. Key concerns of the funding organization can be briefly identified in relation to your proposed project.

√ If you will be collaborating with other organizations make sure some of their interests are also highlighted in the Project Overview. This can assist in strengthening the collaboration by recognizing them at the very beginning of your proposal.

√ The best time to prepare the Project Overview is after you have completed the entire proposal (and you understand all aspects of your proposal very well). Let the Overview be your last piece of writing and then insert it at the beginning of your proposal.

√ Try to keep in mind that someone will be reviewing your proposal and you would like to have this person be very positive about what you have written. The Project Overview will probably form a strong impression in the mind of the reviewer. Work on your Project Overview so that you can avoid giving this person the opportunity to say things like:

Not an original idea
Rationale is weak
Writing is vague
Uncertain outcomes
Does not have relevant experience
Problem is not important
Proposal is unfocused
Project is too large

3. Background Information/Statement of the Problem

√ It may be easier to think of this section as a review of Relevant Literature. Cite previous projects and studies that are similar to what you are proposing. Show the funding agency that you know what you are proposing because you are familiar with what has preceded you.

√ Try to be careful in your use of language. It can be very helpful to have a friend, outside of your area of focus/expertise, read your proposal to make sure that the language is readable and minimizes the use of:

**jargon
trendy or "in" words
abbreviations
colloquial expressions
redundant phrases
confusing language**

√ Position your project in relation to other efforts and show how your project:
    a) will extend the work that has been previously done,
    b) will avoid the mistakes and/or errors that have been previously made,
    c) will serve to develop stronger collaboration between existing initiatives, or
    c) is unique since it does not follow the same path as previously followed.

√ Use the statement of the problem to show that your proposed project is definitely needed and should be funded.

√ It is essential to include a well documented statement of the need/problem that is the basis for your project. What are the pressing problems that you want to address? How do you know these problems are important? What other sources/programs similarly support these needs as major needs?

√ Check to see that the potential funding agency is committed to the same needs/problems that your proposal addresses. Clearly indicate how the problems that will be addressed in your project will help the potential funding agency in fulfilling their own goals and objectives. As you write, keep the funding agency in your mind as a "cooperating partner" committed to the same concerns that you are.

√ Is there a special reason why you and/or your organization are uniquely suited to conduct the project? (Geographic location, language expertise, prior involvements in this area, close relationship to the project clientele, etc.)

√ When you get to the Methods Section of your proposal it will be important to refer back to the needs you have identified in this section (and show how your methods will respond to these needs).

√ It can really help gain funding support for your project if you have already taken some small steps to begin your project. An excellent small step that can occur prior to requesting funding is a need assessment that you conduct (survey, interviews, focus groups, etc.). Write up your need assessment as a short Report, cite the Report in your proposal, and include a copy with the proposal.

√ This is an excellent section to have the reader begin to understand that an ongoing approach to the problem is essential (assuming that you are proposing a project that is ongoing in nature) and that short term responses may have negligible effect. This can begin to establish a rationale for why your project needs external funding - it seeks to provide a *long term response*.

4. Project Detail
a. Goals and Objectives

√ Try and differentiate between your goals and your objectives - and include both.

    √ Goals are the large statements of what you hope to accomplish but usually are not very measurable. They create the setting for what you are proposing.

√ Objectives are operational, tell specific things you will be accomplishing in your project, and are very measurable.

√ Your objectives will form the basis for the activities of your project and will also serve as the basis for the evaluation of your project.

√ Try to insure that there is considerable overlap between the goals and objectives for your proposal and the goals and objectives of the funding organization. If there is not a strong overlap of goals and objectives then it might be best to identify a different funding organization.

√ Present measurable objectives for your project. If you are dealing with "things" it is easier for them to be measured than if you are dealing with abstract ideas. Your proposal is easier for a prospective funding organization to understand (and the outcomes are much more clear) if you describe your objectives in measurable ways.

b. Clientele

√ Include specific information about the population or clientele on which your project is focused.

> √ Exactly who are the clientele? Who is included in the clientele group?
>
> √ In what ways have you already had contact with the clientele group?
>
> √ Can you show that you have the support of the clientele group to move ahead with the project?
>
> √ In what ways have members of the clientele group been involved in the preparation of the proposal?
>
> √ What other agencies are involved with this clientele group (and have these other agencies been included in your proposed project)?

√ It is important for the funding agency to see how much the clientele group has been involved with the project and the preparation of the proposal. (Sometimes a project is funded and then the director finds that the clientele group does not want to be involved!! Do not let that happen to you.)

√ Be sure to clarify why it is important for the funding organization to be concerned about your clientele. Your proposal should clearly indicate how assisting your clientele is in the best interests of the funding organization.

c. Methods
√ There should be a very clear link between the methods you describe in this section and the objectives you have previously defined. Be explicit in your writing and state exactly how the methods you have chosen will fulfill your project's objectives and help deal with the needs/problems on which your proposal is focused.

√ The prospective funding agency will be looking at your methods to see what new, unique or innovative actions you are proposing. Make sure you clearly present the innovative aspects of your idea.

√ Are the specific methods you are proposing for your project very important to your unique clientele? Make sure you clarify this for the funding organization.

√ Do not forget to include the collaborative relationships your project will be developing with other cooperating groups. A good way to show collaboration is in the methods that you will be using. How will the methods for your project encourage groups to join together in dealing with the issues/concerns your project addresses?

√ Your Methods section should clearly indicate how the methods that will be used will allow the outcomes of your project to have value for others beyond your project. (This can also tie into your Dissemination Plan - see the Appendices section for more hints on dissemination.)

d. Staff/Administration

√ Use this section to describe the roles of the different people associated with your project and the importance of each.

√ Make sure to clarify how each of the roles are essential to the success of the project and how each role clearly relates to operationalizing the methods you have described.

√ So what do you say about your key people? To start, make sure you include name, title, experience, and qualifications. Include other information if you feel it is important to the success of your project.

√ The descriptions of your personnel should let the funding agency know that you have excellent people who are committed to the project. You are not asking the funding agency to "trust" you. The validity of what you are proposing is directly related to the people who will work with the project.

√ Working together as a part of a team is something that funding agencies often like to see. Try making your project a team effort.

√ If you will be using a Steering Committee (Advisory Committee, Governing Board, etc.) to assist in your project, this is a good place to describe how it will be organized and who will be included.

> √ A Steering Committee can be politically very helpful to you and your project. You can enlist the support of a variety of other agencies/organizations by placing a representative of these agencies/organizations on your Steering Committee.

> √ Make sure you define the length of service for the members of the Steering Committee (so that membership can rotate and you can minimize the length of service of someone who may not be helpful!).

> √ Members of a Steering Committee can greatly help in identifying and linking to other resources.

> √ A viable Steering Committee can suggest to a funding agency that the project has strong links to the local situation and the project has a good chance of continuing after the funding period is over.

5. Available Resources

√ Collaborative efforts (an important project resource) are usually considered very favorably! Many funding agencies like to see cooperative ventures as the basis for local action. In other words, the funding agency's dollars are being brought together with other existing organizations that are already committed and involved in dealing with the needs that the project is responding to.

√ Sometimes local resources go unnoticed and are difficult to see. Look carefully around you because there are certain to be resources that you have available that you may not be noticing (time that volunteers donate to your project, materials that local merchants may provide, local experts who can provide help/advise when needed, a friend who is willing to do some word processing, etc.). Such in-kind resources can show a potential funding agency that you are strongly rooted in your community.

√ It is very impressive to a prospective funding agency if local resources have already been contacted and plans to include them in the project have already been made. Letters from local resources supporting the project (included in the Appendix) are an excellent addition to the proposal.

6. Needed Resources

a. Personnel

√ Refer back to your Staff/Administration section and identify those people by name who will actually be paid from the grant - these are the ones to be identified in this section

√ Include short descriptions of each of the people who will be involved in your project and supported by the funding. The descriptions should clarify in the mind of the potential funding agency that these people are ideally suited to conduct the project.

√ Instead of having all full-time staff on the project, consider having a number of part-time staff - especially if the part-time staff currently work with other cooperating organizations. This is a good way to show inter-agency collaboration.

√ Make sure you notify people who you identify in your Personnel section and receive their approval *before* you send in your proposal.

b. Facilities

√ Though you may not be requesting funds for the purchase or rental of facilities, it can be helpful to provide a brief description of the facilities that will be used for the project.

√ Consider describing existing facilities that will be used for the project as *in-kind contributions* to the project. Even if you have free access to classrooms at a local school, meeting space at a shopping mall or a project room in a local office building, it can be helpful to indicate how much additional money the prospective funding agency would have to provide if these facilities were not donated.

c. Equipment/Supplies/Communication

√ Be careful in listing the equipment that will be needed for your project. Funding sources are usually much more willing to provide funds for the support of personnel than they are to support the purchase of equipment (that may or may not directly benefit the funded project).

√ The following are the types of equipment that may be needed for a funded project:

> √ tape recorder (for recording interviews, dictating reports, etc.)
> √ video cassette recorder and television monitor (for recording project activities, documenting change, etc.)
> √ computer/monitor/printer (for general project support)
> √ desks/chairs/tables
> √ lamps
> √ intercom/office telephone system
> √ telephone conferencing equipment
> √ photocopy machine
> √ specialized equipment for fulfilling project objectives

√ It will help if you've really done some research on the actual cost of the equipment you specify. This is much better than "guessing" at the cost and then to be challenged on your estimates by the potential funding agency.

√ It is easy to overlook many of the office supplies that will be needed for your project. Will you be needing printed letterhead stationery? And, if you will be mailing many letters, have you considered the current cost of postage (and possible increases in cost)? Do you have a good idea how much paper is needed to support the use of a computer word processor? Have you recently checked the price on such things as sticky notes, paper clips, or pencils/pens? A trip to a local office supply store could be most appropriate.

√ Coffee, cups, donuts or other "supplies" for morning and afternoon breaks are usually not included in the proposal. These are personal (not project) expenses.

√ How will you be sharing information about your project with others? Will your project include a Newsletter? How about a website? The more open you are and willing to help others learn from your experiences the more likely a funding agency will be interested in assisting.

√ Consider including in your proposal additional funds for hosting some form of workshop or institute where you can bring together other professionals who are interested in conducting a similar type of project in their area. This would be a good way to publicly recognize your funding organization. Invite someone from the funding organization to attend the workshop so they can hear what others think about the investment they have made.

d. Budget

√ Make your budget realistic. Carefully think through exactly what you will need from the funding agency to carry out the project and establish your budget around this amount. (Do not forget, funding agencies receive lots of requests for funding. They can easily tell when someone has inflated a budget in order to procure funds for other purposes. Do not get caught in this situation.)

√ Have someone else in your organization review your budget to see how realistic you are.

√ Do you really need a large amount of funding at the beginning of the project or will your project be "phased up" over a period of time? Sometimes it is not very realistic to expect a new project to be able to be up and operating (and spending large amounts of money) during the first 6 months or year of operation.

√ A good strategy to use with a potential funding agency is to ask for a small amount of funding for the first phase of the project. Specify in your proposal what you expect to achieve during this "minimal funding phase" and when you will be returning to the funding agency to ask for funds for the next phase. This can suggest to the funding agency that they can terminate the relationship easily if your project is not successful (and then it is essential for you to make sure the first phase IS successful).

√ Check with the agency to see if they have suggested/required budget categories that they want you to use.

√ If the potential funding agency does not have any suggested/required budget categories, organize your budget around a set of meaningful categories that work for the project you are proposing. Categories that you may want to consider for itemizing your budget are:

> √ Personnel (salary and benefits)
> √ Consultants (salary)
> √ Instruction
> √ Equipment
> √ Supplies
> √ Communication (telephone/postage)
> √ Materials preparation
> √ Travel
> √ Rental of facilities
> √ Evaluation
> √ Other expenses
> √ Indirect costs (costs that your organization requires that you include)

√ A suggested budget format for a three year funding proposal:

	Year 1	Year 2	Year 3
PERSONNEL			
Person #1			
Person #2			
Person #3			
Sub-Total			
FACILITIES (list)			
Sub-Total			
EQUIPMENT (list)			
Sub-Total			
SUPPLIES (list)			
Sub-Total			
COMMUNICATION (list)			
Telephone			
Postage			
Sub-Total			
TRAVEL (list)			
Fuel			
Vehicle Rental			
Rail Tickets			
Sub-Total			
	Year 1	Year 2	Year 3
TOTAL			
SUM TOTAL			

7. Evaluation Plan

√ It is important to describe in your proposal exactly how you will decide whether or not your project has been successful, achieved its objectives, etc. The Evaluation Plan will tell the prospective funding agency how you will be going about showing them at the end of the project that their investment in you was a good one.

√ If you plan to use a survey or questionnaire to help in evaluating the success of your project you may want to include in the Appendices a draft of what you are considering for the questionnaire/survey.

√ Your evaluation plan does not have to be elaborate but it is important to indicate to the prospective funding agency that you have not forgotten this important step.

√ Try to include both a concern for **formative evaluation/process evaluation** (ways to gain feedback on the project while it is being conducted) and **summative evaluation/product evaluation** (ways to show that the project fulfilled that which was originally proposed). Another way of conceptualizing this is that formative evaluation/process evaluation is concerned with the activities of the project. On the other hand, summative evaluation/product evaluation is concerned with the stated objectives of the project.

√ It is easy to create a summative evaluation/product evaluation plan if you have done a good job of clearly stating your project objectives or expected outcomes.

√ Make direct reference to your objectives in your evaluation plan. This creates a strong sense of integration/consistency within your proposal. The reader of your proposal will now be hearing the same message repeated in different sections of your proposal.

√ Try creating two separate evaluation plans - one for formative evaluation and the other for summative evaluation.

√ A good evaluation plan should include some sense of concern for what goes on following the conclusion of the funding period. How will the initiatives that have been started under the project be sustained? Have new things occurred that will be continued in the future? How will other cooperating agencies assist in continuing the project after the conclusion of the funding period? These and other areas should be included in a viable evaluation plan.

8. Appendices

√ Appendices should be devoted to those aspects of your project that are of secondary interest to the reader. Begin by assuming that the reader will only have a short time to read your proposal and it will only be the main body of your proposal (not the Appendices). Then, assume that you have gotten the attention of the reader who would now like some additional information. This is the purpose of the Appendices.

Here are some possible sections to include in the Appendices:

√ **Dissemination Plan** - An important aspect of your proposal will be the plan for disseminating information of/from the project to other audiences. Most funding agencies are interested in seeing how their financial support of your project will extend to other audiences. This may include newsletters, workshops, radio broadcasts, presentations, printed handouts, slide shows, training programs, etc. If you have an advisory group involved with your project they can be very helpful in disseminating project information to other audiences.

√ **Time Line** - A clear indication of the time frame for the project and the times when each aspect of the project will be implemented. Try creating the time line as a graphic representation (not too many words). If done well, it will help demonstrate the feasibility of the project in a very visible way.

√ **Letters of Support** - Funding agencies would like to know that others feel strongly enough about your project that they are willing to write a letter in support of the project. Talk through with the potential letter writers the sort of focus that you think will be important for their letter. (Try and draw on the reputation of the letter writing group.) Do not get pushed into writing the letters for the agencies - they will all sound alike and will probably defeat your purpose of using them. The letters must be substantive. If not, do not use them! Have the letters addressed directly to the funding agency. (Do not use a general "To Whom It May Concern" letter - it makes it appear that you are applying to many different potential funding agencies and are using the same letter for each. This may really be the case, so make sure you personalize each letter to the specific potential funding agency.)

√ **Cooperating Agency Descriptions** - If you have referenced in your proposal different cooperating agencies that you will be working with, it is a good idea to provide a more detailed description of each of these agencies in the appendices. Rather than include large descriptions of each cooperating agency, a single page that gives the name/address of the agency, names of key personnel, and brief descriptions of the major services provided is sufficient. Try and prepare

each of these single page descriptions so they follow a similar outline/presentation of information.

√ **Evaluation Instrument** - Include a draft copy of the actual evaluation instrument you plan to use (survey, questionnaire, interview guide, etc.). This will let your prospective funding agency know that you are serious about making evaluation an integral part of your project - and funding agencies like to hear this! Indicate DRAFT at the top of the instrument and then make it look as real as possible. Never say things like, "I think I may have a question that deals with...", or "Four or five questions will be included that examine the concern of...". If you will be using an interview procedure or a focus group discussion, include a draft copy of the specific questions that will actually be used for the interview/ discussion.

A Proposal Example

A Community-Based Mothers and Infants Center

PROJECT DESCRIPTION

A community-based mothers and infants center called "Healthy Moms for Healthy Kids" (Pusat Ibu dan Anak Sihat or PIAS) will be established in Kota Emessu, the city surrounding the Universitas Pembangunan Pertanian (UNPEMPER). PIAS will focus on providing nutritional education and counseling for mothers, especially those from the extremely low income areas. It is expected that through the providing of information to the mothers that it will be possible to have a direct and positive effect on the well being of the young children of the community.

PIAS will utilize volunteers who are students at UNPEMPER. Each student will be expected to successfully participate in a 4 week training program at the beginning of their work with PIAS. This training program will provide basic nutritional information for mothers and information on adult teaching methods. Student volunteers who demonstrate proficiency during the initial training program will be invited to participate in an advanced training program to learn effective nutritional counseling techniques. Each student volunteer will be expected to contribute 3-5 hours each week and to continue with PIAS for a period of not less than 6 months.

PIAS will operate with 6 full and part time staff members. In addition, a Governing Board made up of community leaders and university staff will operate to provide overall sanctioning of the Center's operation. Periodic evaluations will be conducted to assess the value of PIAS on a) helping the student volunteers to become effective educators, b) the development of new understandings on the part of local mothers and c) the improvement of the well being of children in Kota Emessu.

BACKGROUND INFORMATION/STATEMENT OF PROBLEM

Major obstacles to child survival in the developing world include infections, parasitic diseases, malnutrition and the risks associated with low birth weight and high fertility. (UN Informational Letter #37-435) A serious problem exists in the rural villages of Malnesia of children dying from common illness and infections that are attributable to poor nutrition. Though high nutrition foods are available in the villages, it is apparent that mothers do not have an understanding of exactly what foods contain the most value for their children. (Ministry of Health, 1994) The most significant person in the life of the young child is the child's mother. Research has shown that the children of mothers who have an understanding of how to provide good nutrition to their children stand a significantly greater chance of survival during the first three years of life (87% survival rate) as compared with children of mothers who do not know how to provide good nutrition (43% survival rate) (Position Paper, Opening Plenary Session, Malnesian Health Conference/MALHEALTHCON - 96).

The use of volunteers to provide community service is a new concept in Malnesia and can be capitalized upon as a viable way to provide trained manpower for the offering of educational services. The first student service scheme, Service Mahasiswa/SERMAH, was created in the early 1990s. Initially operated at only two universities, SERMAH is now a mandated national program that operates at all public and private universities (Directorate for Higher Education, Ministry of Education, Statistics for 1996). The emphasis of SERMAH has been exclusively on the providing of information to local farmers on improved farming practices. The Universitas Pembangunan Pertanian has been funded by the Ministry of Agriculture to operate the SERMAH Educational Development Center (Introducing SERMAH, Ministry of Agriculture, 1996) as a central agency for the providing of farming practices instructional materials to all universities in Malnesia. The selection and training of student volunteers is conducted autonomously at each university with the support of the instructional materials disseminated by the SERMAH Educational Development Center.

PROJECT DETAIL

Goals and Objectives

There are two major goals for the "Healthy Moms for Healthy Kids" Project and specific objectives within each of the goals.

Goal #1 - To reduce the degree of malnutrition among young children.

> Objective #1.1 - To provide mothers in Kota Emessu with relevant information regarding health and nutrition

> Objective #1.2 - To assist mothers in Kota Emessu in learning how to effectively apply health and nutrition information in helping their young children to be more healthy.

> Objective #1.3 - To teach mothers in Kota Emessu how to evaluate changes in the health of their young children.

Goal #2 - To effectively use volunteers as a major factor in helping people to learn.

> Objective #2.1 - To recruit a group of undergraduate students (15-20 students each semester) at Universitas Pembangunan Pertanian to become volunteers in the "Pusat Ibu dan Anak Sihat" (PIAS) Project.

> Objective #2.2 - To provide a 4 week training program for the volunteers that covers a) basic nutritional information for mothers and b) information on adult teaching methods.

> Objective #2.3 - To place the students in the PIAS Center to offer tutoring services to local mothers.

> Objective #2.4 - To compare the type and degree of volunteer learning that takes place in the PIAS Project as compared to volunteer involvement with SERMAH.

Clientele

There are two different clientele groups for this project.

The first, and primary, clientele are the mothers of young children who live in Kota Emessu. This clientele group is represented in the project objectives for Goal #1.

The second clientele group are the students at Universitas Pembangunan Pertanian who will participate in the Project as volunteers. This clientele group is represented in the project objectives for Goal #2.

Both clientele groups are important and essential components of this project. It is expected that significant learning will take place for both clientele groups.

Methods

The primary methods for achieving the goals and objectives of the Project will be:

the creation of a Center in the city that will become a focal point for providing information on food and nutrition for young children through workshops and one-on-one counseling of mothers, and the development of a recruitment/training program and supervised practicum for student volunteers that is modeled after the SERMAH program.
In addition, a Documentation/Dissemination Plan will be developed by staff to guarantee the systematic collection of information about the operation of the Project and provide the basis for sharing information with other similar projects.

Staff/Administration

The Project will employ three full-time and three part time staff.

> Project Director (full time)- Responsible for hiring project staff, overseeing project development and operation, establishing and maintaining links with local government agencies, and budget. The Project Director will be Harjono Soemadji (author of this proposal)

> Center Coordinator (full time)- Responsible for establishing the community Center, developing working relationships with formal and informal community leaders, establishing links to community women's organizations, and scheduling of Center programs.

> Volunteer Coordinator (full time) - Responsible for recruiting university student volunteers, establishing and maintaining a working linkage with the UNPEMPER Department of Food and Nutrition, developing and offering training programs for volunteers, scheduling volunteers for service at the Center. The Volunteer Coordinator will have a background in food and nutrition and will be housed in the Department of Food and Nutrition.

> Project Evaluator (part time) - Responsible for collecting entry level data regarding mother's health and nutrition information and conducting periodic assessment of changes in their level of knowledge, comprehension, and application of that information. Also responsible for developing and implementing a system for periodic formative evaluation

of the work of the student volunteers.

Center Assistant (part time) - Responsible for maintaining the structure and appearance of the Center, routine correspondence, and other forms of communication with mothers in the community.

Graphic Artist (part time) - Responsible for creating illustrated posters to teach about food and nutrition information, layout/design of project publications, and development of volunteer recruitment and training materials.

Governing Board - Made up of both community leaders and university staff. Responsible for sanctioning the operation of the Center and providing feedback to the Project Director on Center policies and operation.

AVAILABLE RESOURCES

Building - small building for the Center will be provided by the community head.

Volunteer Meeting/Training Room and Office - will be provided by the Department of Food and Nutrition (UNPEMPER) and used for housing the Volunteer Coordinator and the training of volunteers.

Volunteer Coordinator (50%) - this person is currently on the staff of the Department of Food and Nutrition as a part time staff member.

NEEDED RESOURCES

Personnel - Two full time staff at 100% salary, one full time staff at 50% salary, three part time persons at 50% salary.

Facilities - None (provided by the community head and the Department of Food and Nutrition - UNPEMPER)

Equipment -
       Duplicating machine (for preparation of informational educational materials)
       Chairs and desks for three offices
       Chairs and tables for a large classroom/community meeting room
       Chalk board
       Typewriter
       Drafting table
       Supplies - Paper, pencils, chalk, duplicating supplies, and materials preparation.

Budget -

Year 1 - Development of Center Operation and Recruitment/Training of First Group of Student Volunteers

Personnel M$387,000
Project Director Full time - 12 months M$127,000
Center Coordinator Full time - 12 months M$85,000
Volunteer Coordinator* Full time - 12 months M$42,000
Project Evaluator Part time - 12 months M$49,000
Center Assistant Part time - 12 months M$42,000
Graphic Artist Part time - 12 months M$42,000

*Note: Volunteer Coordinator is currently a 50% staff member of the Department of Food and Nutrition. The Project will pay the other 50% of this person's salary to bring her up to 100%.

Development/Production of Educational Materials M$39,000
Advertising/Promotion M$17,500
Evaluation M$8,500
YEAR ONE TOTAL M$452,000

Year 2 - Operation/Maintenance of Center and Recruitment/Training of Two Student Volunteer Groups

Personnel (assumes 3% yearly increment) M$398,610
Production of Educational Materials M$6,000
Advertising/Promotion M$4,000
Evaluation M$3,000
YEAR TWO TOTAL M$412,000

Year 3 and beyond (assume 3% yearly increment on Year 2 budget)

YEAR THREE TOTAL M$424,000

EVALUATION PLAN

Project evaluation will be the responsibility of the Project Evaluator and consist of two different evaluative strategies - formative and summative.

Formative Evaluation - Primarily qualitative in nature, the formative evaluation will be conducted through interviews and open-ended questionnaires. Mothers and student volunteers will be asked about the day-to-day operation of the Center, the topics covered in the volunteer training program, the attractiveness of the training materials, and other questions to provide feedback for the ongoing improvement of the operation of the Project. The Project Evaluator will meet regularly with project staff to share findings from the formative evaluation effort. Periodic reports will be prepared that identify the major findings of the formative evaluation and how they have been used to improve Project operation.

Summative Evaluation - Primarily quantitative in nature, the summative evaluation will begin with the establishment of baseline data at the beginning of the Project (using a random sample of mothers of young children to assess their food and nutrition knowledge) and then be conducted at 6 month intervals (just prior to each group of volunteers completing their Project service). Data for the summative evaluation will focus on the two primary goals of the project and the objectives of each.

Goal #1

    - Pre/post tests of knowledge gain on the part of the mothers in health and nutrition information (Objective 1.1).
    - Selected interviews of mothers to assess their ability to effectively apply health and nutrition information (Objective 1.2).
    - Selected interviews of mothers to evaluate changes in the health of their child (Objective 1.3).

Goal #2

    - Records of number of students involved in the project (Objective 2.1).
    - Documentation of agendas/attendance rosters from all training programs (Objective 2.1).
    - Documentation of number of mothers served and number of volunteer hours recorded at the PIAS Center (Objective 2.3).
    - Comparative analysis of Goal #2 data with similar data from SERMAH (Objective 2.4)

A yearly report will be issued that presents the formative and summative findings.

APPENDIX A - TIME LINE (First Year)

Month One

    Advertising of Project staff positions
    Meetings with community leaders
    Meeting with university administrators

Month Two

    Interviewing of candidates for Project staff positions
    Finalizing location of Center

Month Three

    Selection/hiring of Project staff members
    Preparation for Center operation

Month Four - Six

     Preliminary advertising of Center operation
     Hosting community meetings at Center
     Collection of baseline data on mothers of young children
     Recruitment/selection/training of student volunteers

Month Seven - Twelve

     Conducting of regular formative evaluation
     Final summative evaluation at end of twelfth month

APPENDIX B - Resume of Harjono Soemadji (Project Director)

PROJECT DIRECTOR
Harjono Soemadji

Title:
     Faculty Member/Lecturer
     Department of Food and Nutrition
     Universitas Pembangunan Pertanian
     Kota Emessu, Malnesia

Experience:

Education:

     B.S. Universitas Pendidikan National (Secondary Teacher Education) 1987
     M.S. Universitas Pembangunan Pertanian (Food and Nutrition) 1989

Teaching:

     Instructor/Teacher - Emessu Scientific High School 1989-1994

     Department Chair - Emessu Scientific High School 1992-94

     Junior Lecturer - Universitas Pembangunan Pertanian, Department of Food and Nutrition 1994-1996

     Lecturer - Universitas Pembangunan Pertanian, Department of Food and Nutrition 1996-Present

Publications/Presentations:

Soemadji, Harjono, Mother's Influence on the Nutrition of their Young Children, Master's Thesis, Universitas Pembangunan Pertanian, 1989.

Soemadji, Harjono, A Study of Mother's Nutritional Needs in the Kota Emessu Region,

Publications Center, Universitas Pembangunan Pertanian, 1995.

Soemadji, Harjono, The Problem of Malnutrition Amongst Children in the Kota Emessu Region, Paper presented at the 15th Annual Meeting of the Southeast Asian Health Conference (SEAHEC), 1996.

Soemadji, Harjono and Soemardi Hadisubroto, Understanding the Effectiveness of the Student Service Scheme, SERMAH Educational Development Center, Universitas Pembangunan Pertanian, 1997

APPENDIX C - PERSONAL PERSPECTIVE

For the past 10 years I have had a strong concern for the health of young children in the Kota Emessu area. This is the area in which I was born and raised. Through my studies at the University and my practice as a teacher and lecturer I have come to learn that it is possible to alleviate the problems of malnutrition through well designed and meaningfully focused educational programs.

The challenge to the creation and operation of these programs, however, is twofold. First, there does not exist the teaching materials to assist mothers of young children in understanding how to improve nutritional intake and the effect that nutritional intake has on the health and welfare of their own children. And second, there does not exist a group of trained facilitators to assist in delivering this information in a timely and meaningful manner.

Research suggests that the most powerful way to affect the health and welfare of a young child is through the improved understanding of the child's mother. This project will focus on the development of teaching materials and a system for helping mothers of young children learn appropriate food and nutrition information to help in the development of their children. And, it will occur in a local community location, close to where these mothers of young children are living.

Further, the Project will build upon the very successful SERMAH program as a way to involve university student volunteers in the offering of services to mothers of young children. In addition to using these volunteers as a viable form of manpower for the offering of service, the Project will work to help these volunteers learn meaningful food/nutrition information and also techniques for effectively teaching this information to adults - a knowledge base that is certain to help them in their future endeavors.

Harjono Soemadji

Other books by Joe Levine:
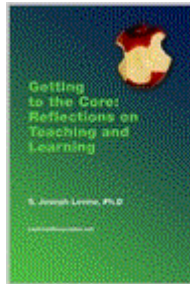
Getting To the Core: Reflections On Teaching and Learning

A wonderful collection of 46 reflective essays by Joe Levine that examine the role of the teacher. A must read for adult educators presented in an unparalleled, refreshing format. Provides extremely helpful, even if personal, insights into the heart and soul of adult education — the personal commitment and involvement of those who have dedicated themselves to the wonderful, joyous, rewarding, yet sometimes exasperating, task of helping adults learn, grow, and develop.
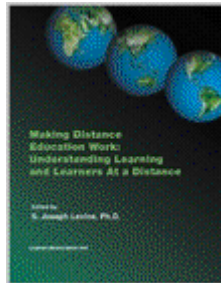
Making Distance Education Work: Understanding Learning and Learners At a Distance

A guide to the effective development and delivery of distance education programs. Includes chapters that focus on the understanding of the basic principles of distance education, clarifications of who distance education learners are, and examples of learner-focused distance education programs. An essential reference for those about to create distance education programs, those who currently conduct distance education programs, and - most importantly - learners who are considering the challenge of learning at a distance.
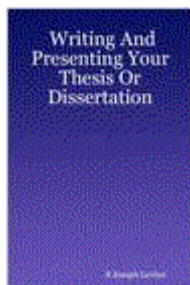
Writing and Presenting Your Thesis or Dissertation

A comprehensive and practical Guide to assist students in the crafting, implementing and defending of a graduate school thesis or dissertation. Provides suggestions on how to successfully navigate the path to completion.

Available on the web at:

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Writing and Presenting Your
Thesis or Dissertation

Writing and Presenting Your Thesis or Dissertation

S. Joseph Levine, PhD

Professor Emeritus
Michigan State University
East Lansing, Michigan USA

LearnerAssociates.net

PREFACE

This guide has been created to assist my graduate students in thinking through the many aspects of crafting, implementing and defending a thesis or dissertation in areas related to the discipline of adult learning. It has been my purpose to share with my students some of the many ideas that have surfaced over the past few years that definitely make the task of finishing a graduate degree so much easier. (Note: This Dissertation/Thesis Guide is a companion to the Guide for Writing a Funding Proposal which can also be found on the worldwide web at: http://www.LearnerAssociates.net)

Usually a guide of this nature focuses on the actual implementation of the research. This is not the intention of this guide. Instead of examining such aspects as identifying appropriate sample size, field testing the instrument and selecting appropriate statistical tests, this guide looks at many of the quasi-political aspects of the process. Such topics as how to select a supportive committee, making a compelling presentation of your research outcomes and strategies for actually getting the paper written are discussed.

Of course, many of the ideas that are presented can be used successfully by other graduate students studying under the guidance of other advisers and from many different disciplines. However, the use of this guide carries no guarantee -- implied or otherwise. When in doubt check with your adviser. Probably the best advice to start with is the idea of not trying to do your research entirely by yourself. Do it in conjunction with your adviser. Seek out his/her input and assistance. Stay in touch with your adviser so that both of you know what's happening. There's a much better chance of getting to the end of your project and with a smile on your face.

With this in mind, enjoy the guide. I hope it will help you finish your graduate degree in good shape. Good luck and good researching!

S. Joseph Levine
January 2005

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The "Thinking About It" Stage

The "thinking about it stage" is when you are finally faced with the reality of completing your degree. Usually the early phases of a graduate program proceed in clear and very structured ways. The beginning phases of a graduate program proceed in much the same manner as an undergraduate degree program. There are clear requirements and expectations, and the graduate student moves along, step by step, getting ever closer to the completion of the program. One day, however, the clear structure begins to diminish and now you're approaching the thesis/dissertation stage. This is a new and different time. These next steps are more and more defined by **you** and not your adviser, the program, or the department.

► 1. **Be inclusive with your thinking**. Don't try to eliminate ideas too quickly. Build on your ideas and see how many different research projects you can identify. Give yourself the luxury of being expansive in your thinking at this stage -- you won't be able to do this later on. Try and be creative.

► 2. **Write down your ideas**. This will allow you to revisit an idea later on. Or, you can modify and change an idea. If you don't write your ideas they tend to be in a continual state of change and you will probably have the feeling that you're not going anywhere. What a great feeling it is to be able to sit down and scan the many ideas you have been thinking about, if **they're written down**.

► 3. **Try not to be overly influenced at this time by what you feel others expect from you** (your colleagues, your profession, your academic department, etc.). You have a much

better chance of selecting a topic that will be really of interest to you if it is your topic. This will be one of the few opportunities you may have in your professional life to focus in on a research topic that is really of your own choosing.

► 4. **Don't begin your thinking by assuming that your research will draw international attention to you!!** Instead, be realistic in setting your goal. Make sure your expectations are tempered by:

> ... the realization that you are fulfilling an academic requirement,

> ... the fact that the process of conducting the research may be just as important (or more important) than the outcomes of the research, and

> ... the idea that first and foremost the whole research project should be a learning experience for you.

If you can keep these ideas in mind while you're thinking through your research you stand an excellent chance of having your research project turn out well.

► 5. **Be realistic about the time that you are willing to commit to your research project**. If it's a 10 year project that you're thinking about admit it at the beginning and then decide whether or not you have 10 years to give to it. If the project you'd like to do is going to demand more time than you're willing to commit then you have a problem.

I know it's still early in your thinking but it's never too early to create a draft of a timeline. Try using the 6 Stages (see the

next item) and put a start and a finish time for each. Post your timeline in a conspicuous place (above your computer monitor?) so that it continually reminds you how you're doing. Periodically update your timeline with new dates as needed.

► 6. If you're going to ask for a leave of absence from your job while you're working on your research this isn't a good time to do it. Chances are you can do the "thinking about it" stage without a leave of absence. Assuming that there are six major phases that you will have during your research project, probably **the best time to get the most from a leave of absence is during the fourth stage* - the writing stage**. This is the time when you really need to be thinking well. To be able to work at your writing in large blocks of time without interruptions is something really important. A leave of absence from your job can allow this to happen. A leave of absence from your job prior to this stage may not be a very efficient use of the valuable time away from your work.

Stage 1 - Thinking About It

Stage 2 - Preparing the Proposal

Stage 3 - Conducting the Research

Stage 4 - Writing the Research Paper*

Stage 5 - Sharing the Research Outcomes with Others

Stage 6 - Revising the Research Paper

► 7. It can be most helpful at this early stage to try a very **small preliminary research study** to test out some of your

ideas to help you gain further confidence in what you'd like to do. The study can be as simple as conducting half a dozen informal interviews with no attempt to document what is said. The key is that it will give you a chance to get closer to your research and to test out whether or not you really are interested in the topic. And, you can do it before you have committed yourself to doing something you may not like. Take your time and try it first.

Preparing the Proposal

Assuming you've done a good job of "thinking about" your research project, you're ready to actually prepare the proposal. A word of caution -- those students who tend to have a problem in coming up with a viable proposal often are the ones that have tried to rush through the "thinking about it" part and move too quickly to trying to write the proposal. Here's a final check. Do each of these statements describe you? If they do you're ready to prepare your research proposal.

> I am *familiar* with other research that has been conducted in areas related to my research project.
>
> > (___Yes, it's me)
> > (___No, not me)
>
> I have a clear ***understanding*** of the steps that I will use in conducting my research.
>
> > (___Yes, it's me)
> > (___No, not me)
>
> I feel that I have the **ability** to get through each of the steps necessary to complete my research project.
>
> > (___Yes, it's me)
> > (___No, not me)
>
> I know that I am **motivated** and have the **drive** to get through all of the steps in the research project.

(___Yes, it's me)
(___No, not me)

Okay, you're ready to write your research proposal. Here are some ideas to help with the task:

► 8. **Read through someone else's research proposal**. Very often a real stumbling block is that we don't have an image in our mind of what the finished research proposal should look like. How has the other proposal been organized? What are the headings that have been used? Does the other proposal seem clear? Does it seem to suggest that the writer knows the subject area? Can I model my proposal after one of the ones that I've seen? If you can't readily find a proposal or two to look at, ask your adviser to see some. Chances are your adviser has a file drawer filled with them.

► 9. Make sure your proposal has a **comprehensive review of the literature** included. Now this idea, at first thought, may not seem to make sense. I have heard many students tell me that "This is only the proposal. I'll do a complete literature search for the dissertation. I don't want to waste the time now." But, this is the time to do it. The rationale behind the literature review consists of an argument with two lines of analysis: 1) this research is needed, and 2) the methodology I have chosen is most appropriate for the question that is being asked. Now, why would you want to wait? Now is the time to get informed and to learn from others who have preceded you! If you wait until you are writing the dissertation it is too late. You've got to do it some time so you might as well get on with it and do it now. Plus, you will probably want to add to the literature review when you're writing the final dissertation.

► 10. With the ready availability of photocopy machines you should be able to bypass many of the hardships that previous dissertation researchers had to deal with in developing their literature review. When you read something that is important to your study, **photocopy the relevant article or section**. Keep your photocopies organized according to categories and sections. And, most importantly, photocopy the bibliographic citation so that you can easily reference the material in your bibliography. Then, when you decide to sit down and actually write the literature review, bring out your photocopied sections, put them into logical and sequential order, and then begin your writing.

► 11. What is a proposal anyway? **A good proposal should consist of the first three chapters of the dissertation**. It should begin with a statement of the problem/background information (typically Chapter I of the dissertation), then move on to a review of the literature (Chapter 2), and conclude with a defining of the research methodology (Chapter 3). Of course, it should be written in a future tense since it is a proposal. To turn a good proposal into the first three chapters of the dissertation consists of changing the tense from future tense to past tense (from "This is what I would like to do" to "This is what I did") and making any changes based on the way you actually carried out the research when compared to how you proposed to do it. Often the intentions we state in our proposal turn out different in reality and we then have to make appropriate editorial changes to move it from proposal to dissertation.

► 12. **Focus your research very specifically**. Don't try to have your research cover too broad an area. Now you may think that this will distort what you want to do. This may be

the case, but you will be able to do the project if it is narrowly defined. Usually a broadly defined project is not do-able. By defining too broadly it may sound better to you, but there is a great chance that it will be unmanageable as a research project. When you complete your research project it is important that you have something specific and definitive to say. This can be accommodated and enhanced by narrowly defining your project. Otherwise you may have only broadly based things to say about large areas that really provide little guidance to others that may follow you. Often the researcher finds that what he/she originally thought to be a good research project turns out to really be a *group* of research projects. Do one project for your dissertation and save the other projects for later in your career. Don't try to solve all of the problems in this one research project.

► 13. **Include a title on your proposal**. I'm amazed at how often the title is left for the end of the student's writing and then somehow forgotten when the proposal is prepared for the committee. A good proposal has a good title and it is the first thing to help the reader begin to understand the nature of your work. Use it wisely! Work on your title early in the process and revisit it often. It's easy for a reader to identify those proposals where the title has been focused upon by the student. Preparing a good title means:

>...having the most important words appear toward the beginning of your title,

>...limiting the use of ambiguous or confusing words,

>...breaking your title up into a title and subtitle when you have too many words, and

...including key words that will help researchers in the future find your work.

► 14. It's important that your **research proposal be organized around a set of questions** that will guide your research. When selecting these guiding questions try to write them so that they frame your research and put it into perspective with other research. These questions must serve to establish the link between your research and other research that has preceded you. Your research questions should clearly show the relationship of your research to your field of study. Don't be carried away at this point and make your questions too narrow. You must start with broad relational questions.

A good question:

Do adult learners in a rural adult education setting have characteristics that are similar to adult learners in general ?

A poor question:

What are the characteristics of rural adult learners in an adult education program? (too narrow)

A poor question:

How can the XYZ Agency better serve rural adult learners? (not generalizable)

► 15. Now here are a few more ideas regarding the defining of your research project through your proposal.

► a. Make sure that you will be **benefitting those who are participating in the research.** Don't only see the subjects as sources of data for you to analyze. Make sure you treat them as participants in the research. They have the right to understand what you are doing and you have a responsibility to share the findings with them for their reaction. Your research should not only empower you with new understandings but it should also empower those who are participating with you.

► b. **Choose your methodology wisely**. Don't be too quick in running away from using a quantitative methodology because you fear the use of statistics. A qualitative approach to research can yield new and exciting understandings, but it should not be undertaken because of a fear of quantitative research. A well designed quantitative research study can often be accomplished in very clear and direct ways. A similar study of a qualitative nature usually requires considerably more time and a tremendous burden to create new paths for analysis where previously no path had existed. Choose your methodology wisely!

► c. Sometimes a **combined methodology** makes the most sense. You can combine a qualitative preliminary study (to define your population more clearly, to develop your instrumentation more specifically or to establish hypotheses for investigation) with a quantitative main study to yield a research project that works well.

► d. Deciding on **where you will conduct the research** is a major decision. If you are from another area of the country or a different country there is often an expectation that you will return to your "home" to conduct the research. This may yield more meaningful results, but it will also most likely create a situation whereby you are expected to fulfill other obligations while you are home. For many students the opportunity to conduct a research project away from home is an important one since they are able to better control many of the intervening variables that they can not control at home. Think carefully regarding your own situation before you make your decision.

► e. What if you have the opportunity for **conducting your research in conjunction with another agency or project** that is working in related areas. Should you do it? Sometimes this works well, but most often the dissertation researcher gives up valuable freedom to conduct the research project in conjunction with something else. **Make sure the trade-offs are in your favor.** It can be very disastrous to have the other project suddenly get off schedule and to find your own research project temporarily delayed. Or, you had tripled the size of your sample since the agency was willing to pay the cost of postage. They paid for the postage for the pre-questionnaire. Now they are unable to assist with postage for the post-questionnaire. What happens to your research? I usually find that the cost of conducting dissertation research is not prohibitive and the trade-offs to work in conjunction with another agency are not in favor of the researcher. Think twice before altering your project to accommodate someone

else. Enjoy the power and the freedom to make your own decisions (and mistakes!) -- this is the way we learn.

► 16. Selecting and preparing your advisory committee to respond to your proposal should not be taken lightly. If you do your "homework" well **your advisory committee can be most helpful to you**. Try these ideas:

► a. If you are given the opportunity to select your dissertation committee do it wisely. Don't only focus on content experts. **Make sure you have selected faculty for your committee who are supportive of you** and are willing to assist you in successfully completing your research. You want a committee that you can ask for help and know that they will provide it for you. Don't forget, you can always access content experts who are not on your committee at any time during your research project.

► b. **Your major professor/adviser/chairperson is your ally.** When you go to the committee for reactions to your proposal make sure your major professor is fully supportive of you. Spend time with him/her before the meeting so that your plans are clear and you know you have full support. The proposal meeting should be seen as an opportunity for you and your major professor to seek the advice of the committee. Don't ever go into the proposal meeting with the feeling that it is you against them!

► c. **Provide the committee members with a well-written proposal** well in advance of the meeting. Make sure they have ample time to read the proposal.

► d. **Plan the proposal meeting well**. If graphic presentations are necessary to help the committee with understandings make sure you prepare them so they look good. A well planned meeting will help your committee understand that you are prepared to move forward with well planned research. Your presentation style at the meeting should not belittle your committee members (make it sound like you know they have read your proposal) but you should not assume too much (go through each of the details with an assumption that maybe one of the members skipped over that section).

Writing the Thesis or Dissertation

Now this is the part we've been waiting for. I must assume that you have come up with a good idea for research, had your proposal approved, collected the data, conducted your analyses and now you're about to start writing the dissertation. If you've done the first steps well this part shouldn't be too bad. In fact it might even be enjoyable.

► 17. The major myth in writing a dissertation is that you start writing at Chapter One and then finish your writing at Chapter Five. This is seldom the case. The most productive approach in writing the dissertation is to **begin writing those parts of the dissertation that you are most comfortable with**. Then move about in your writing by completing various sections as you think of them. At some point you will be able to spread out in front of you all of the sections that you have written. You will be able to sequence them in the best order and then see what is missing and should be added to the dissertation. This way seems to make sense and builds on those aspects of your study that are of most interest to you at any particular time. Go with what interests you, start your writing there, and then keep building!

(David Kraenzel - North Dakota State University - wrote in describing the "A to Z Method". Look at the first section of your paper. When you are ready go ahead and write it. If you are not ready, move section-by-section through your paper until you find a section where you have some input to make. Make your input and continue moving through the entire paper - from A to Z - writing and adding to those sections for which you have some input. Each time you work on your paper

follow the same A to Z process. This will help you visualize the end product of your efforts from very early in your writing and each time you work on your paper you will be building the entire paper -- from A to Z. Thanks David!)

► 18. If you prepared a comprehensive proposal you will now be rewarded! Pull out the proposal and begin by checking your proposed research methodology. Change the tense from future tense to past tense and then make any additions or changes so that the methodology section truly reflects what you did. You have now been able to **change sections from the proposal to sections for the dissertation**. Move on to the Statement of the Problem and the Literature Review in the same manner.

► 19. I must assume you're using some form of word processing on a computer to write your dissertation. (if you aren't, you've missed a major part of your doctoral preparation!) If your study has specific names of people, institutions and places that must be changed to provide anonymity don't do it too soon. Go ahead and **write your dissertation using the real names**. Then at the end of the writing stage you can easily have the computer make all of the appropriate name substitutions. If you make these substitutions too early it can really confuse your writing.

► 20. As you get involved in the actual writing of your dissertation you will find that conservation of paper will begin to fade away as a concern. Just as soon as you print a draft of a chapter there will appear a variety of needed changes and before you know it another draft will be printed. And, it seems almost impossible to throw away any of the drafts! After awhile it will become extremely difficult to remember which

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draft of your chapter you may be looking at. **Print each draft of your dissertation on a different color paper**. With the different colors of paper it will be easy to see which is the latest draft and you can quickly see which draft a committee member might be reading.

► 21. The one area where I would caution you about using a word processor is in the creation of elaborate graphs or tables. I've seen too many students spend too many hours in trying to use their word processor to create a graph that could have been done by hand in 15 minutes. So, the simple rule is **to use hand drawing for elaborate tables and graphs for the draft of your dissertation.** Make sure your committee can clearly understand your graph, but don't waste the time trying to make it perfect. After you defend your dissertation is the time to prepare the "perfect" looking graphs and tables.

► 22. Dissertation-style writing is not designed to be entertaining. **Dissertation writing should be clear and unambiguous.** To do this well you should prepare a list of key words that are important to your research and then your writing should use this set of key words throughout. There is nothing so frustrating to a reader as a manuscript that keeps using alternate words to mean the same thing. If you've decided that a key phrase for your research is "educational workshop", then **do not** try substituting other phrases like "in-service program", "learning workshop", "educational institute", or "educational program." Always stay with the same phrase - "educational workshop." It will be very clear to the reader exactly what you are referring to.

► 23. **Review two or three well organized and presented dissertations**. Examine their use of headings, overall style,

typeface and organization. Use them as a model for the preparation of your own dissertation. In this way you will have an idea at the beginning of your writing what your finished dissertation will look like. A most helpful perspective!

► 24. A simple rule -- if you are presenting information in the form of a table or graph **make sure you introduce the table or graph in your text**. And then, following the insertion of the table/graph, make sure you discuss it. If there is nothing to discuss then you may want to question even inserting it.

► 25. Another simple rule -- **if you have a whole series of very similar tables try to use similar words in describing each**. Don't try and be creative and entertaining with your writing. If each introduction and discussion of the similar tables uses very similar wording then the reader can easily spot the differences in each table.

► 26. We are all familiar with how helpful the Table of Contents is to the reader. What we sometimes don't realize is that it is also invaluable to the writer. **Use the Table of Contents to help you improve your manuscript**. Use it to see if you've left something out, if you are presenting your sections in the most logical order, or if you need to make your wording a bit more clear. Thanks to the miracle of computer technology, you can easily copy/paste each of your headings from throughout your writing into the Table of Contents. Then sit back and see if the Table of Contents is clear and will make good sense to the reader. You will be amazed at how easy it will be to see areas that may need some more attention. Don't wait until the end to do your Table of Contents. Do it early enough so you can benefit from the information it will provide to you.

► 27. If you are including a Conclusions/Implications section in your dissertation **make sure you really present conclusions and implications**. Often the writer uses the conclusions/ implications section to merely restate the research findings. Don't waste my time. I've already read the findings and now, at the Conclusion/Implication section, I want you to help me understand what it all means. This is a key section of the dissertation and is sometimes best done after you've had a few days to step away from your research and allow yourself to put your research into perspective. If you do this you will no doubt be able to draw a variety of insights that help link your research to other areas. I usually think of conclusions/implications as the "So what" statements. In other words, what are the key ideas that we can draw from your study to apply to my areas of concern.

► 28. Potentially the silliest part of the dissertation is the Suggestions for Further Research section. This section is usually written at the very end of your writing project and little energy is left to make it very meaningful. The biggest problem with this section is that the suggestions are often ones that could have been made prior to you conducting your research. **Read and reread this section until you are sure that you have made suggestions that emanate from your experiences** in conducting the research and the findings that you have evolved. Make sure that your suggestions for further research serve to link your project with other projects in the future and provide a further opportunity for the reader to better understand what you have done.

► 29. Now it's time to write the last chapter. But what chapter is the last one? My perception is that **the last chapter**

should be the first chapter. I don't really mean this in the literal sense. Certainly you wrote Chapter One at the beginning of this whole process. Now, at the end, it's time to "rewrite" Chapter One. After you've had a chance to write your dissertation all the way to the end, the last thing you should do is turn back to Chapter One. Reread Chapter One carefully with the insight you now have from having completed Chapter Five. Does Chapter One clearly help the reader move in the direction of Chapter Five? Are important concepts that will be necessary for understanding Chapter Five presented in Chapter One?

The Thesis/Dissertation Defense

What a terrible name -- a ***dissertation defense***. It seems to suggest some sort of war that you're trying to win. And, of course, with four or five of them and only one of you it sounds like they may have won the war before the first battle is held. I wish they had called it a dissertation seminar or professional symposium. I think the name would have brought forward a much better picture of what should be expected at this meeting.

Regardless of what the meeting is called, try to remember that the purpose of the meeting is for you to show everyone how well you have done in the conducting of your research study and the preparation of your dissertation. In addition there should be a seminar atmosphere where the exchange of ideas is valued. You are clearly the most knowledgeable person at this meeting when it comes to your subject. And, the members of your committee are there to hear from you and to help you better understand the very research that you have invested so much of yourself in for the past weeks. Their purpose is to help you finish your degree requirements. Of course other agenda often creep in. If that happens, try to stay on course and redirect the meeting to your agenda.

The following ideas should help you keep the meeting on your agenda.

► 30. The most obvious suggestion is the one seldom followed. Try to **attend one or more defenses prior to yours**. Find out which other students are defending their research and sit in on their defense. In many departments this is expected of all graduate students. If this is not the case for you, check with

your adviser to see that you can get an invitation to attend some defenses.

At the defense try and keep your focus on the interactions that occur. Does the student seem relaxed? What strategies does the student use to keep relaxed? How does the student interact with the faculty? Does the student seem to be able to answer questions well? What would make the situation appear better? What things should you avoid? You can learn a lot from sitting in on such a meeting.

► 31. Find opportunities to **discuss your research with your friends and colleagues**. Listen carefully to their questions. See if you are able to present your research in a clear and coherent manner. Are there aspects of your research that are particularly confusing and need further explanation? Are there things that you forgot to say? Could you change the order of the information presented and have it become more understandable?

► 32. I hope you **don't try circulating chapters of your dissertation to your committee members as you are writing them**. I find this practice to be most annoying and one that creates considerable problems for the student. You must work closely with your dissertation director. He/she is the person you want to please. Develop a strategy with the dissertation director regarding how and when your writing should be shared. Only after your dissertation director approves of what you have done should you attempt to share it with the rest of the committee. And by then it's time for the defense. If you prematurely share sections of your writing with committee members you will probably find yourself in a situation where one committee member tells you to do one thing and another

member says to do something else. What should you do? The best answer is not to get yourself into such a predicament. The committee meeting (the defense) allows the concerns of committee members to surface in a dialogical atmosphere where opposing views can be discussed and resolved.

► 33. It's important that you have the feeling when entering your defense that you **aren't doing it alone**. As was mentioned earlier, your major professor should be seen as an ally to you and "in your corner" at the defense. Don't forget, if you embarrass yourself at the defense you will also be embarrassing your dissertation director. So, give both of you a chance to guarantee there is no embarrassment. Meet together ahead of time and discuss the strategy you should use at the defense. Identify any possible problems that may occur and discuss ways that they should be dealt with. **Try and make the defense more of a team effort**.

► 34. **Don't be defensive at your defense** (this sounds confusing!). This is easy to say but sometimes hard to fulfill. You've just spent a considerable amount of time on your research and there is a strong tendency for YOU to want to defend everything you've done. However, the committee members bring a new perspective and may have some very good thoughts to share. Probably the easiest way to deal with new input is to say something like "Thank you so much for your idea. I will be giving it a lot of consideration." There, you've managed to diffuse a potentially explosive situation and not backed yourself or the committee member into a corner. Plus, you've not promised anything. Try and be politically astute at this time. Don't forget that your ultimate goal is to successfully complete your degree.

► 35. Probably the most disorganized defense I've attended is the one where the dissertation director began the meeting by saying, "You've all read the dissertation. What questions do you have for the student?" What a mess. Questions started to be asked that bounced the student around from one part of the dissertation to another. There was no semblance of order and the meeting almost lost control due to its lack of organization. At that time I vowed to protect my students from falling into such a trap by helping them **organize the defense as an educational presentation.**

Here's what we do:

> I ask the student to prepare a 20-25 minute presentation that reviews the entire study. This is done through the help of a series of 10-12 large pieces of paper, wall charts, that have been posted sequentially around the walls of the room. Each piece of paper contains key words regarding each of the different aspects of the study. Some pieces of paper contain information about the study setting, questions and methodology. Other pieces of paper present findings and finally there are those pieces that present the conclusions and implications. By preparing these wall charts ahead of time the student is able to relax during the presentation and use the pieces of paper as if they were a road map toward the goal. No matter how nervous you are you can always let the wall charts guide **YOU** through your presentation. Lettering is done with a dark marking pen and extra notes are included in very small printing with a pencil (that no one can really see). We've also tried it with overhead projected transparencies but it doesn't work as well. With the transparencies they're gone

from view after a few seconds. The wall charts stay up for everyone to see and to help focus attention.

Following this structured presentation the committee begins to ask questions, but as can be expected the questions follow along with the wall charts and the whole discussion proceeds in an orderly manner. If guests are present at the defense, this form of presentation helps them also follow along and understand exactly what was accomplished through the research.

► 36. Consider **tape recording your defense**. Using a small portable recorder, record your entire presentation and also the questions and comments of the committee members. This helps in two ways. First, the student has documentation to assist in making suggested changes and corrections in the dissertation. The student can relax more and listen to what is being said by the committee members. The tape recorder is taking notes! Second, the student has a permanent record of his/her presentation of the study. By keeping the paper charts and the tape together, they can be most useful for reviewing the research in future years when a request is made for a presentation. (Bring out the tape and the pieces of paper the night before your presentation and you can listen to you make the presentation. What a good way to review.)

Well that about does it. By following the above suggestions and ideas I hope it will be possible for you to finish your graduate degree program in a most timely and enjoyable manner. By looking ahead to the different aspects of this final part of your graduate study it becomes clear that you can do a number of things to insure your success. Good luck!

► 37. Oh, I almost forgot. There's one last thing. Get busy and **prepare an article or paper that shares the outcomes of your research**. There will be no better time to do this than now. Directly after your defense is when you know your study the best and you will be in the best position to put your thinking on paper. If you put this writing task off it will probably never get done. Capitalize on all of the investment you have made in your research and reap some additional benefit - start writing.

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[Learners, Learners Everywhere: The Challenge of Teaching At A Distance](#)

An exciting new "learner-focused" guide for distance educators. Deals with every aspect of creating a powerful distance education program that encourages learning.

[Guide For Writing A Funding Proposal](#)

Created to help empower people to be successful in gaining funds for projects that provide worthwhile social service. A major theme that runs throughout the Guide is a concern for the development of meaningful cooperative relationships - with funding agencies, with community organizations, and with the people you are serving - as a basis for the development of strong fundable initiatives. The Guide is built on the

assumption that it is through collaboration and participation at all levels that long term change can be affected.

Mirror, Mirror On The Wall: Reflections On teaching And Learning

A wonderfully written series of essays that challenge educators to use reflection as a way to inform their practice.

Meet S. Joseph Levine –

Joe started out in life to become an engineer, then a music educator, then a professional musician, then a guidance counselor, then… He finally ended up as a Professor of Education – spending 37 years on the faculty of Michigan State University.

Throughout his career he has been guided by a concern for helping people learn. And, most especially, the field of adult learning - understanding how adults learn, helping others recognize the uniqueness of the adult learner, and creating educational programs for adult learners. It was only natural that his teaching and advising of graduate students was drawn from this concern for adults as learners.

This Guide is a result of that concern and is designed to help graduate students better understand the dissertation/thesis project so that they may be empowered in the process of successfully completing their graduate studies.

Joe lives with his family in Okemos, Michigan (a suburb of East Lansing). When not being consumed by the worldwide

web he can usually be found doing a bit of woodworking, operating his amateur radio station or playing his clarinet.

GUIDELINES FOR THE PREPARATION OF THESES, SPECIALIST PROJECTS, AND DISSERTATIONS

WESTERN MICHIGAN UNIVERSITY

GRADUATE COLLEGE
KALAMAZOO, MICHIGAN
2013 EDITION

Preface

All graduate students at Western Michigan University who must submit a master's thesis, specialist project, or doctoral dissertation to the Graduate College as part of their degree requirements must comply with the University's guidelines for the preparation of these manuscripts. This manual explains those format and style requirements, and illustrates them through instructions and sample documents.

This version of the *Guidelines for the Preparation of Theses, Specialist Projects, and Dissertations* allows for flexibility in the choice of formatting styles used in the document. The focus of the review process is to ensure consistency of style within each individual document, rather than enforcing consistency across all documents. This process allows students to better follow the standards of their disciplines and to incorporate new technology into their documents. Students who follow the standards as published in previous editions of the *Guidelines for the Preparation of Theses, Specialist Projects, and Dissertations* are still in compliance, as no new requirements have been added to this version.

As part of the review process, the Graduate College will:
1. Certify compliance with copyright laws and protected subjects regulations.
2. Verify numbering of all pages and consecutive pagination throughout document (i.e., no missing pages, consecutive page numbering throughout text and appendices).
3. Verify compliance with *Guidelines* in matters that require consistency across all documents; i.e., minimum margins of 1.5 inches on left and 1 inch on remaining sides; use of Roman numerals centered at bottom in front matter of document; use of standard serif or sans-serif fonts (no script fonts) in point sizes 10 to 12.
4. Verify consistency in all formatting matters in any given document, i.e., font selection, vertical spacing, preparation of headings, margins, placement of page numbers, etc.
5. Require inclusion of abstract, title page, copyright page, table of contents, and list of tables/list of figures, if needed. Graduate College format to be followed in preparation of abstract and title page. In Table of Contents/List of Tables/List of Figures, tabs must be used to align listed items and page numbers.
6. Edit text of abstracts as needed to ensure quality of scholarly writing.
7. Check accuracy of page numbers listed in Table of Contents/List of Tables/List of Figures.
8. Reserve the right to return manuscripts to departments for substantive editing concerns (numerous typographical errors, poor use of English language, etc.).

The student should be aware that this manual is to be used in conjunction with the style manual chosen by the student's academic department or unit. In matters in which there is a conflict between the requirements of this manual and those of the academic department's style manual, this manual will take precedence. In matters that are not addressed by this manual (for example, style of citations and bibliography), the department's style manual should be followed.

The student and his/her doctoral, project, or thesis committee are responsible for the accuracy of the content of the manuscript, and should proofread and edit the manuscript carefully for correct syntax, grammar, spelling, punctuation, references, and adherence to University guidelines. The Graduate College reserves the right to reject theses, projects, and dissertations that contain errors or do not follow format and style guidelines.

Graduate College

Table of Contents

Basic Requirements

Word Processing

Of the most widely available word-processing programs, Microsoft® Word is highly recommended for use in preparing a thesis, project, or dissertation. A formatting template in Microsoft Word is available free of charge on the Graduate College website (http://www.wmich.edu/grad). Highly technical or specialized programs such as LaTeX may be used if appropriate -- please check with your advisor.

The following regulations must be observed when preparing your manuscript:

1. Select and use consistently throughout the manuscript any standard serif or non-serif font in point sizes 10 to 12. Script fonts are not acceptable. The same font should be used for all text, headings, page numbers, table titles, and figure captions. A smaller typeface may be used in footnotes and elsewhere if appropriate; however, the size must be at least 10 points.

2. The doctoral dissertation must be submitted in one PDF file as indicated in the dissertation check-in form. It is strongly encouraged that master's theses are submitted electronically as well as we are moving toward a mandatory electronic submission across the board.

3. No evidence of any kind of correction should be visible on the submitted copy.

The Graduate College can provide information on word processing and editing services available to graduate students. All arrangements, including the financial aspect, are to be handled directly between the word processor and the student. When hiring someone to prepare your manuscript, specify all terms. Agree on such things as a time frame for completion (including corrections), whether or not editing and correction will be expected, specific fees per page, and whether fees agreed upon cover corrections until final approval by the Graduate College.

Pagination

Introductory Material. The abstract, title page, copyright page, acknowledgments, table of contents, list of tables, and list of figures pages appear in this order and are considered the introductory material of the manuscript. Page numbers in the introductory pages are expressed in lower case Roman numerals (i.e., i, ii, iii). The abstract and copyright pages are not counted in the page numbering. The first page counted in the numbering is the title page, but a page number does not appear on that page. The first page of the document that bears a page number is page ii, which is usually the first page of the acknowledgments (unless acknowledgments do not appear).

Body of the Manuscript. The main text, illustrations, appendices, and bibliography are considered the body of the manuscript. Each of these pages is assigned a page number that is expressed in Arabic numerals (i.e., 1, 2, 3). Begin the pagination at 1 and continue consecutively to the end of the manuscript, including the appendices and bibliography.

Margins and Placement of Page Numbers

The margin on the left or bindery side of the manuscript must be 1.5 inches; the margins on the remaining three sides must be at least 1 inch. Page number placement is determined by the department's style manual, but should be at least 0.5 inch from the edge of the page. The top margin and page number placement of each new chapter or major section page (major sections generally begin with a heading in all capital letters) may be different from that of subsequent pages in that chapter.

Headings

Careful organization is needed to reflect a logical development of the research project. Most manuscripts are organized by chapters although a structured organization can exist without the use of the specific heading CHAPTER. Also, each chapter or major section may be subdivided by second-, third-, and occasionally fourth- and fifth-level headings to emphasize specific aspects of the discussion. There should never be fewer than two headings under each preceding level (e.g., you would have at least two fourth-level headings if you subdivided a third level). When subdividing a section, always advance directly to the next level of heading; do not skip any levels.

First- and second-level headings should be listed in the Table of Contents, and it is recommended that third-level headings also appear. The wording of the Table of Contents and the text headings must match exactly. The appearance of the levels of headings used should follow your department's style manual, and should be consistent throughout the entire manuscript. Capitalization of the first letter of each word in headings (except articles, conjunctions, and prepositions that are less than 4 letters in length such as *a, an, and, but, by, for, of, the,* etc.) is optional. Capitalization in headings, if used, must be consistent throughout the document. Spacing above and below all headings should also be consistent throughout the manuscript.

A sample page illustrating the use of five heading levels is on the following page.

Vertical Spacing Summary

The student's department will determine vertical spacing.

Generally, single spacing is used within a heading, table title, or figure caption that runs more than one line; within reference lists, bibliography entries, and footnotes; and in quoted material if set off and indented within the body of the text ("blocked" quotations). [Normally, quotations longer than 40 words (or 4 lines) are "blocked." If set off, do not use quotation marks unless found in the quotation itself. All material directly quoted must include exact page references.]

Double spacing (one blank line) is frequently used within the body of the manuscript and between single-spaced material and adjacent material, unless such single-spaced material is a heading.

Triple spacing (**two** blank lines between lines of text) is often used above and below headings, tables, and figures (see example on next page). However, other amounts of space may be used as well, as long as the spacing is consistent throughout the document.

If you are using LaTex or a similar program, please do not use the vertical justification option as this may distribute the spacing above and below the headings unevenly.

CHAPTER I

INTRODUCTION

Historical Background of Problem

Pre-Twentieth Century Delinquency

The problem of juvenile delinquency is a historical phenomenon which has affected every society in the world throughout the centuries (Cavan, 1969). It is a social problem that requires effective treatment and rehabilitation for this group of youngsters, rather than a criminal problem requiring restrained punishments. From a counseling perspective, delinquent behavior results from a socially, mentally, and emotionally immature human personality that needs to be guided and helped not punished.

The Jordanian Problem

The problem of juvenile delinquency has been receiving increasing official attention in Jordan. Majali (1981) indicates that the first reformatory in Jordan was established in 1934, and the first girls' reformatory was founded in 1957.

Separate social department for juvenile delinquency. Modern day Jordan has developed an active program to combat delinquency. A separate department for juvenile delinquency has been formed in the Social Defense Department.

1

Sample Pages and Instructions

Approval Forms

Many departments expect students to prepare their own thesis, specialist project, or dissertation approval forms, which are then signed by the student's committee members when they have approved the paper (either at the defense or thereafter). Regardless of who prepares the forms, they should be prepared according to the following instructions and as shown on the sample:

1. The forms are available on the Graduate College's Web site (http://www.wmich.edu/grad). Select the appropriate form and follow the instructions. Do not type your own forms—only approval forms generated by the Graduate College may be used.

2. Master's and specialist students will need to print two forms; doctoral students will need three forms. Each of the forms will need to be signed by the student's committee upon approval of the paper.

3. DATE: Use the date of the student's oral defense or the date the paper was approved by the department.

4. NAME: Type in the student's name **exactly** as it appears on the abstract and title page of the paper. (No initials or degree abbreviations should follow the name.)

5. TITLE: Type in the **exact** title as it appears on the abstract and title page of the paper. You may use either upper-/lowercase or all capital letters.

6. DEGREE: Select the correct degree name to follow the words "for the degree of" (do not add any other words):

   Master of Arts
   Master of Music
   Master of Science
   Master of Science in Engineering (Computer)
   Master of Science in Engineering (Electrical)
   Master of Science in Engineering (Industrial)
   Master of Science in Engineering (Mechanical)
   Specialist in Education
   Doctor of Education
   Doctor of Philosophy

   The web-based forms have a pull-down menu for the selection of the proper degree.

7. DEPARTMENT: If your academic unit is a department (e.g., psychology, mathematics), it is not necessary to precede with the words "Department of". If the unit is not a department, the full name of the unit should be given (e.g., The Medieval Institute, School of Public Affairs and Administration). If two lines are needed, place both lines of text above the department line with the longer line over the shorter line (inverted pyramid format).

8. PROGRAM: The official name of the program should appear in this space. Sometimes the program name is the same as the name of the department, and sometimes it differs. If you are uncertain of the official program name, please refer to the current graduate catalog.

8. SIGNATURE SPACES: The web-based forms allow you to type in the names of your committee members under the signature line. Use only black or blue ink for signatures.

9. APPROVAL SPACE: Leave the approval and date spaces at the bottom of the page blank. The graduate dean will complete these upon approval of the paper by the Graduate College.

10. Carefully **proofread** the forms before printing. Any errors will result in the affected form(s) being returned for retyping **and** re-signing. This may delay the approval of the paper.

THE GRADUATE COLLEGE
WESTERN MICHIGAN UNIVERSITY
KALAMAZOO, MICHIGAN

Date _____ July 3, 2006 _____

WE HEREBY APPROVE THE DISSERTATION SUBMITTED BY

Amanda Rachelle Warren

ENTITLED   Ridge-runners

AS PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE

DEGREE OF ____ Doctor of Philosophy

English
_____
(Department)

William Olsen, Ph.D.
Dissertation Review Committee Chair

Creative Writing
_____
(Program)

Nancy Eimers, Ph.D.
Dissertation Review Committee Member

Daneen Wardrop, Ph.D.
Dissertation Review Committee Member

Cynthia Running-Johnson, Ph.D.
Dissertation Review Committee Member

APPROVED

_____
Dean of The Graduate College

Date _____

Abstract

The abstract is a succinct statement of the problem, methodology, findings, and conclusions of the study. The author should prepare the content of the abstract with care; doctoral abstracts are published and distributed nationally and internationally exactly as submitted. Abstracts are written in present tense. Users who review indices to dissertations use the abstract to determine the value and relevance of the study. The Graduate College reserves the right to edit text of abstracts as needed to ensure quality of scholarly writing.

The abstract page is not numbered, is placed before the title page, and is submitted with each copy of the thesis, project, or dissertation required by the University. The format must be prepared according to the following instructions and shall be similar in appearance to the sample illustrated on the following page.

1. Center the title of your manuscript 1.75 inches from the top of the page. **The title must be an accurate and clear description of the content of the research study and must be identical (including line breaks) to the title appearing on the title page of your manuscript and on the approval forms.** Titles should not be more than 20 words in length.

    Whenever possible, use words, not symbols, acronyms, formulas, superscripts, subscripts, or Greek letters.

    If your title is more than one line in length, the second and third lines should be single-spaced with the longest line being the first line (i.e., an inverted pyramid shape). Arrange the lines logically (e.g., break after a colon or before a clause).

2. Center the author's name on the third line (a triple space) below the title, and follow the author's name with a comma and the appropriate abbreviation for the degree to be received. The author's name must be identical to that which appears on the title page and the approval forms. Abbreviations for degrees awarded at Western Michigan University are M.A., M.F.A., M.M., M.S., M.S.E., Ed.S., Ed.D., and Ph.D.

3. Center the institution's name—Western Michigan University—followed by a comma and the year the degree is conferred, on the second line (a double space) below the author's name.

4. Begin the text of the abstract on the third line (a triple space) below the institution's name. Indent each paragraph 0.5 inch and double-space the text.

5. The abstract of a master's thesis or a specialist project must be complete on one page.

    The abstract of a doctoral dissertation must not exceed 350 words and must be complete on two pages. **If your dissertation abstract exceeds the 350-word limit, it will be shortened by ProQuest/UMI editors.** On the second page of a dissertation abstract, the top margin reverts to 1.25 inches, and no header is used.

See the sample abstract on the next page.

THE DISSERTATION TITLE MUST BE IN ALL CAPITALIZATION, SINGLE
SPACED AND INVERTED PYRAMID STYLE

John Doe, Ph.D.

Western Michigan University, 2013

The abstract must be limited to one page for the master's thesis and 350 words
for the doctoral dissertation. Abbreviations for the degrees awarded at Western
Michigan University are M.A., M.F.A., M.M., M.S., M.S.E., Ed.S., Ed.D., and Ph.D.
the abstract is not page numbered, is placed before the title page, and is submitted
with each copy of the thesis, project or dissertation required by the University. The
graduate College reserves the right to edit text of abstracts as needed to ensure quality
of scholarly writing.

Title Page

The title page must be prepared according to the following instructions and shall be similar in appearance to the sample illustrated on the next page. The title page follows the abstract and is not numbered, but is considered to be the first page of the manuscript. The subsequent introductory material (Acknowledgments, Table of Contents, List of Tables, etc.) is, with the exception of the copyright page, numbered using lower case Roman numerals (i.e. ii, iii).

1. Center the title of your manuscript in capital letters 1.75 inches from the top of the page. The title must be identical, both in wording and in line breaks, to the title appearing on the abstract of your manuscript (in other words, the "inverted pyramid" rule should still be applied).

2. Approximately 6 lines below the title, center the word "by." On the second line (a double space) below "by," center the author's name exactly as it appears on the abstract, the acknowledgments, and approval forms.

3. Approximately 10 lines below the author's name, center "A Thesis," "A Project," or "A Dissertation" followed by 5 lines of single-spaced text identifying the degree and academic unit. Be sure to use the correct name for the academic unit (e.g., School of Music, The Medieval Institute, Biological Sciences). On the sixth line reflect the graduation month and year (April or May, June or July, August, or December). No comma follows the month.

4. Approximately 10 lines below the name of the academic unit, flush left "Doctoral or Thesis Committee:" On the next line list the committee members beginning with the Chair followed by their terminal degree.

THE DISSERTATION TITLE MUST BE IN ALL CAPITALIZATION, SINGLE
SPACED AND INVERTED PYRAMID STYLE

by

John Doe

A dissertation submitted to the Graduate College
in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
Educational Leadership, Research and Technology
Western Michigan University
April 2013

Doctoral Committee:

Jane H. Smith, Ph.D., Chair
David M. Woods, Ph.D.
Samuel E. Woods, Ph.D.
Kate B. Harbough, Ph.D.

Copyright

Federal copyright protection applies to your thesis, project, or dissertation immediately upon its creation, whether or not you file a notice of registration with the U.S. Copyright Office. Therefore, a copyright page should be prepared and included with each copy of the manuscript deposited with The Graduate College.

The copyright page follows the title page and is unnumbered. It includes the following information centered vertically and horizontally on 3 lines in the middle of the page:

<div align="center">

Copyright by
Your name
Year

</div>

An alternative copyright notice, using the copyright symbol, can be used:

<div align="center">

© 2013 Your name

</div>

Registration of the copyright is optional, but is generally required before an infringement lawsuit can be filed (at which point it is too late to file the registration). Other inducements to copyright registration include the conferral of additional legal rights on the author, such as the ability to collect statutory damages and attorneys' fees in an infringement action. Please consult with your advisor to determine whether to file for copyright.

All doctoral dissertations and master's theses written at Western Michigan University will be made available online in ScholarWorks at WMU our institutional scholarly repository. Students may choose to embargo this online access for up to 10 years, but it is recommended that unless there is a good reason to embargo, that dissertations and theses are made available through this University archive. Regardless, a ScholarWorks Access Agreement must be completed by all candidates.

All doctoral dissertations written at Western Michigan University will be made available to the academic community, nationally and internationally, through reproduction by University Microfilms Inc. [UMI]. (Authors of master's theses/specialist projects have the option to deposit with UMI) UMI/Proquest can be contracted to act as the author's agent in filing the copyright registration. For a fee of $55 (certified check or money order payable to PQIL), UMI/ProQuest will file the necessary application for copyright and deposit 2 copies of the manuscript in the U.S. Copyright Office. Your federal copyright application will be processed upon receipt by UMI, but it will take several months before an official notice can be sent to you. You also have the option of filing your own registration, which requires a fee and the deposit of 2 copies of the manuscript along with the copyright registration form. For more information on fees and options at the U.S. Copyright Office visit: http://copyright.gov/docs/fees.html.

The copyright registration form, or further information on copyright law, can be obtained at the Library of Congress Web site (http://lcweb.loc.gov/copyright), by calling the U.S. Copyright Office at (202) 707-9100, or by writing to:

<div align="center">

U.S. Copyright Office
Library of Congress
101 Independence Ave. S.E.

Washington, D.C. 20559-6000

</div>

Acknowledgments

Although acknowledgments are optional, they are a courteous way of recognizing people to whom the author is indebted for guidance, assistance, or special aid, including faculty mentors, colleagues, friends, and family members. The acknowledgments should be expressed simply and tactfully. It is best practice to secure permission of those to be cited in acknowledgements.

The acknowledgments page should be prepared according to the following instructions and shall be similar in appearance to the sample illustrated on the following page.

1. Center the heading ACKNOWLEDGMENTS in capital letters 1.75 inches from the top of the page.

2. On the third line (a triple space) below that heading, begin entering the text. Indent each paragraph 0.5 inch and double-space the text.

3. On the third line (a triple space) below the last line of text, beginning at the center of the page and moving right, place the author's name. **The name must be identical to that appearing on the abstract, title page, and approval forms.**

4. The acknowledgments section is numbered in lowercase Roman numerals, beginning with "ii," with the number centered horizontally 1 inch from the bottom of the page. Any subsequent pages would be numbered consecutively.

5. If your acknowledgments text exceeds 1 page, center the heading

   Acknowledgments—Continued

   on the extra page(s) 1.25 inches from the top of the page. The continued text will begin on the third line (a triple space) below this heading.

ACKNOWLEDGMENTS

I would like to begin by acknowledging the influence of two men I have never met: Dr. John Dixon of the University of Massachusetts and Dr. David Ullman of Oregon State University. Their enthusiasm for and support of academic work in design theory (and the quality of their own work) inspired me to pursue the subject, and ultimately led to the work contained in this thesis.

Secondly, I would like to thank the people who took time to discuss with me their perceptions of the topics contained herein, specifically Dr. Jerry Hamelink, Ralph Damato, and James Moskalik. I also thank the members of my graduate committee, Dr. Jerry Hamelink, Dr. Dennis VandenBrink, and Dr. Judah Ari-Gur, for taking the time to review my work. I would particularly like to thank Dr. Ari-Gur for helping winnow the wheat from the chaff and bring some cohesiveness to the broad subject material I am presenting. His help in coalescing my ideas into something substantive has been invaluable.

Lastly, I would like to thank my wife, Teresa, for having the patience to watch me sit in front of a CRT and tap keys night after night, with nothing but this stack of paper to show for it.

Andrew J. Moskalik

Name begins at center—it is not centered

Table of Contents

An auto-formatted table of contents is acceptable when generated in Microsoft Word or specialized programs such as LaTeX. Automatic generation of the table of contents in Microsoft Word creates links within the document and is therefore recommended for students submitting electronically. It may also be updated during revisions to ensure that the page numbers and headings listed are accurate. Please make sure that page setup and numbering on these pages are consistent with the rest of the text. See the table of contents of this manual for an example of an automatically formatted table of contents. If manually creating a table of contents, the following format is recommended. Refer to the department's style manual when varying from this format.

1. Center the heading TABLE OF CONTENTS in capital letters 1.75 inches from the top of the page. First-level headings (e.g. Acknowledgments, List of Tables, titles of chapters, Bibliography) are fully capitalized in the Table of Contents. For second- and third-level headings, use the same capitalization that is used in the body of the text.

2. Indent each subsequent heading level within a chapter 0.375 [3/8] inch from the previous level. The indent for the second level is measured from the first letter of the chapter title.

3. Double space between each entry and each level of heading, and single space within multiple line headings, but do not further indent the second line of a multiple line heading. Headings requiring more than one line should be single spaced and divided so that the first line is the longest and each succeeding line is shorter.

4. Headings must be identical in level and wording to those in the manuscript.

5. First- and second-level headings within chapters must be included in the Table of Contents. Third-level headings are also recommended since the Table of Contents often serves as an index to the thesis or dissertation.

6. Each page of the Table of Contents is numbered with lower-case Roman numerals, with the number centered 1 inch from the bottom of the page. The space between the page number and the last line of text on the page is approximately 0.25 inch.

7. If the Table of Contents is longer than 1 page, the second and subsequent pages begin with the heading   Table of Contents—Continued
This heading is centered 1.25 inches from the top of the page. On the third line (a triple space) below the heading, continue entering the text. If a page break occurs within a listing of chapters or appendices, the heading CHAPTER or APPENDICES is repeated, a triple space below the page heading.

8. Tab leaders (leader dots) should extend from the last word of each entry to the page number indicating where each entry is located. Leave a small gap (about 0.25 inch) between leader dots and page numbers.

9. If there is only one Appendix, it can simply be labeled APPENDIX. When including multiple appendices, use the heading APPENDICES in your Table of Contents. Each appendix is identified with an upper case letter (i.e. A, B), a title, and is listed in the Table of Contents. **The page number listed in the Table of Contents is for the title page of each appendix.**

10. If you have a section titled REFERENCES or ENDNOTES at the end of the document, this first-level heading will precede APPENDICES in the Table of Contents. The section itself immediately follows the text of the manuscript. However, it is possible to have references or endnotes concluding each chapter. If there is a chapter section for references or endnotes, this would normally be included in the Table of Contents as a second-level heading (see example on pg. 16). Please refer to your department's style manual for details.

Align page numbers at right margin with a right-flush tab

Align end of leader dots with a leader dot tab (ca. 5.375")

TABLE OF CONTENTS

Align beginning of chapter titles with a left-flush tab at 0.5"

Table of Contents—Continued

Use of Chapters and Headings

The majority of theses, projects, and dissertations are organized by chapters. However, you may choose, especially in relatively brief manuscripts, to omit chapter designations in favor of major section headings. In that event, the Table of Contents would have the following appearance; however, all other rules apply to this form of Table of Contents.

TABLE OF CONTENTS

List of Tables and List of Figures

If any tables or figures appear in your manuscript, a List of Tables and/or List of Figures should be prepared according to the following instructions. These should be similar in appearance to the samples illustrated on the following pages. As with the table of contents, if your list of tables and list of figures are automatically generated by Microsoft Word or a specialized program such as LaTeX is used, an alternate format is acceptable.

1. Center the heading LIST OF TABLES or LIST OF FIGURES in capital letters 1.75 inches from the top of the page.

2. When both are needed, the List of Tables page(s) precede(s) the List of Figures page(s).

3. On the third line (a triple space) below the heading, begin entering the table/figure listings— single space within entries and double space between entries. Titles should be listed word-for-word the same as they appear in the text. Capitalization of the first letter of each word in headings (except articles, conjunctions, and prepositions that are less than 4 letters in length such as *a, an, and, but, by, for, of, the,* etc.) is optional. Capitalization in headings, if used, must be consistent throughout the document.

4. Headings requiring more than one line should be divided so that the first line is the longest and each succeeding line is shorter.

5. Tab leaders (leader dots) are required for each entry. The leaders should extend from the last word of each entry to the page number indicating where each entry is located. Leave a small gap (about 0.25 inch) between leader dots and page numbers.

6. Each page is numbered with a Roman numeral centered 1 inch from the bottom of the page.

7. If your List of Tables or List of Figures is longer than 1 page, the second page heading is

    <div align="center">List of Tables—Continued</div>

    or

    <div align="center">List of Figures—Continued</div>

    This heading is centered 1.25 inches from the top of the page. On the third line (a triple space) below the heading, continue entering the text.

LIST OF TABLES

LIST OF FIGURES

Tables, Figures, and Equations

No designation other than Table or Figure is used to identify tabular or graphic representations in the manuscript. If information in a table or figure is taken from another source, a complete citation should acknowledge the source(s) and page(s); such sources must be cited in your bibliography. No table or figure may be reproduced in whole from another source without express written permission from the author (see pg. 28).

No table or figure is included if not referenced in the text. Additional tables and figures may be placed in the appendices; such tables and figures need not be identified on the List of Tables or List of Figures, and do not need to be referenced in the text.

In the text, the table or figure should be placed as directly as possible after its first reference. However, the narrative may continue even if reference to another table or figure is made -- the table or figure does not need to immediately follow. Two or more tables or figures can be placed subsequently in the manuscript even if narrative referencing them is separated by several pages. Table and figure placement should be consistent throughout the text. A page break may be inserted in the text to allow for the placement of a table or figure on a separate page, leaving blank space on the bottom of the preceding page, if this method is used consistently throughout the manuscript.

It is preferable to number tables and figures sequentially in Arabic numerals, beginning with 1. However, some style manuals and specialized programs allow for sub-numbering (e.g., Table 4a, Figure 1.2) in tables and figures, and this is also acceptable. Keep table titles and figure captions brief, and do not use multiple sentences. Additional descriptive material can be placed, if necessary, in a note below the table or above the figure caption.

Narrative must continue on table/figure pages if there is room for at least two lines of text. Do not, however, inset narrative alongside either tables or figures.

Spacing and format of all tables, figures, and equations should remain consistent throughout the document.

Tables

In order to be designated as a table, the information presented must be arranged in rows and columns (at least 2 of each). Table titles should precisely reflect the table's content. The table should be designed to display information in a way that clarifies the textual description. Tables should be prepared in the following manner:

1. Present the table as directly as possible after the first reference to it, but do not split a table if it can fit on a single page. Rather than divide the table between pages, you may begin the table at the top of the next page and fill the remainder of the previous page with narrative.

2. Follow the table format presented in the style manual used by your department.

3. Tables may be inserted horizontally (i.e., in the "landscape" orientation)—see example on the following pages. Note that the position of the page number does not change, and that the **top** of the table is placed at the **left** margin.

[21]

Table 7

Summary of Approaches for Conducting Evaluations

Approach	Organizer	Attribute		
		Purpose	Key strengths	Key weaknesses
Politically controlled	Threats	Get, keep or increase power, or money.	Secures evidence advantageous to the client in a conflict.	Violates the principle of full and frank disclosure.
Public relations	Propaganda needs	Create positive public image.	Secures evidence most likely to bolster public support.	Violates the principles of balanced reporting, and objectivity.
Experimental research	Causal relationships	Determine causal relationships between variables.	Strongest paradigm for determining causal relationships.	Requires controlled setting, limits range of evidence, focuses primarily on results.
Management evidence systems	Scientific efficiency	Continuously supply evidence needed to fund, direct, and control programs.	Gives managers detailed evidence about complex programs.	Human service variables are rarely amenable to the narrow, quantitative definitions needed.

Page number remains in same orientation as rest of manuscript

No solid line appears at bottom of page if table continues on another page

Table 7—Continued

Continued table page begins with this heading

Column headings repeated

Approach	Organizer	Attribute		
		Purpose	Key strengths	Key weaknesses
Decision-oriented	Decisions	Provide a knowledge and value base for making and defending decisions.	Encourages use of evaluations to plan and implement needed programs. Helps justify decisions about plans and actions.	Necessary collaboration between evaluator and decision-maker provides opportunity to bias results.
Policy studies	Broad issues	Identify and assess potential costs and benefits of competing policies.	Provides general direction for broadly focused actions.	Often corrupted or subverted by politically motivated actions of participants.
Consumer-oriented	Generalized needs and values, effects	Judge the relative merits of alternative goods and services.	Independent appraisal to protect practitioners and consumers from shoddy products and services. High public credibility.	Might not help practitioners do a better job. Requires credible and competent evaluator.

23

As the hours of training increased from less than 4 hours to 4–10 hours to greater than 10 hours, the percent of participants that had daily contact with family members decreased from 87.5% at <4 hours to 60.0% at more than 10 hours (p = .025) (see Table 4).

Table 4

Professional Relationship With Family by Non-Academic Training on Abuse

	Less than Daily Contact		Daily Contact	
	n	(%)	n	(%)
Training >3 hours	8	(12.5)	56	(87.5)
Training 4–10 hours	8	(22.2)	28	(77.8)
More than 10 hours	8	(40.8)	12	(60)

Note. 26.4% are missing: chi square p-value, $\leq$.025.

Pearson's chi square was then used to test if amount of education of child care providers had an association with mandated reporting rates by child care providers.

A greater percentage of child care providers who have a 4-year college (80.3%) or graduate (76%) degree worked in a child care center rather than in a licensed child care home, while those with a high school or community college degree were more likely to work in a licensed child care home (63.2% and 62.9%, respectively). The result was statistically significant, $p = \leq 0.0005$ (see Table 5). A greater percentage of child care providers with college (66.1%) or graduate degrees (69.2%) stated that they had ever reported abuse to CPS compared to those with

Figures

All kinds of illustrations—such as photographs, graphs, diagrams, and maps—may be presented as figures. As with tables, each figure must be precisely and uniquely titled.

Figures are subject to the following requirements:

1. Present the figure as directly as possible after the first reference to it. If there is not room on that page to present the figure, present it on the next available page and fill the remainder of the page of reference with narrative.

2. Figure caption placement and format are determined by the style manual used by the department.

3. Copies of theses and dissertations deposited with the University Libraries and theses and dissertations submitted electronically may contain color materials, but no reference to specific colors should be made in texts that will be deposited with Bell & Howell. This is necessary because references to color would be meaningless to readers who access the manuscript through Bell & Howell, since Bell & Howell does not have the capacity to reproduce in color. All figures in manuscripts that will be deposited with Bell & Howell should be done in black ink so that neat, sharp photocopies can be made, and all photographs should be black and white and dry mounted on the same type of paper used in the rest of the manuscript, or photocopied with a laser photocopier in black and white.

4. If maps or other large figures that cannot be inserted in the text are used, each must be numbered, included in a list in the introductory pages (e.g., List of Plates, List of Maps), and prepared for placement in a pocket in a bound volume. Foldover pages may also be used -- please indicate on the submission check-in form that your manuscript contains items that will require special handling.

Equations

Equations should be prepared and numbered according to the style manual used by the department. A list of equations is not required. It is customary to set equations off from the rest of the text and number them consecutively throughout the document.
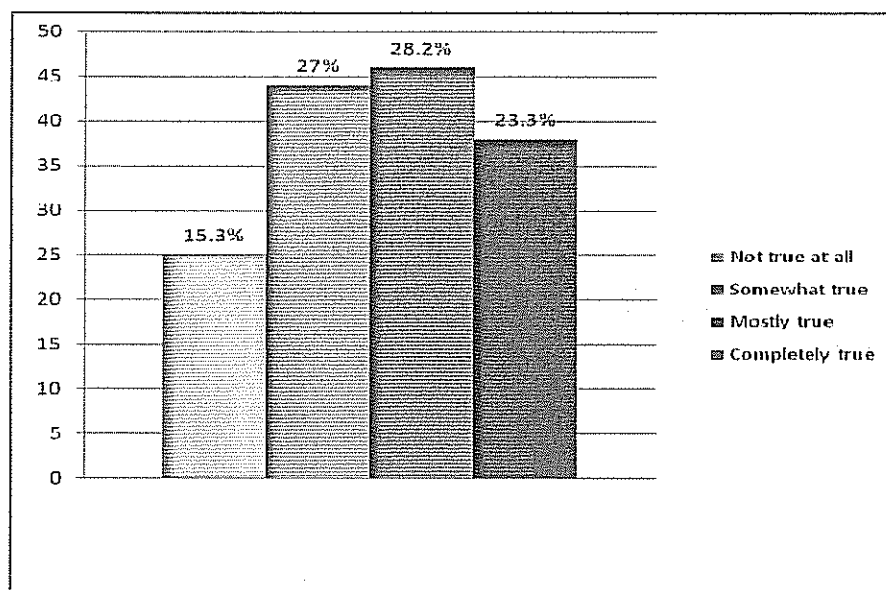
Figure 9. Adequacy of Non-Academic Training on Abuse

Current Understanding of Role as a Mandated Reporter

Sixty-four percent of survey respondents felt they were fully aware of their responsibilities for mandated reporting, 23% felt they had some idea of what they were required to report but did not fully understand it, 3.7% reported they had no idea what they were supposed to report, and 9.8% did not answer the question (see Figure 10).

Sixty-eight percent of survey respondent reported they understood their legal responsibilities in reporting suspicions of abuse or neglect and correctly answered the survey question that they, *not* their supervisor, must report. Twenty-six percent incorrectly identified their supervisor or another professional was responsible for filing a report with CPS, 1.2% believed that based on the severity of the abuse they could make the determination of whether or not they needed to file a report, and 9.8% did not answer the question (see Figure 11).

Appendices

Appendices may include detailed statistical data, questionnaires, form letters, results of pilot studies, figures, or tables providing supplementary information. Do not include letters and documents from individuals or institutions that may reveal the identity of confidential subjects, or take care to block out identifying information when including such materials. **If the student's research involved protected subjects or materials such as those regulated by the University's Human Subjects Institutional Review Board (HSIRB), the Institutional Animal Care and Use Committee (IACUC), or the Institutional Biosafety Committee (IBC), a copy of the signed letter of research protocol clearance must be included as an appendix, ie: HSIRB approval letter.** Manuscripts submitted electronically must still include these materials as part of the thesis or dissertation.

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Appendices should be prepared in the following manner:

1. A title page should be prepared for each appendix. The heading Appendix A (B, C, etc.) is centered in the middle of the page (if there is only one appendix, just title it "Appendix"). The title is centered on the second line (a double space) beneath. Each word of the title should be capitalized or not capitalized according to the same system used in the capitalization of your headings. Titles requiring more than one line should be single-spaced and divided so that the first line is the longest and each succeeding line is shorter (inverted pyramid).

2. The page number style and location of each appendix is to be consistent with the page numbering system used in the body of the document. **Every page in each appendix, including photocopied material, must have a page number.**

3. If necessary, margins in the appendices may be narrower than in the text except on the bindery side (left margin of 1.5 inches). The typeface may vary from that of the text if reproduced material.

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(Crews, 1992, pp. 16-17)

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August 30, 2013

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For your convenience, I am including a space for your signature on of the page to indicate your permission for my use of the above-mentioned material. By signing below, you give ProQuest Information and Learning (UMI) the right to supply copies of this material on demand as part of my doctoral dissertation. Please attach any other terms and conditions for the proposed use of this item below. If you no longer hold the copyright to this work, please indicate to whom I should direct my request on the bottom of this page and return it to me.

_____   _____

Name   Date

Please return this letter in the self-addressed, stamped envelope provided. Thank you for your time and attention to this matter.

Sincerely,

Name
Address
Phone

Submission, Review, and Approval Process

All theses, specialist projects, and dissertations written by students at Western Michigan University are reviewed by The Graduate College for approval of style and format. The following procedures should be followed in order to complete the approval process. *(Information in italics applies to **doctoral students only**.)*

1. Apply for graduation by the deadline for the semester/session in which you intend to graduate. Graduation applications are available at the Registrar's Office or online at http://www.wmich.edu/registrar. It is best practice to check with your department to make sure a current program of study and approved committee appointment form are already on file before you apply for graduation. It is recommended that you apply for graduation at least six months before you plan to graduate - your graduation date can be changed after the initial audit is completed at no additional cost to you by contacting your graduation auditor. *Doctoral students must have completed the graduation audit process and clear any outstanding requirements before the oral dissertation defense can be scheduled.*

2. Format your document according to the requirements of this manual and your department's style manual of choice.

3. *Prior to submitting the manuscript, doctoral students must request information for the UMI agreement form via email to* jennifer.holm@wmich.edu. The candidate must also obtain a Dissertation or Thesis Check-In Form, available on the Graduate College website, which lists the items that must be submitted along with the manuscript by the deadline for the graduation period. The candidate must complete and sign a ScholarWorks Access Agreement. http://libguides.wmich.edu/scholarworks/

Submission Procedures

Once your departmental committee has approved your manuscript (indicated by their signatures on the approval forms), you may submit the manuscript and related paperwork to the Graduate College. The deadline for submission of papers is published on the Graduate College website (http://www.wmich.edu/grad). Your audit letter will also indicate the submission deadline for the term in which you have applied to graduate. The following items must be submitted. Review by the Graduate College will not begin until all items on the dissertation or thesis check-in form have been submitted. Failure to submit all required materials will result in the document not being accepted for review.

Master's theses and specialist projects:
- One complete, unbound or electronic copy of the manuscript
- One additional title page and abstract
- Two signed, **original** (not photocopied) approval forms with **original signatures** of your committee
- One photocopy of a signed approval form.
- Copyright permission letters, if needed.
- A thesis/project check-in form with current and future contact information and completed SholarWorks Access Agreement.

Doctoral dissertations:
- One complete, electronic copy of the manuscript

- Three signed, **original** (not photocopied) approval forms with **original signatures** of your committee
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- Copyright permission letters, if needed.
- Completed **and signed** UMI agreement form
- One photocopy of UMI agreement form
- $100.00 processing fee (subject to change).

- A dissertation check-in form with current and future contact information and completed ScholarWorks Access Agreement.

Manuscript Review and Approval Process

The Graduate College will review the manuscript for compliance with University guidelines. A minimum of two weeks should be allowed for first review for dissertations and a minimum of four weeks for theses, although more time may be needed if extensive corrections are required. Dissertations are read in the order in which they are received in the Graduate College, theses are reviewed post graduation. If corrections are needed, the manuscript will need to be picked up either in person or sent by priority mail, to the student or the student's editor for corrections. The corrected copy will be due back within approximately one week of return of the manuscript - a due date will be specified upon return. Failure to meet this deadline may delay graduation by one semester or session.

The review and revision process involves a minimum of two cycles, depending on the quality of the original work, the revisions and adherence to the guidelines. It will be necessary to correct any and all errors in formatting, spelling, punctuation and grammar indicated. If you need to make changes that involve pagination, please make changes to your table of contents, list of tables and list of figures accordingly. The reader may make stylistic suggestions; it is your choice whether to incorporate these changes.

Once the manuscript format is approved, the Dean of the Graduate College will sign and date all copies of the approval forms; one copy of the signed form will be returned to the candidate. At this point, one complete approved electronic copy in PDF format of the manuscript will be due from master's, specialist and doctoral candidates. One copy will be placed in ScholarWorks at WMU (either visible or embargoed). *In addition, doctoral dossertations will be submitted to UMI/ProQuest.* Any final copies that may be required by the committee or department are the candidate's responsibility.

Last-Minute Check List

The following are some potentially costly and time-consuming problems that are easily avoided. Before submitting a thesis, specialist project, or doctoral dissertation to The Graduate College, the student should double-check the following:

1. Did you fill out and include the Thesis or Dissertation Check-In form?

2. Are your name and the title of your document **exactly** the same on the approval forms, abstract, title page, copyright page, and acknowledgments?

3. Does your abstract adhere to the 1-page limit for theses and specialist projects or 350 words (2 pages) for dissertations?

4. Is your document consecutively paginated throughout and are all pages included?

5. If your research involved working with regulated subjects/materials (humans, vertebrate animals, biohazards, or genetic material), have you included in the appendices a copy of your protocol approval by the appropriate University board or committee?

6. If you are including previously copyrighted material in your document, have you:
    *   contacted the copyright holders and received **written permission** to include the material?
    *   properly acknowledged, in your manuscript, the permission given to use the materials?
    *   included a copy of each permission letter with the manuscript?
    Doctoral students only:
    *   made sure the copyright permission letters state that ProQuest Information and Learning (PQIL) may "supply copies on demand"?
    *   attached a copy of each permission letter to the UMI agreement form?

7. Does all the material in the appendices have a 1.5 inch left margin and a page number, including reproduced material?

How to Grade a Dissertation

Faculty have implicit standards for evaluating the dissertation. They owe it to their students to make those standards explicit.

By Barbara E. Lovitts

The PhD dissertation is the ultimate educational product. It reflects the training of its author and the technical, analytical, and writing skills he or she developed in a doctoral program. Successful completion of the dissertation and the award of the PhD certify that the degree recipient can do independent scholarly work. That much is generally agreed. But who decides what an acceptable dissertation looks like? What are the standards by which faculty evaluate dissertations?

Identifying these criteria—and they do exist, however reluctant faculty are to write them down—could help faculty develop informed measures of learning outcomes. These measures would constitute powerful indicators of the success of research training, provide a method for evaluating PhD programs, and allow more objective comparisons among them. Such standards would also make evaluation of dissertations more valid and reliable across candidates in a department or field.

This article draws on a study that asked faculty to make explicit their implicit criteria for evaluating dissertations. The study aimed to help departments, disciplines, and universities develop objective standards for the outcome of doctoral training—the dissertation—and to use these standards in two ways. At the student level, the goal is to employ them to improve graduate education and training and make it more transparent to students; at the program level, it is to assess educational effectiveness.

The Study

In 2003–04, 276 faculty members in 74 departments across 10 disciplines at 9 research universities participated in focus groups in which they were asked to characterize dissertations and their components (the problem statement, the literature review, theory, methods, analysis, and discussion or conclusion) at four different quality levels—outstanding, very good, acceptable, and unacceptable. They were also asked what it means to make an original and significant contribution in their disciplines and what the purpose of the dissertation is. The study targeted faculty members who had produced high numbers of PhDs in four science disciplines (biology, electrical and computer engineering, physics or physics and astronomy, and mathematics); three social science disciplines (economics, psychology, and sociology); and three humanities disciplines (English, history, and philosophy).

To get a measure of the faculty members' experience and productivity, we asked them to specify how long they had been a professor, how many dissertations they had supervised, and how many dissertation committees they had served on. Together, the 272 focus group members who provided background information had 6,129 years of experience, had advised approximately 3,470 dissertations, and had sat on about 9,890 dissertation committees. The average focus group participant had been a professor for 22 years, advised 13 dissertations, and served on 36 dissertation committees.

The faculty members said that they often make holistic judgments about the quality of a dissertation after they have read it. In other words, they do not have a mental checklist of items against which they assess a dissertation. Still, our results demonstrate that faculty members do make quality judgments about dissertations and that they can (and did) make those judgments

explicit. Across focus groups and disciplines, there was a high degree of consistency in the way faculty members characterized the levels of quality we identified (see table 1). However, no dissertation does or can achieve all of the individual benchmarks the group identified. Indeed, taken together, some of the items are self-contradictory.

Outstanding

When we asked faculty members to characterize outstanding dissertations, they often said that such work defied explication, that there was no single feature or set of defining features: "You know it when you see it." Even though outstanding dissertations are rare—they come along once or twice a decade, if that often, the focus group participants said—the faculty members liked talking about this quality level more than any other.

They said outstanding dissertations are characterized by originality, high-quality writing, and compelling consequences. They said such dissertations display a richness of thought and insight and make an important breakthrough. Their clear and persuasive writing provides a glimpse into the mind of the author—you can see how the student is thinking. Moreover, they are a pleasure to read; they are "page turners." When faculty members read outstanding dissertations, they say, "Wow! Why didn't I think of that?" Each individual component of the dissertation is outstanding, and the components are integrated seamlessly throughout the dissertation.

The faculty members described students who produce outstanding dissertations as very creative and intellectually adventurous. They love, and are passionate about, what they are doing, and they display intense curiosity and drive. They leap into new territory and transfer ideas from place to place. Although they often have great advisers with whom they have rich and satisfying intellectual exchanges, outstanding students typically think and work independently, the focus group participants reported. At the same time, an outstanding dissertation can also be a function of luck. The student may simply be in the right place at the right time.

Very Good

The focus groups indicated that most of the dissertations they see are "very good," which is the level of quality the faculty members said they expect of most graduate students. Consequently, they had less to say about very good dissertations than about the other quality levels. Very good dissertations are solid and well written, but they are distinguished by being "less"—less original, less significant, less ambitious, less exciting, and less interesting than outstanding dissertations. They display mastery of the field, address the next question or problem in a research program, and are executed competently and confidently. One or more components of the dissertation may not be as strong as the others. The work expands rather than alters the thinking of a field.

The focus group participants said that students who produce very good dissertations show drive and ability. They have good technical skills, but they may not be in control of all the elements of the dissertation. Sometimes, according to the participants, what might have been an outstanding dissertation ends up being "only" very good because the student did not have or take the time to develop his or her ideas. The student may have run out of time or money, had a job waiting, or may simply have wanted to get on with life. In experimental disciplines, the dissertation may be very good rather than outstanding because experiments did not work out as planned, or the results were not as crisp and clear as expected.

Acceptable

In discussing the acceptable dissertation, many focus groups distinguished between acceptable dissertations and marginally acceptable ones, although their discussion of the two was often blurred. Participants explained that acceptable dissertations adequately meet the criteria for the award of the PhD, whereas marginally acceptable ones are just barely over the threshold of acceptability—they pass the "gag test."

The participants agreed that acceptable dissertations are somewhat pedestrian and distinguished by being "not very"—not very original, significant, exciting, or interesting. They contain an acceptable amount of solid work that demonstrates that the student can do research. The work is often a highly derivative, small extension of someone else's work. The writing is good enough, but the dissertation is a chore to read.
The acceptable dissertation adds little to the field and lacks consequence.

Students who produce acceptable dissertations were said to be functioning close to their capabilities. Although most are bright, they are missing "a certain quality of mind"—they lack intellectual power and the ability to think like a researcher. They also lack independence and initiative and thus require coaching and hand holding. Their advisers often give them their topics or problems, feed them ideas, and spend much time writing and copy editing their work.

Sometimes, acceptable dissertations are the function of circumstance or bad luck. For example, a student may not have been in residence and, consequently, not received the advice and guidance needed to produce a better-quality dissertation. More often, students rush their dissertations because they have accepted a job or a postdoctoral position or run out of funds. Others have a family to support or simply run out of steam.

In experimental disciplines, otherwise good dissertations are considered acceptable when experiment(s) do not work out, and students get null or negative results.

The focus group participants said that advisers and dissertation committees adjust their standards and expectations for students who produce acceptable and marginally acceptable dissertations. The primary consideration is that the student fulfilled the contract. That is, the student worked hard, did what he or she promised to do in the dissertation proposal, and demonstrated competence. The faculty members also take into consideration such "extraneous" factors as their judgments about the person and the type of career the student is planning. Indeed, a few focus groups debated whether the PhD should be awarded solely on the basis of the quality of the product (the dissertation), or whether their feelings about the person and their knowledge of the process the student had been through should play a role in their decision to award the degree. Ultimately, the "hidden criterion" for the award of the PhD is that the student will not embarrass or harm the reputation of the adviser, the committee members, the department, or the university.

Unacceptable
When asked about the unacceptable dissertation, participants balked. They asserted that they rarely, if ever, failed a dissertation, that dissertations of unacceptable quality were seldom allowed to come before a dissertation committee, that students who produced unacceptable dissertations would probably drop out of the program before advancing to a defense, and that it was the adviser's responsibility to prevent unacceptable dissertations from going forward. The faculty members noted that when they did see an unacceptable dissertation, it was usually the adviser's fault; the student had not been given the opportunity to do well. Because so few of the focus group members had ever been on a committee that failed a dissertation, the characterization of the unacceptable dissertation is based primarily on their experience with unacceptable drafts.

Unacceptable dissertations are poorly written and full of errors and mistakes. They are distinguished by "not"—not original, not thoughtful, and not well done. Unacceptable dissertations do not have a good or clearly defined question or problem. They exhibit a poor grasp of the field and either do not use the proper methods or use them inappropriately. Unacceptable dissertations do not yield new or relevant results, and those they yield are often misinterpreted or oversold.

The participants agreed that students produce unacceptable dissertations for different reasons. Most, however, cannot master professional standards and do not have what it takes to be a researcher. Some should not have been admitted into a program in the first place or should have been stopped before advancing to candidacy. Others cannot handle a big project; they do not understand what needs to done. Many cannot or will not take their adviser's advice or criticism into account and, consequently, produce one bad revision after another. Yet others are capable of producing acceptable dissertations but fail to do so because they have taken jobs or otherwise left the university and have not kept up with research in their area. The result is an unoriginal or out-of-date product. Some fail because they push for the defense even though their advisers have told them they were not ready to defend.

Many advisers simply wait for students whose work is unacceptable to get discouraged and leave instead of proactively terminating them. Some try to disassociate themselves from such students by sending "signals" or by telling them to find another adviser. Others use the defense to get rid of the student. In rare instances, when an unacceptable dissertation makes it to defense, dissertation committees often seek excuses to pass it. They will take into consideration such things as their feelings about the person rather than the objective document. In the end, most defer to the adviser, hold their noses, and vote to pass.

Practical Implications

Faculty members and administrators who want to develop standards by which to judge dissertations must develop their own performance expectations for their local circumstances and translate them into rubrics, or criteria that identify the expected dimensions of a dissertation. The rubrics should include a detailed description of what constitutes different levels of accomplishment for each of those dimensions.

Rubrics can be developed by analyzing existing products (dissertations in this case), or by reflecting on the objectives of a learning task—which is probably easier for a product the size of a dissertation. In their 2004 book, *Introduction to Rubrics: An Assessment Tool to Save Grading Time, Convey Effective Feedback, and Promote Student Learning*, Dannelle Stevens and Antonia Levi describe a four-stage process for developing rubrics based on reflection. The first stage involves reflecting on performance outcomes, or what faculty want from students. In the second stage, the rubric developer identifies and lists the details of the task and the learning goals. In the third stage, grouping and labeling, he or she organizes the reflections into component skills, which then become the dimensions of the rubric. The fourth stage, application, involves transferring the lists and groupings to the rubric grid and filling in descriptions for each dimension at each quality level. Table 2 illustrates some of the dimensions that emerged from the focus groups' discussion of the components of the dissertation.

Departments or divisions can meet to work out rubrics for dissertations and their components and even for course assignments, seminar papers, or qualifying examinations. The best advice I can offer for working toward shared understandings of expectations about quality is to write everything down while it's being said—on a blackboard or a flipchart, for example. When faculty members see the proposed characteristics against each other, it's easier to debate their merits and move toward a consensus.

Rubrics and Students

Faculty members can use rubrics formatively with students during the research and drafting stages of the dissertation. Ideally, rubrics should be given to and discussed with students at the beginning of the course or program in which they will be used. For the dissertation, optimal times may be during orientation or the proseminar and again in a dissertation preparation course, if the program has one. Many focus group members and doctoral students who participated in a study that supplemented the one described in this article expressed interest in putting performance expectations in graduate student handbooks and on departmental Web sites.

The rubrics help inform students about the expectations of the discipline or profession and its standards for excellence for research and communication. They provide students with benchmarks against which they can judge and revise their work, thus enhancing their ability to assess and correct their own work and that of their peers (and thereby reducing the amount of work advisers and committee members have to do). In short, the more time departments and faculty spend up front explaining and discussing the criteria in rubrics with students, the smoother and easier the process should be for everyone.

In addition to talking to students about the expectations contained in a rubric, advisers and committee members can and should use it to provide feedback to students on dissertation proposals and chapter drafts. As they read a proposal or draft, faculty members can check or circle the level of performance demonstrated on each dimension of the rubric and return it to the student with the draft. Besides reducing the comments an adviser or committee member may need to write on the draft, the rubric will help students see how their work differs from the target level and will give them information about what they need to do to progress toward the target.

The target should be very good, not outstanding, because very good is the level most faculty members expect of most graduate students. Done is better than perfect. Graduate school is the beginning, not the end, of a career. The goal should be to use rubrics to help doctoral students achieve the highest level possible in light of their needs, capabilities, and professional aspirations, and to get them out of graduate school and into their careers.

Rubrics and Programs

Because rubrics provide a rich record of student achievement, departments, disciplines, and universities can use them to register the aggregate performance outcomes for dissertations for a department, for program or specialty areas, for individual advisers, or for types of dissertations (for example, quantitative versus qualitative, historical, theoretical, or empirical). These aggregate rubrics can offer departments and other stakeholders formal, systematic, evidence-based information about the doctoral program.

As dissertations come up for defense, the adviser, all committee members, or the dean's representative (outside committee member) could be asked to check or circle the demonstrated level of performance on each dimension on a rubric. (Committees should produce a consensus rubric.) The performance on the different dimensions of a dissertation would then be transferred to a master rubric in the form of checks or tally marks.

After the results of a set of dissertations have been recorded on the master rubric, patterns of student performance should become evident. For example, the master rubric might indicate that most students' methodology and analytical techniques fall in the very good range but that fewer students do a good job of aligning theory and methods, or that students who took theory with Professor X do better theoretical work than students who took theory with Professor Y. These patterns should help advisers, departments, and universities identify strengths and weaknesses in many different areas: pedagogy, instructional design, curricular and co-curricular design, institutional programs and services that support student learning, educational resources and tools, educational opportunities, and student advising. This information can then be used to build on the strengths of graduate programs and modify their weaknesses.

The faculty members said that they often make holistic judgments about the quality of a dissertation after they have read it. They do not have a mental checklist of items against which they assess a dissertation.

In rare instances, when an unacceptable dissertation makes it to defense, dissertation committees seek excuses to pass it. Most defer to the adviser, hold their noses, and vote to pass.

Table 1. The Characteristics of Dissertations
Below are the criteria the focus group members specified for each level of dissertation quality.

Outstanding

- Is original and significant, ambitious, brilliant, clear, clever, coherent, compelling, concise, creative, elegant, engaging, exciting, interesting, insightful, persuasive, sophisticated, surprising, and thoughtful
- Is very well written and organized
- Is synthetic and interdisciplinary
- Connects components in a seamless way
- Exhibits mature, independent thinking
- Has a point of view and a strong, confident, independent, and authoritative voice
- Asks new questions or addresses an important question or problem
- Clearly states the problem and why it is important
- Displays a deep understanding of a massive amount of complicated literature
- Exhibits command and authority over the material
- Argument is focused, logical, rigorous, and sustained
- Is theoretically sophisticated and shows a deep understanding of theory
- Has a brilliant research design
- Uses or develops new tools, methods, approaches, or types of analyses
- Is thoroughly researched
- Has rich data from multiple sources
- Analysis is comprehensive, complete, sophisticated, and convincing
- Results are significant
- Conclusion ties the whole thing together
- Is publishable in top-tier journals
- Is of interest to a larger community and changes the way people think
- Pushes the discipline's boundaries and opens new areas for research

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Very Good

- Is solid
- Is well written and organized
- Has some original ideas, insights, and observations, but is less original, significant, ambitious, interesting, and exciting than the outstanding category
- Has a good question or problem that tends to be small and traditional
- Is the next step in a research program (good normal science)
- Shows understanding and mastery of the subject matter
- Has a strong, comprehensive, and coherent argument
- Includes well-executed research
- Demonstrates technical competence
- Uses appropriate (standard) theory, methods, and techniques
- Obtains solid, expected results or answers
- Misses opportunities to completely explore interesting issues and connections
- Makes a modest contribution to the field but does not open it up

Acceptable

- Is workmanlike
- Demonstrates technical competence
- Shows the ability to do research
- Is not very original or significant
- Is not interesting, exciting, or surprising
- Displays little creativity, imagination, or insight
- Writing is pedestrian and plodding
- Has a weak structure and organization
- Is narrow in scope
- Has a question or problem that is not exciting—is often highly derivative or an extension of the adviser's work
- Displays a narrow understanding of the field
- Reviews the literature adequately—knows the literature but is not critical of it or does not discuss what is important
- Can sustain an argument, but the argument is not imaginative, complex, or convincing
- Demonstrates understanding of theory at a simple level, and theory is minimally to competently applied to the problem
- Uses standard methods
- Has an unsophisticated analysis—does not explore all possibilities and misses connections
- Has predictable results that are not exciting
- Makes a small contribution

Unacceptable

- Is poorly written
- Has spelling and grammatical errors
- Has a sloppy presentation
- Contains errors or mistakes
- Plagiarizes or deliberately misreads or misuses sources
- Does not understand basic concepts, processes, or conventions of the discipline
- Lacks careful thought
- Looks at a question or problem that is trivial, weak, unoriginal, or already solved
- Does not understand or misses relevant literature
- Has a weak, inconsistent, self-contradictory, unconvincing, or invalid argument
- Does not handle theory well, or theory is missing or wrong
- Relies on inappropriate or incorrect methods
- Has data that are flawed, wrong, false, fudged, or misinterpreted
- Has wrong, inappropriate, incoherent, or confused analysis
- Includes results that are obvious, already known, unexplained, or misinterpreted
- Has unsupported or exaggerated interpretation
- Does not make a contribution

Table 2. Some Dimensions of the Different Components of the Generic Dissertation

The following dimensions emerged from the analysis of the results of the study described in this article.

Component 1: Introduction

The introduction
- Includes a problem statement
- Makes clear the research question to be addressed
- Describes the motivation for the study
- Describes the context in which the question arises
- Summarizes the dissertation's findings
- Discusses the importance of the findings
- Provides a roadmap for readers

Component 2: Literature Review

The review
- Is comprehensive and up to date
- Shows a command of the literature
- Contextualizes the problem
- Includes a discussion of the literature that is selective, synthetic, analytical, and thematic

Component 3: Theory

The theory that is applied or developed
- Is appropriate
- Is logically interpreted
- Is well understood
- Aligns with the question at hand

In addition, the author shows comprehension of the theory's
- Strengths
- Limitations

Component 4: Methods

The methods applied or developed are
- Appropriate
- Described in detail
- In alignment with the question addressed and the theory used In addition, the author demonstrates
- An understanding of the methods' advantages and disadvantages
- How to use the methods

Component 5: Results or Analysis

The analysis
- Is appropriate
- Aligns with the question and hypotheses raised
- Shows sophistication
- Is iterative

In addition, the amount and quality of data or information is
- Sufficient
- Well presented
- Intelligently interpreted

The author also cogently expresses
- The insights gained from the study
- The study's limitations

Component 6: Discussion or Conclusion

The conclusion
- Summarizes the findings
- Provides perspective on them
- Refers back to the introduction
- Ties everything together
- Discusses the study's strengths and weaknesses
- Discusses implications and applications for the discipline
- Discusses future directions for research

Lovitts, B. (2005). How to Grade a Dissertation. Academe, 91(6).
http://www.aaup.org/publications/Academe/2005/05nd/05ndlovi.htm

Tips for Making Scientific Posters
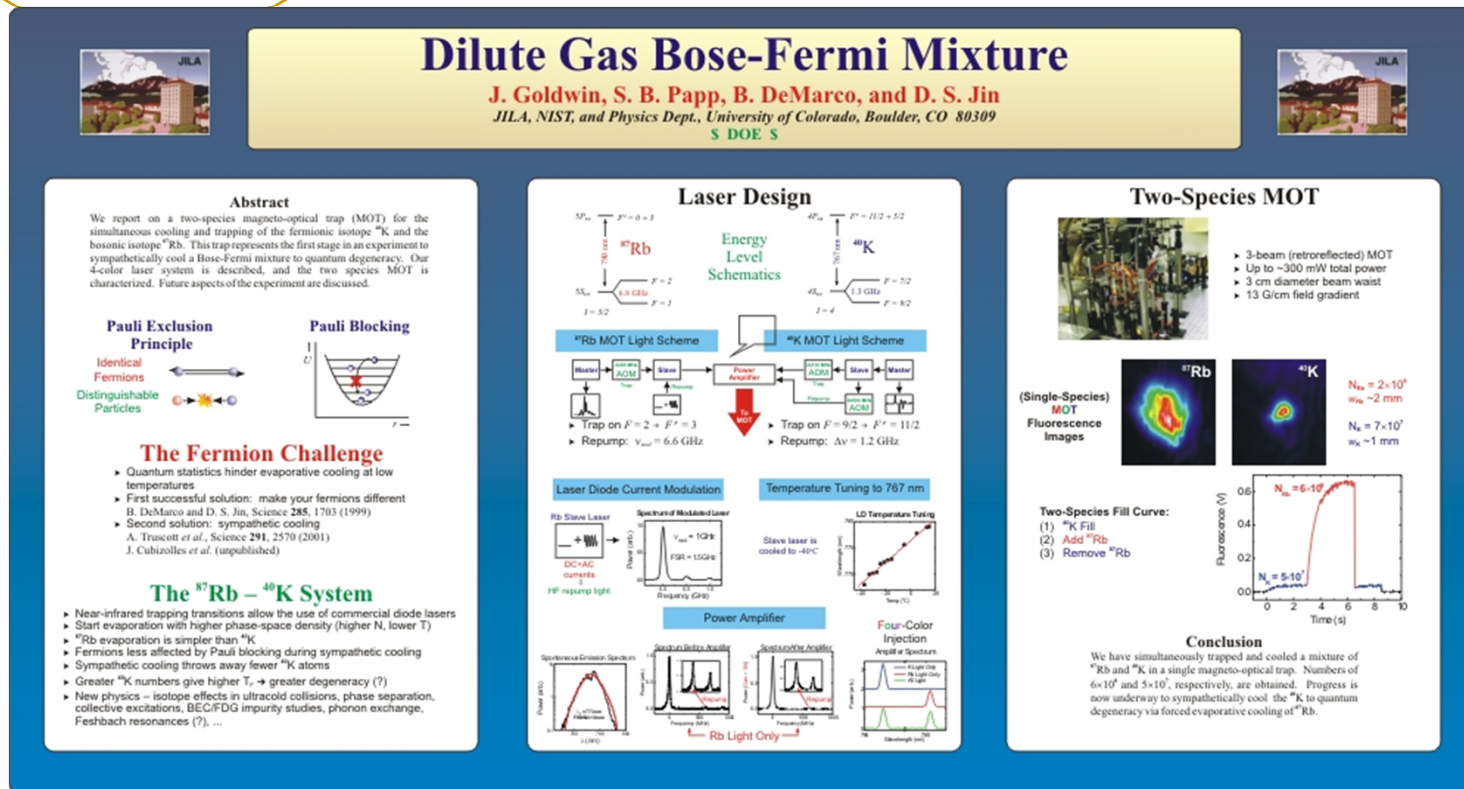
Courtesy B. DeMarco

Source: The Craft of Scientific Presentations, Michael Alley

See also http://www.writing.eng.vt.edu/posters.html

Why a scientific poster?

One of the most common methods of disseminating scientific information at conferences!
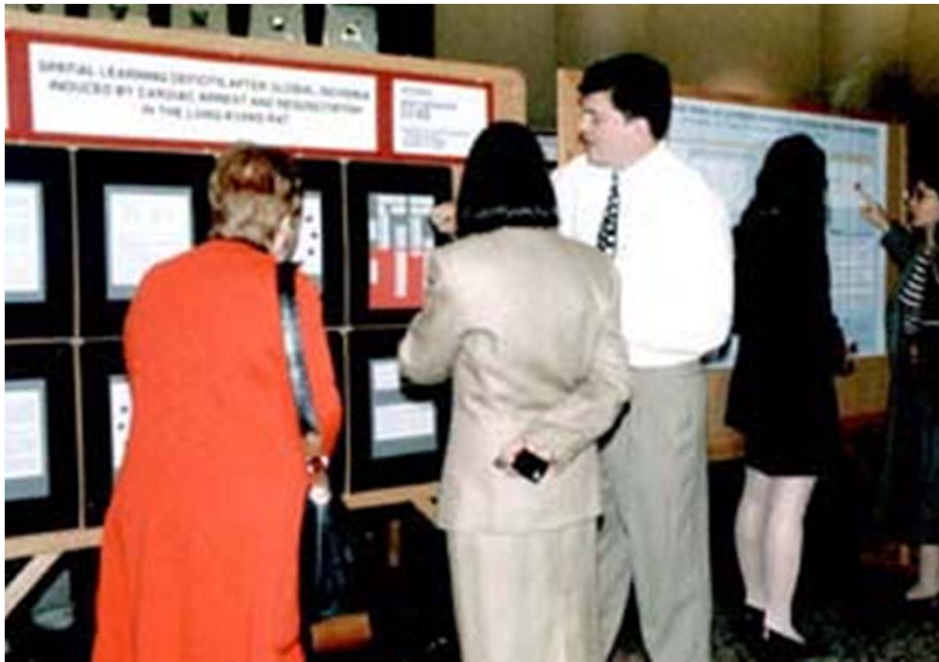
Allows one to convey more details than in a talk

Provides an opportunity for more Q&A exchange between author and reader than a talk or paper

Key features of a poster

Gap-Crossing Decisions by Red Squirrels in Fragmented Forests
Victoria J. Bakker, *University of California, Davis*

Good!

Key features of a scientific poster:

Must attract an audience:
- Prominent title
- Attractive figures (lots)
- Clean, open layout

Must quickly orient the reader to the key points

Should be logically arranged

Should contain all elements of a good research paper:
- Motivation/Background
- Procedures/Experimental
- Results/Analysis
- Conclusions
- Acknowledgments

Should have clearly labeled sections

Key features of a poster

Cooling Effects of Dirt Purge Holes on the Tips of Gas Turbine Blades

Eric Couch, Jesse Christophel, Erik Hohlfeld, and Karen Thole

Not so good!

Key features of a scientific poster:

Must attract an audience:

- Prominent title
- Attractive figures (lots)
- Clean, open layout

Must quickly orient the reader to the key points

Should be logically arranged

Should contain all elements of a good research paper:

- Motivation/Background
- Procedures/Experimental
- Results/Analysis
- Conclusions
- Acknoweldgments

Should have clearly labeled sections

Posters should have more description than a talk slide, less description than a paper

Too little description:

Improving the Cooling of Blades and Vanes in Gas Turbine Engines

Professor K. A. Thole
Virginia Tech Experimental and Computational Convection Laboratory
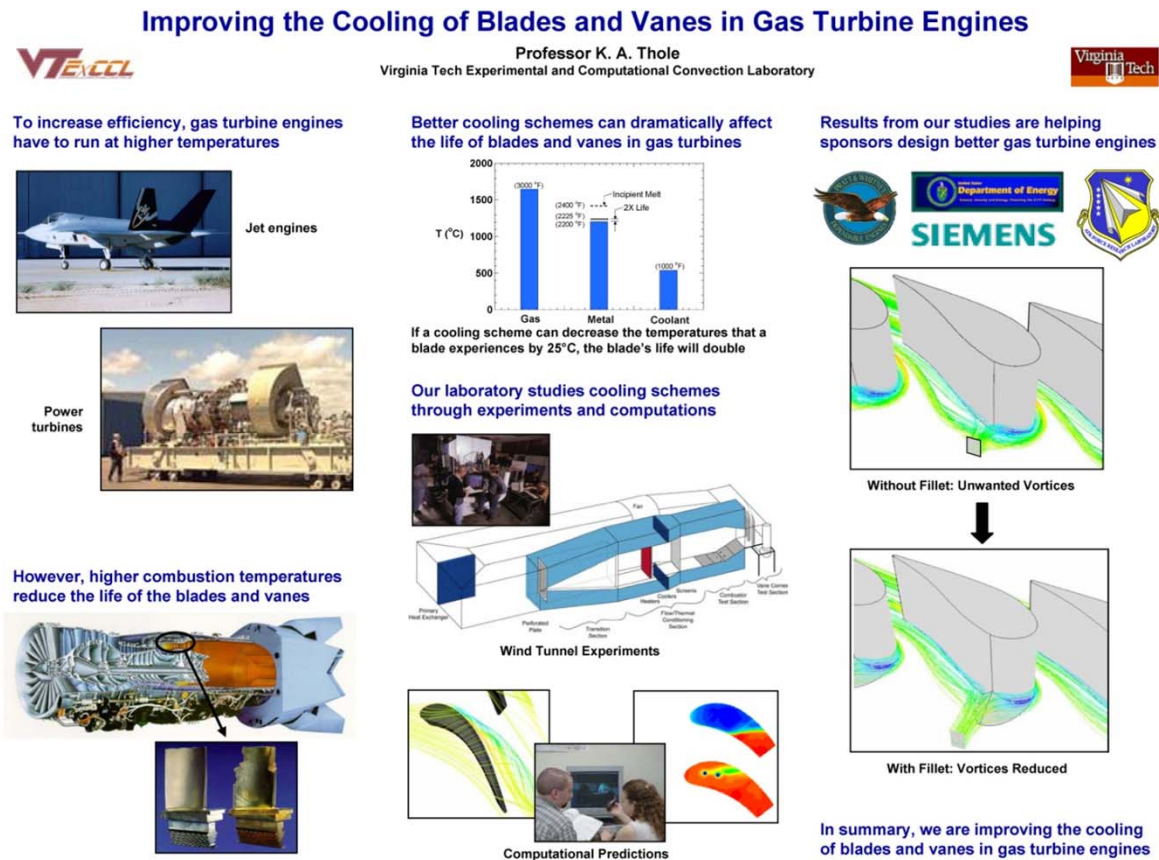
Posters should have more description than a talk slide, less description than a paper

(Way) too much description:
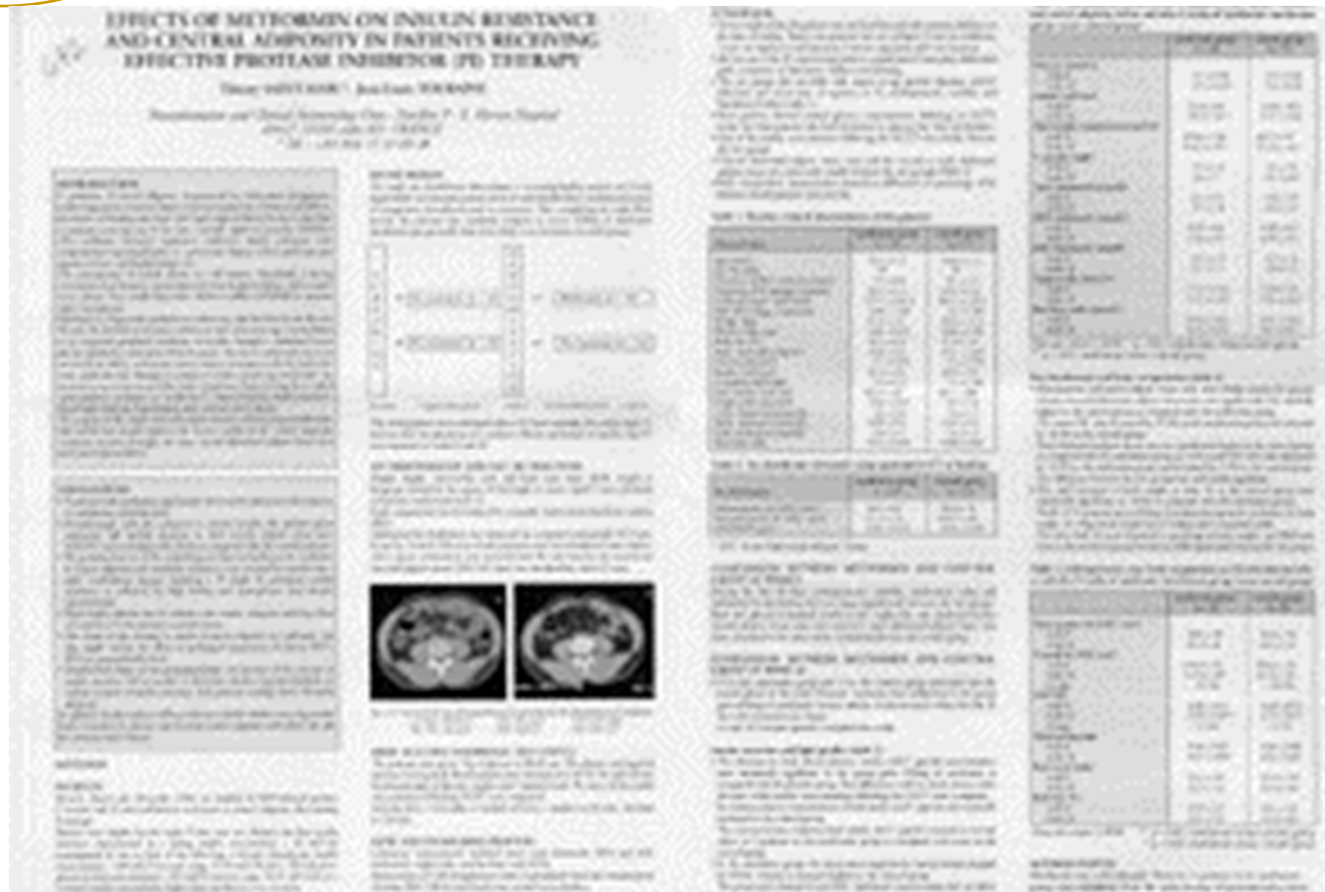
How to get started:

Choose a poster layout

vertical columns

contrasting fields
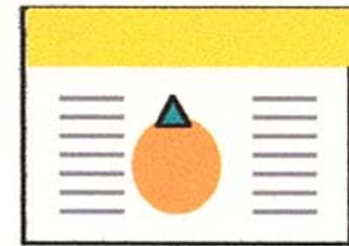
centered images w/ explanations
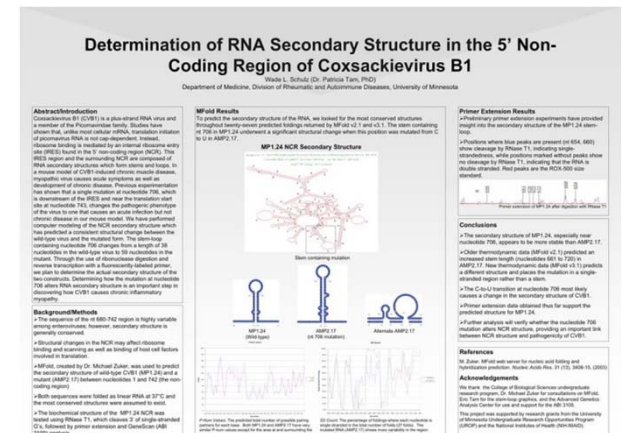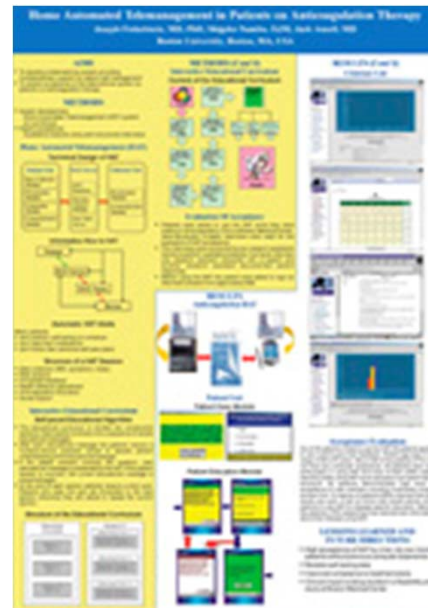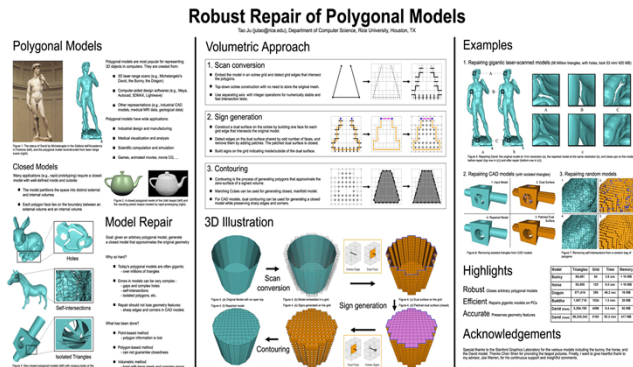
How to get started:

Sketch your organizational plan on paper

Write down the key ideas in each section

Identify the figures/results that best convey your ideas in each section

Title
Authors & Affiliations

Intro/Motivation
main point #1
main point #2

Results
main point #1

main point #2
main point #3

Analysis
main point #1
main point #2

Background
main point #1
main point #2

Conclusions
main point #1
main point #2

Acknowledgments
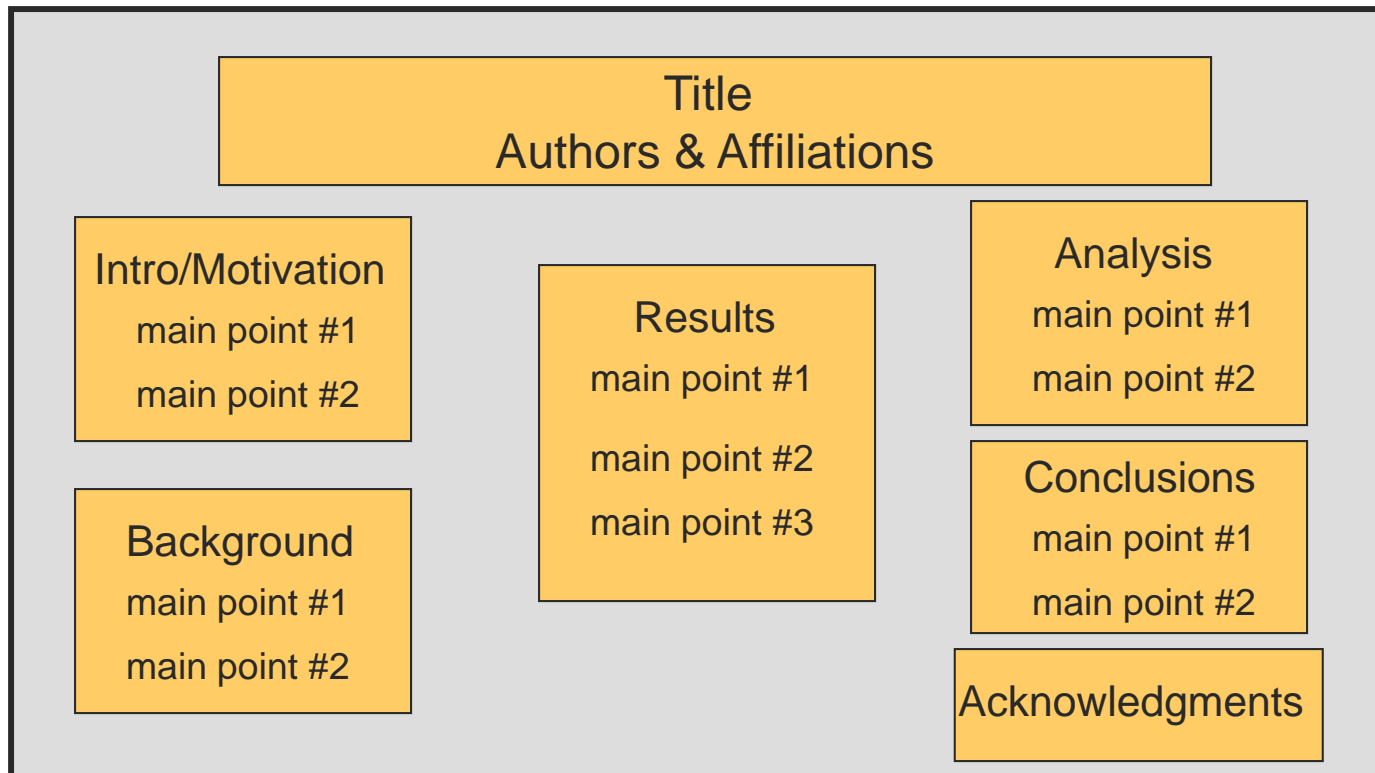
How to get started:

Make sure there's a coherent "flow" in your sections
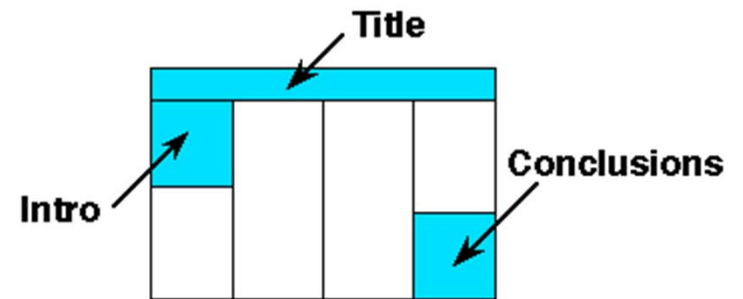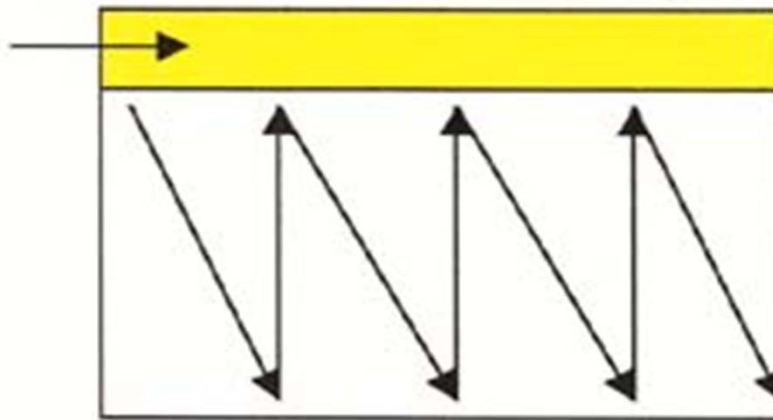
You're telling a story, so make sure the reader knows where to start and end

How to get started:

Use lots of blank space around margins to define sections:
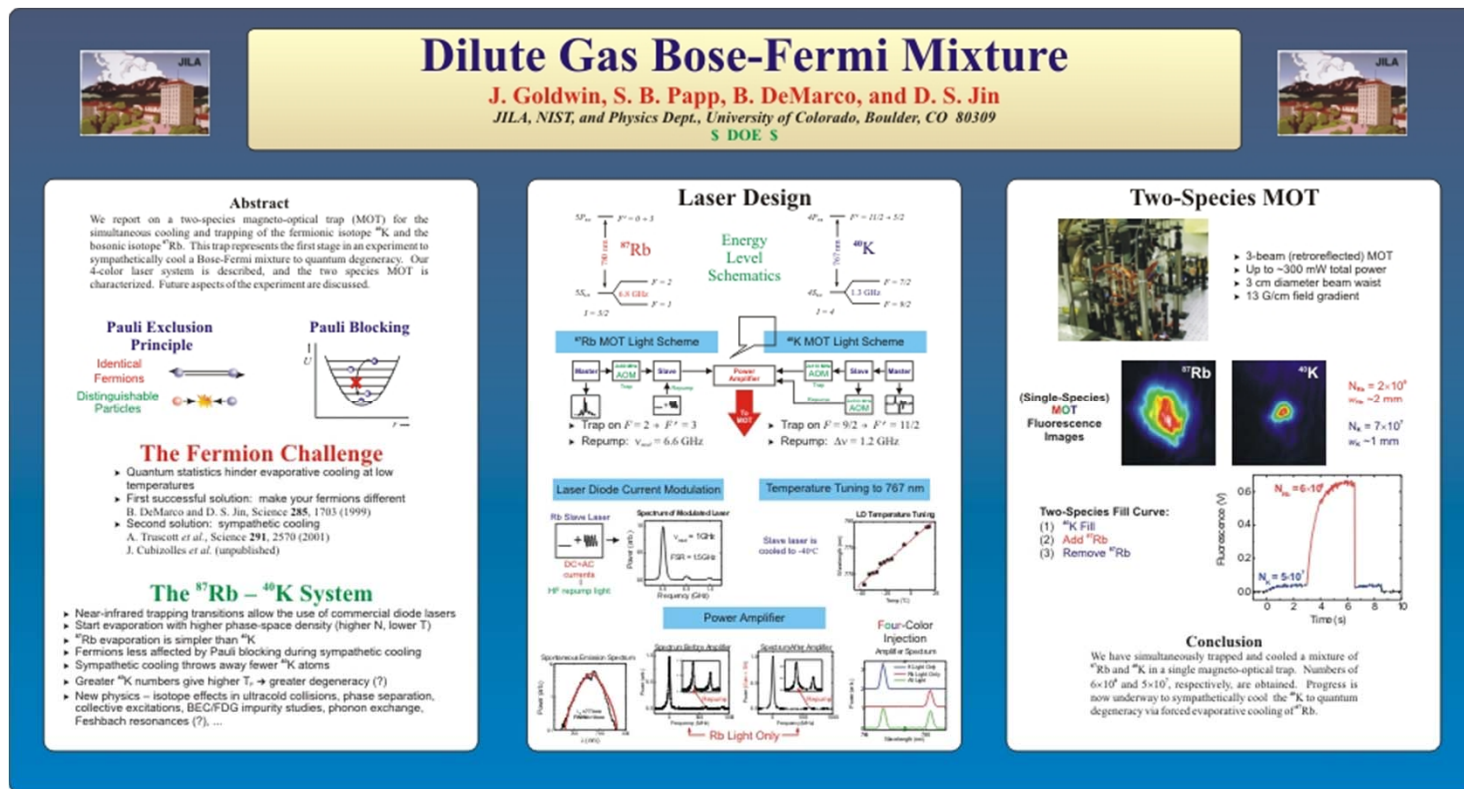
Courtesy B. DeMarco

How to get started:

Setting up PowerPoint:

Select "Page Setup" under File Menu →

Slides sized for: Custom

Orientation of slides: Landscape

Width of slides: 56 inches

Height of slides: 28 inches

Title: 90-120 pt, sans serif font

Author: 48-60 pt. sans serif

Headings: 70-80 pt. sans serif

Main text: 36-40 pt. sans serif
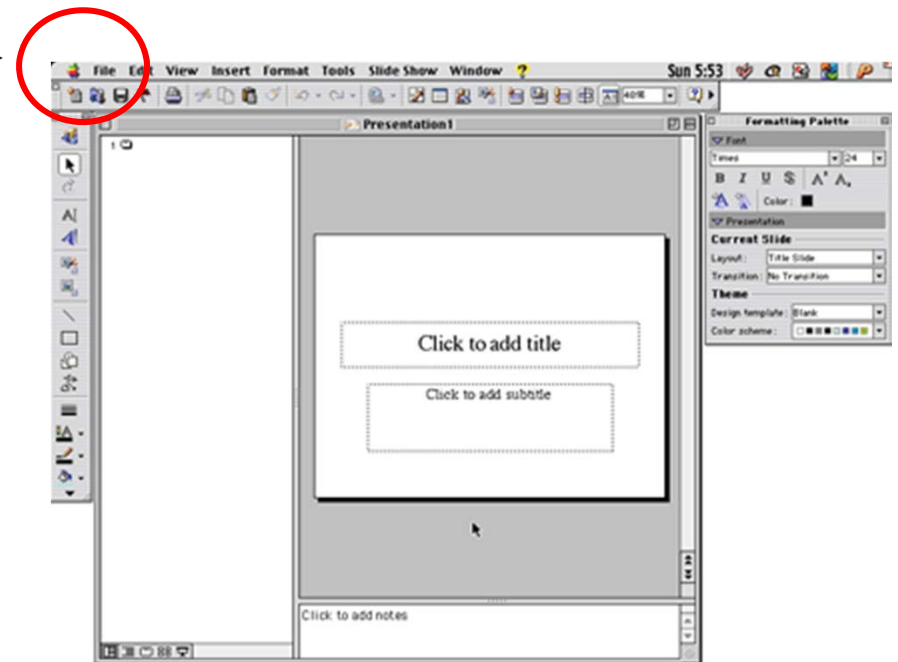
Other tips: Text

Text and figures should be legible from 3-5 feet away: 36 pt. font size minimum!

Edit excessive text!! Poster should have roughly 20% text, 40% figures, 40% space

Use sans serif fonts: these fonts are more legible than serif fonts from a distance

Headings and other text having the same level of importance should be the same font size

Generally, putting information in "bullet" form, rather than in sentences, is better:

Original

The ideal anesthetic should quickly make the patient unconscious but allow a quick return to consciousness, have few side effects, and be safe to handle.

http://www.owlnet.rice.edu/~cainproj/designing.html

Revised

Ideal anesthetics should:

- offer quick sedation

- provide quick recovery

- have few side effects

- be safe to handle

Other tips: Color

Use color to define relationships between different areas of the poster

Use color to create coherence and guide the reader through your poster

DON'T overuse color…too much variation will distract from the substance of your poster

DON'T use color arbitrarily – the reader expects color to *mean something*, so they'll be confused if it's arbitrarily applied

DON'T use a distracting background, and make sure there's sufficient contrast between the background and the text

Beware shading of backgrounds…this sometimes doesn't show up well when enlarged to full poster size

Other tips: Figures

Make sure to label all figures with legible fonts and font sizes

Include a brief caption for the figure, or explicitly refer to the figure in the text

Make sure your images and figures are of sufficiently high resolution to be enlarged

Make sure your figures advance the points you're making in the text

Use darker background for lighter figures/pictures, and a lighter background for darker figures/pictures

100 nm

Critique these posters:
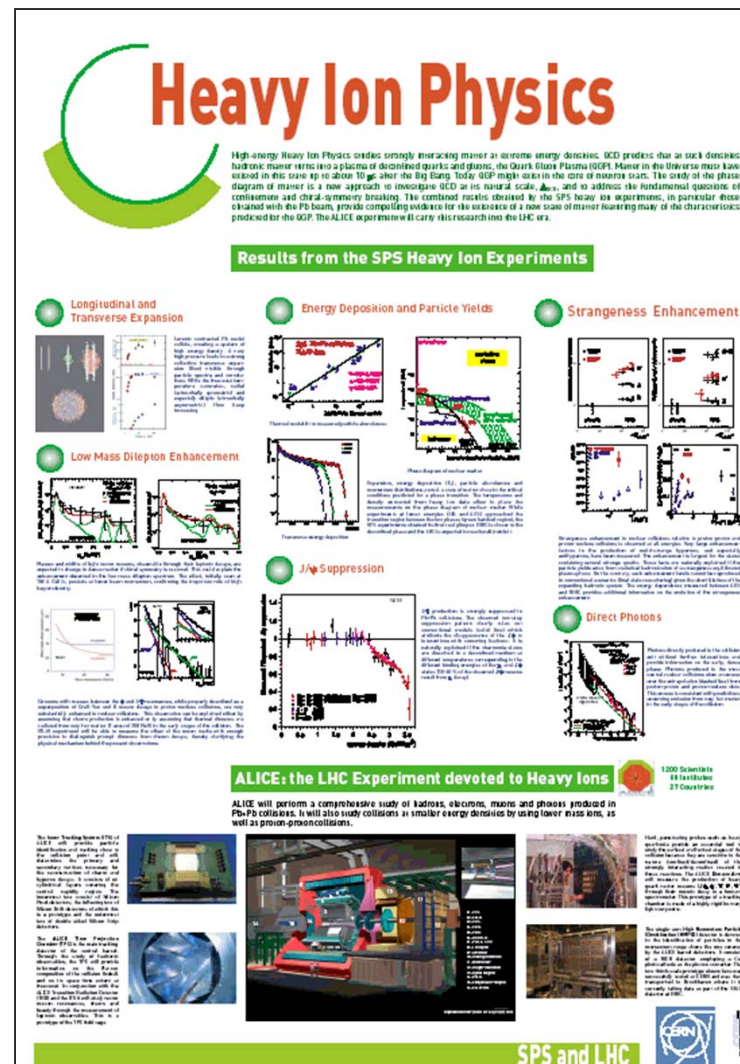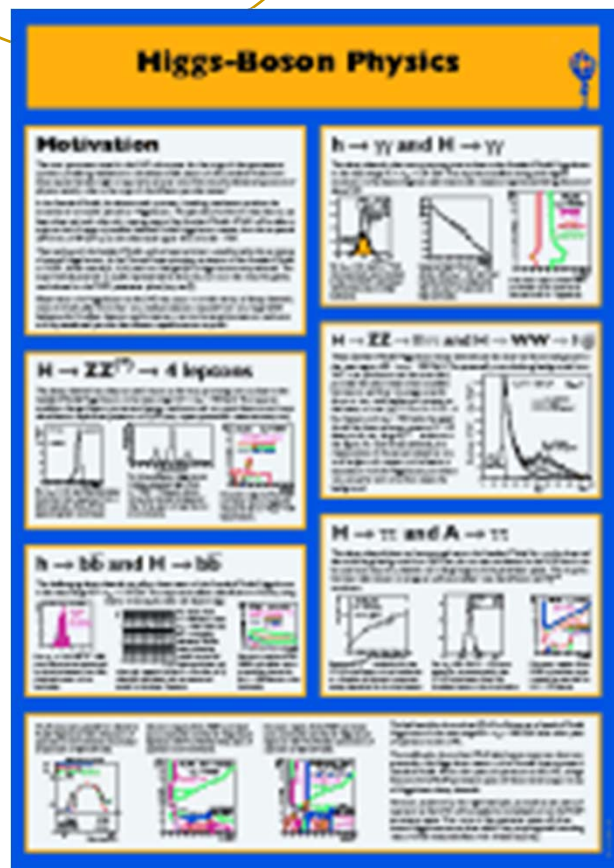
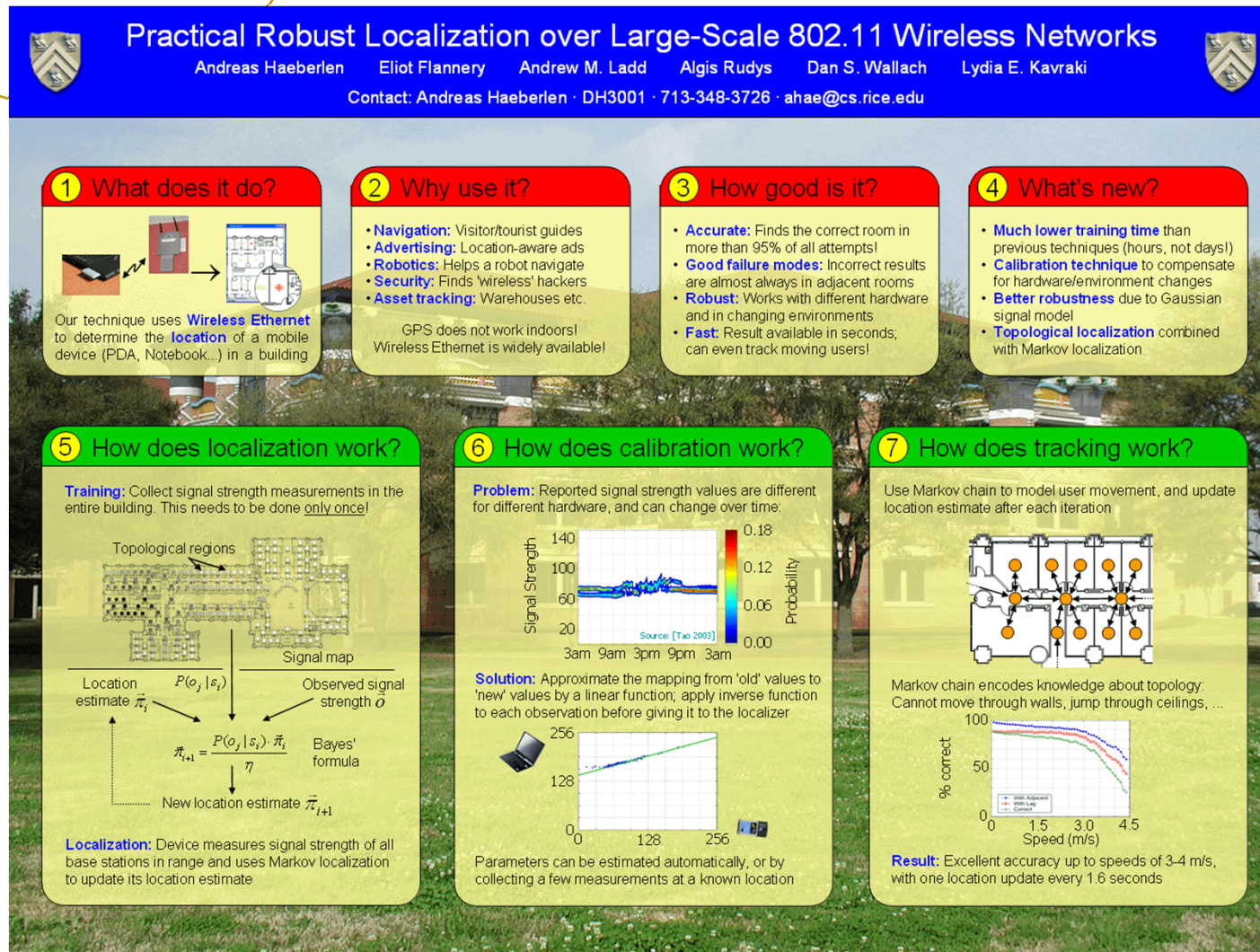# Critique these posters:

Critique these posters:

Critique these posters:

Critique these posters:

Critique these posters:

Informal Homework Assignment

- Go to the "classroom corridor" on the first floor of Loomis to check out the Senior Thesis posters
    - look at and critique the posters you see
    - which ones are most effective?
        - capture your interest
        - easily navigable
        - etc., etc.
    - What features of posters you see should you avoid?