March 3, 2015
(Last update: 03/02/15)

Handouts of the Graduate Faculty Council

Michigan Tech
Graduate Faculty Status Review Template

Version 2.1

This template is meant to assist unit chairs/deans with the periodic review of the qualifications of each of their graduate faculty-eligible members as per Section 1.5.3 “Graduate Faculty Status” of the Faculty Handbook. Completed forms will be reviewed by the Dean of the Graduate School and will be used to update the listing of eligible Graduate Faculty.

This review shall take place every 6 years from the start of the member’s eligible status as graduate faculty. To retain the status of Graduate Faculty, the unit chair/dean must circle at least one item in Section 1 and one item in Section 2 related to the faculty member under review.

1. Qualifications of Graduate Faculty. Does the faculty member under review meet one or more of the following criteria? (Circle all that apply.)

a. Possesses experience and continued interest in the conduct of research.

b. Has the necessary background for, and a continued interest in, teaching graduate courses.

c. Has continuing interest in serving as a graduate student advisor.

2. Evidence of Qualifications. Does the faculty member under review meet one or more of the following criteria? (Circle all that apply.)

a. Is currently involved in research work or graduate instruction or in advising graduate students.

b. Regularly publishes articles in recognized journals having national distribution or books related to their field of study.

c. Has earned the terminal degree in his/her field.

Response by reviewee:

Faculty members should indicate in writing below whether or not they concur with the unit chair’s/dean’s review. If the faculty member does not concur, the member should support their argument with reasons, providing relevant evidence.
The University Senate of Michigan Technological University

Proposal XX-15

(Voting Units: Academic)

“Definition of “Joint” Faculty Appointments”

I. Background

This proposal is to formalize the definition of a term applied to tenured or tenure-track faculty who contribute scholarship in more than one discipline at the University.

This proposal also rectifies the current situation regarding the use of the term “adjunct” at Michigan Tech. At Michigan Tech, the term “adjunct” is currently applied to faculty members who contribute scholarship in more than one discipline at the University but only receive financial compensation from one discipline. This use of the term “adjunct” is not in alignment with the usage of the term at other institutions of higher education.

II. Proposal

The proposed changes are intended to be added to the Tenured/Tenure-Track Faculty Handbook.

II.a. Joint Faculty Appointments

JOINT FACULTY APPOINTMENT (Professor, Associate Professor, Assistant Professor): Joint faculty appointments are used to acknowledge and support the scholarly contributions that faculty may make in more than one discipline.

All faculty members holding joint appointments must have a primary affiliation within an academic department or school. The primary department or school will be responsible for annual reviews for the faculty member’s reappointment, tenure, promotion, and salary consideration. The primary department/school will seek and consider written input from the chair of the department(s) and/or dean of the school(s) hosting the faculty member’s joint appointments.

Joint faculty appointments may or may not be associated with the distribution of salary for a faculty member among two (or potentially more) academic units at Michigan Tech.

Joint faculty appointments are at the same rank (i.e., professor, associate professor, or assistant professor) as a faculty member’s primary appointment.
Joint faculty appointments are possible with non-departmental and interdisciplinary programs as well as with departments or departmental programs.

All requests for joint appointments must be approved by the provost. Requests for joint appointments also need approval from the:

- faculty member’s primary academic department chair or school dean,
- dean of the faculty member’s primary college (if in a college)
- faculty member’s joint-appointment discipline’s department or school (for disciplinary appointments) or the appropriate executive group or director and Graduate Dean for interdisciplinary appointments.
- dean of the faculty member’s joint appointment college (if the joint-appointment discipline is housed in a college)
The University Senate of Michigan Technological University

Proposal XX-15

(Voting Units: Academic)

“Definition of “Affiliated Joint” Faculty Appointments”

I. Background

This proposal is to formalize the definition of a term applied to tenured or tenure-track faculty who contribute scholarship in more than one discipline at the University.

This proposal also rectifies the current situation regarding the use of the term “adjunct” at Michigan Tech. At Michigan Tech, the term “adjunct” has been applied to faculty members who contribute scholarship in more than one discipline at the University but only receive financial compensation from one discipline. This use of the term “adjunct” is not in alignment with the usage of the term at other institutions of higher education.

II. Proposal

The proposed changes are intended to be added to the Tenured/Tenure-Track Faculty Handbook Section 1.5.5.

II.a. Joint-Affiliated Faculty Appointments

JOINT-AFFILIATED FACULTY APPOINTMENT (Professor, Associate Professor, Assistant Professor): Joint-Affiliated faculty appointments are used to acknowledge and support the scholarly contributions that faculty may make in more than one discipline.

All faculty members holding joint-affiliated appointments must have a primary affiliation within an academic department or school. The primary department or school will be responsible for annual reviews for the faculty member’s reappointment, tenure, promotion, and salary consideration. The primary department/school will seek and consider written input from the chair of the department(s) and/or dean of the school(s) hosting the faculty member’s joint affiliated appointments.

Joint-Affiliated faculty appointments may or may not be associated with the distribution of salary for a faculty member among two (or potentially more) academic units at Michigan Tech.

Joint-Affiliated faculty appointments are at the same rank (i.e., professor, associate professor, or assistant professor) as a faculty member’s primary appointment.
JointAffiliated faculty appointments are possible with non-departmental and interdisciplinary programs as well as with departments or departmental programs.

All requests for joint-affiliated appointments must be approved by the provost. Requests for affiliated appointments also need approval from the:

- faculty member’s primary academic department chair or school dean,
- dean of their primary college (if in a college),
- approval from the joint-affiliated-appointment discipline’s department or school (for disciplinary appointments) or from the appropriate executive group or director and graduate dean (for interdisciplinary appointments)
- dean of the faculty member’s affiliated-appointment college (if the affiliated-appointment discipline is housed in a college).
Results of Benchmarking Study of Number and Roles of External Graduate Committee Members

Summary

The policies for external committee members on thesis or dissertation examining committees of 13 universities were examined. When policies were set by graduate programs, the policies of Mechanical Engineering programs were examined.

- At the PhD level:
  - Ten of the universities require an external committee member.
  - Eleven universities require four committee members, one requires five committee members, and one requires three committee members.
  - For reference purposes, Michigan Tech requires an external committee member and a total of four committee members (including the advisor). If co-advisors are chosen and one co-advisor is from outside the student’s home department or school, it recommended, but not required, than an additional external member be chosen.

- At the MS level:
  - No programs required an external committee member.
  - Committee member requirements were three for nine universities, two for two universities, and one for one university.
  - For reference purposes, Michigan Tech requires an external committee member and a total of three committee members. If co-advisors are chosen and one co-advisor is from outside the student’s home department or school, it recommended, but not required, than an additional external member be chosen.

Recommended Changes to Michigan Tech Graduate School Policies and Procedures

Based on the results of the benchmarking the Graduate School proposes the following changes to the requirements for graduate committee membership at Michigan Tech.

1. The requirement that master’s committees include an “external” member be eliminated.
2. The definition of “external” member for PhD committee be revised so that the external member is defined as a member of the Graduate Faculty who has a 50% or greater appointment outside of the student’s academic home department. If a student is advised by two co-advisors, the external member must be from outside the administrative home(s) of both co-advisors. The role of the external member role is to promote cross-disciplinary scholarly collaboration and consideration of the dissertation research from a perspective that might not be available if all committee members were drawn directly from the student’s field of specialization.
Appendix 1.
Doctoral committee requirements

<table>
<thead>
<tr>
<th>University</th>
<th>External required?</th>
<th>Number of members</th>
<th>Definition of external</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado School of Mines</td>
<td>Yes</td>
<td>4</td>
<td>The fourth, required member of the Committee must be a full-time permanent CSM faculty member, may not be an advisor, and must be from outside of the student's doctoral degree program, home department and minor program area(s) – if appropriate. This committee member acts as Thesis Committee Chairperson.</td>
</tr>
<tr>
<td>Michigan State*</td>
<td>Yes</td>
<td>4</td>
<td>At least three members of the guidance committee shall be from the Mechanical Engineering Department and at least one member shall be from a different academic department at Michigan State University. The outside member may be from another department within the College of Engineering or from a department outside the College.</td>
</tr>
<tr>
<td>Missouri University of Science and Technology</td>
<td>Yes</td>
<td>4</td>
<td>The advisory committee must include at least one member from outside the candidate’s major department. One member of the committee should also be designated to represent the department most closely associated with any minor field of study elected by the student.</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>Yes</td>
<td>4</td>
<td>One of these faculty members must be from the minor field if the student has declared a minor. If a doctoral graduate committee has no representation outside of the student’s graduate program, a Graduate School Representative is required.</td>
</tr>
<tr>
<td>Northwestern Univ.</td>
<td>No</td>
<td>3</td>
<td>NA</td>
</tr>
<tr>
<td>University</td>
<td>External required?</td>
<td>Number of members</td>
<td>Definition of external</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Penn State</td>
<td>Yes</td>
<td>4</td>
<td>At least one regular member of the doctoral committee must represent a field outside the candidate’s major field of study in order to provide a broader range of disciplinary perspectives and expertise. This committee member is referred to as the “Outside Field Member.” In cases where the candidate is also pursuing a dual-title field of study, the dual-title representative to the committee may serve as the Outside Field Member. Additionally, in order to avoid potential conflicts of interest, the primary appointment of at least one regular member of the doctoral committee must be in an administrative unit that is outside the unit in which the dissertation/performance adviser's primary appointment is held (i.e., the adviser's administrative home; in the case of tenure-line faculty, this is the individual's tenure home). This committee member is referred to as the “Outside Unit Member.” In the case of co-advisers, the Outside Unit Member must be from outside the administrative home(s) of both co-advisers. In some cases, an individual may have a primary appointment outside the administrative home of the student’s dissertation/performance adviser and also represent a field outside the student’s major field of study; in such cases, the same individual may serve as both the Outside Field Member and the Outside Unit Member.</td>
</tr>
<tr>
<td>Purdue</td>
<td>No</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>Stony Brook University</td>
<td>Yes</td>
<td>4</td>
<td>One member external to the program. The outside member should have expertise in the student’s research field so as to be able to understand, criticize, and contribute to the dissertation, as well as to judge the quality and significance of the research.</td>
</tr>
<tr>
<td>UCLA</td>
<td>Yes</td>
<td>4</td>
<td>One of the four doctoral committee members must hold an appointment at UCLA in a department &quot;outside&quot; the student's major department. (Note: Faculty who hold multiple appointments count as &quot;inside&quot; if one of those appointments is in the student's department.)</td>
</tr>
<tr>
<td>Univ. of Illinois (Urbana- Champaign)</td>
<td>No</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>University</td>
<td>External required?</td>
<td>Number of members</td>
<td>Definition of external</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------</td>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>Yes</td>
<td>4</td>
<td>Committees must have a cognate member who is familiar with the standards for doctoral research. The cognate member’s role is to broaden the scholarly representation of the dissertation committee beyond the candidate’s home program and to provide a perspective on the quality of the dissertation from outside the field of specialization of the candidate. Except for the committee of a student in an interdepartmental program, the cognate member must hold at least a 0.50 appointment in a Rackham doctoral program other than the student’s home department/program, and may not hold a sole appointment as research or clinical faculty, instructor, or lecturer. For committees formed after July 1, 2007, the cognate member may not serve as chair or co-chair.</td>
</tr>
<tr>
<td>U. Wisconsin - Madison</td>
<td>Yes</td>
<td>5</td>
<td>At least one of the 5 members must be from outside of the student’s major program or major field (often from the minor field).</td>
</tr>
<tr>
<td>Virginia Tech</td>
<td>No</td>
<td>4</td>
<td>It is appropriate, but not required, that the Advisory Committee includes at least one faculty member from outside the student's major department.</td>
</tr>
</tbody>
</table>

*Committee requirements are set by graduate programs. Data for Mechanical Engineering is used, when available.*
## Appendix 2.
Master’s committee requirements

<table>
<thead>
<tr>
<th>University</th>
<th>External Required?</th>
<th>Number of members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado School of Mines</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Michigan State*</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Missouri University of Science and Technology</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Penn State*</td>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Purdue</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>Stony Brook University*</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>U. Wisconsin - Madison</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>UCLA</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>University of Illinois (Urbana-Champaign)*</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>University of Michigan*</td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Virginia Tech</td>
<td>No</td>
<td>3</td>
</tr>
</tbody>
</table>

*Committee requirements are set by graduate programs. Data for Mechanical Engineering is used, when available.
# Appendix 3.
Data sources.

<table>
<thead>
<tr>
<th>University</th>
<th>Source of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado School of Mines</td>
<td><a href="http://bulletin.mines.edu/graduate/programs/">http://bulletin.mines.edu/graduate/programs/</a></td>
</tr>
<tr>
<td>Michigan State</td>
<td><a href="http://www.egr.msu.edu/me/sites/default/files/content/Grad_Handbook_10_8_2013Current_1.pdf">http://www.egr.msu.edu/me/sites/default/files/content/Grad_Handbook_10_8_2013Current_1.pdf</a></td>
</tr>
<tr>
<td>North Carolina State University</td>
<td><a href="http://www.ncsu.edu/grad/handbook/sections/3.2-advisory-committees.html">http://www.ncsu.edu/grad/handbook/sections/3.2-advisory-committees.html</a></td>
</tr>
<tr>
<td>Northwestern University</td>
<td><a href="http://www.tgs.northwestern.edu/about/policies/phd-degree-requirements.html">http://www.tgs.northwestern.edu/about/policies/phd-degree-requirements.html</a></td>
</tr>
<tr>
<td>Penn State</td>
<td><a href="http://bulletins.psu.edu/graduate/degreerequirements/degreeReq1#doctoralAdvisers">http://bulletins.psu.edu/graduate/degreerequirements/degreeReq1#doctoralAdvisers</a></td>
</tr>
<tr>
<td>U. Wisconsin - Madison</td>
<td><a href="https://grad.wisc.edu/acadpolicy/">https://grad.wisc.edu/acadpolicy/</a></td>
</tr>
<tr>
<td>UCLA</td>
<td><a href="https://grad.ucla.edu/gasaa/etd/committeereg.htm">https://grad.ucla.edu/gasaa/etd/committeereg.htm</a></td>
</tr>
<tr>
<td>University of Illinois (Urbana-Champaign)</td>
<td><a href="http://www.grad.illinois.edu/etd/gradhandbook/chaptervi/section04#DissCommittee">http://www.grad.illinois.edu/etd/gradhandbook/chaptervi/section04#DissCommittee</a></td>
</tr>
<tr>
<td>University of Michigan</td>
<td><a href="http://www.rackham.umich.edu/current-students/policies/academic-policies/section5#553">http://www.rackham.umich.edu/current-students/policies/academic-policies/section5#553</a></td>
</tr>
<tr>
<td>Virginia Tech</td>
<td><a href="http://graduateschool.vt.edu/graduate_catalog/policies.htm?policy=002d14432c654287012c6542e38200d8">http://graduateschool.vt.edu/graduate_catalog/policies.htm?policy=002d14432c654287012c6542e38200d8</a></td>
</tr>
</tbody>
</table>
Proposal to discontinue binding dissertations, theses, or reports

Proposal
Discontinue binding dissertations, theses, and reports through the Library. Offer options to students to bind these documents through off campus providers at their discretion.

Background
Students, faculty, and staff have provided feedback that they would like a simpler process to complete a dissertation, thesis, or report. Binding services create a complicated process at the end that involve a large number of staff across campus.

Current procedure
From a staff perspective, the process involves:

1. Graduate School staff
   a. Reviewing documents for formatting requirements
   b. Obtaining approval from the advisor for publishing options (ETD, embargo, number of bound copies)
   c. Processing inter-account bills when costs are paid by an internal index and/or billing student for binding fees
   d. Sending notice to the Library that volumes are ready for Digital Commons and binding
2. Library staff
   a. Cataloging volumes in Digital Commons
   b. Sending orders to the bindery
   c. Reviewing each document to ensure the order was fulfilled properly
   d. Sending back orders with mistakes to the bindery (this is done with almost every order)
   e. Sending copies to graduate programs
3. Graduate program staff
   a. Distributing bound copies to recipients, including mailing student copies to off campus students (departments pay for mailing copies)
   b. Communicating with students to obtain a mailing address (as needed) for copies

For a student, the process looks like the following:

1. Student obtains approval from their advisor and department chair to submit to the Graduate School via the Approval of a dissertation, thesis, or report form.
2. Student submits final document to the Graduate School.
3. The Graduate School reviews the document for formatting.
4. The Graduate School requests approval from the advisor for the publication options (number of bound copies, embargo, ETD).
5. The student is billed (if applicable) for any publication fees.
6. Student pays publication fees.
7. The document is accepted.
8. The degree is awarded once all degree requirements are met.
**Proposed procedure**

If the binding process was eliminated, the staff process would involve:

1. Graduate School staff
   a. Reviewing documents for formatting requirements
   b. Sending notice to the Library that volumes are ready for Digital Commons
2. Library staff
   a. Cataloging volumes in Digital Commons

For a student, the process would look like the following:

1. Student obtains approval from their advisor and department chair to submit to the Graduate School via the Approval of a dissertation, thesis, or report form. The form would also collect the publication options for the volume (embargo and ETD).
2. Student submits final document to the Graduate School.
3. The Graduate School reviews the document for formatting.
4. The document is accepted.
5. The degree is awarded once all degree requirements are met.

**Notes about the proposed procedure**

- Binding services are offered through a variety of off campus vendors. The Graduate School will provide a list of available vendors and students can choose the option that best suits their needs if personal copies are desired.
- The bound archival copy of the dissertation would need to be eliminated. This is currently the only bound copy required by the Graduate School.
- Programs that require a bound copy for an internal library would also order from an off campus vendor.
- The potential exists for further simplification of formatting requirements, since the page margin requirements for submission to ProQuest are less rigorous than the bindery.
- Fees for optional ProQuest services (Open Access PLUS and copyright filing) and bound copies could be collected directly through ProQuest.
Proposal to reduce the number of required approvals for dissertation, theses, and reports

Proposal
Reduce the approvals needed to complete a dissertation, thesis, or report as shown in the table below.

Background
Students and faculty have provided feedback that they would like fewer paper forms with less required approvals for the dissertation, thesis, and report process. The table below lists the forms involved in this process, a brief description of the purpose of these forms, who currently signs the forms (Current approval), and the proposed changes for signing the forms (Proposed Approval)

After investigating the available options, we will present options for collecting the approvals in an electronic method. Standardizing and reducing approvals across programs will allow for an easier transition to electronic approvals and less maintenance on these items.

<table>
<thead>
<tr>
<th>Form name and purpose</th>
<th>Current Approval</th>
<th>Proposed Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Advisor(s)</td>
<td>Committee</td>
</tr>
<tr>
<td>Pre-defense form</td>
<td>All</td>
<td>Some</td>
</tr>
<tr>
<td>• Sets the time, date and location of defense</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Collects the title of the document</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Appoints the advisor and committee if not appointed previously</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Report on final oral examination</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>• Reports the pass/fail results for defenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approval of a dissertation, thesis, or report</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>• Verifies that the required technical changes to a document are complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree completion form</td>
<td>All (or pgm director)</td>
<td></td>
</tr>
<tr>
<td>• Collects embargo and ETD options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Orders print copies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GFC Review of Formatting and Document Requirements

Proposal

Review the requirements for formatting dissertations, theses, and reports and the document requirements. Recommend any changes to reduce or simplify the requirements.

Background

Students, faculty, and staff have provided feedback that they would like a simpler process to format a dissertation, thesis, or report. There are two basic sets of requirements for these documents:

1. Sections required (see Table 1)
2. Formatting required (see Table 2)

The requirements vary between the documents. Standardization of the requirements across the types of documents could simplify the process for students and the staff that assist them. Some sections required also have formatting requirements for their style.

Table 1. Sections required in a dissertation, thesis, or report along with formatting requirements for each. Items that are required are marked with an “×”. Optional sections, such as a list of tables, are not listed.

<table>
<thead>
<tr>
<th>Section</th>
<th>Required for</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Description of formatting requirements</td>
<td>Dissertations or Theses Reports</td>
</tr>
<tr>
<td>Title page</td>
<td>×</td>
</tr>
<tr>
<td>• Must match format of template</td>
<td>×</td>
</tr>
<tr>
<td>Approval page</td>
<td>×</td>
</tr>
<tr>
<td>• Must match format of template</td>
<td>×</td>
</tr>
<tr>
<td>Table of contents</td>
<td>×</td>
</tr>
<tr>
<td>• Main sections listed (abstract, chapters)</td>
<td></td>
</tr>
<tr>
<td>• Numbers right aligned</td>
<td></td>
</tr>
<tr>
<td>• Numbers preceded by periods</td>
<td></td>
</tr>
<tr>
<td>Preface (when collaborative work present)</td>
<td>×</td>
</tr>
<tr>
<td>• Clearly describe the contribution of authors to papers or collaborative works</td>
<td>×</td>
</tr>
<tr>
<td>Abstract</td>
<td>×</td>
</tr>
<tr>
<td>• Length must not exceed two pages (double spaced) or one page (single spaced)</td>
<td>×</td>
</tr>
<tr>
<td>Main body</td>
<td>×</td>
</tr>
<tr>
<td>• Previously published work must be cited</td>
<td></td>
</tr>
<tr>
<td>Reference list/bibliography</td>
<td>×</td>
</tr>
<tr>
<td>• Located at end of chapter or at end of document</td>
<td></td>
</tr>
<tr>
<td>Required sections (noted with the × in columns) must be in the order as listed</td>
<td>×</td>
</tr>
</tbody>
</table>


Table 2. Formatting requirements for a dissertation, thesis, or report. Requirements for reports depend on whether the report is being prepared for binding by the Library. Required items for each type of document are marked with an “×”. Recommended formatting is not described.

<table>
<thead>
<tr>
<th>Formatting item</th>
<th>Dissertations or Theses</th>
<th>Reports (without binding)</th>
<th>Reports (with binding)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description of formatting requirements</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typefaces</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• All fonts embedded</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• Type 1, Open Type or True Type fonts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Margins</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• Binding edge 1.5-1.6 inches</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• Non-binding edge 1.0 – 1.25 inches</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>Paper size</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• 8.5 × 11 inches</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td>• Oversized pages (11 × 17 inches)</td>
<td>×</td>
<td>×</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page numbers</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Title and approval pages not numbered, but included in count</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All numbers must be unique and sequential</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All numbers must be in the same location (top outer corner or bottom middle)</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All numbers must be in the same location for landscape pages when rotated to the binding orientation (portrait)</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figures</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• All text must be legible</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Images must be clear, readable, and reproducible</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Must have a caption with a unique and sequential number</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Caption must be located below figures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tables</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Must have a caption with a unique and sequential number</td>
<td>×</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Must be located above table</td>
<td>×</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary of Changes


Since the previous Guide was developed, there have been a number of changes at the University that require updating the Guide. These changes include:

- Creating the Degree completion timeline web pages [http://www.mtu.edu/gradschool/administration/academics/timeline/](http://www.mtu.edu/gradschool/administration/academics/timeline/)
- Approving new submission deadlines beginning in Fall 2015 [http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/](http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/)
- Launching MyMichiganTech
- Simplifying the process to approve the Degree completion form

Student, faculty, and staff feedback also has requested a shorter document that makes it easier to find the required formatting. The Guide was revised as follows to reduce the page length by 17 pages:

- Section 1 was updated to reflect the changes in the 2015 document compared to the 2012 document.
- Section 2 was replaced with new text pointing readers to the web for current information on formatting, completing a degree, and writing assistance. By moving to the web, it will be easier to maintain a single source for submission instructions and will allow us to update procedure without revising the Guide.
- Clarifying text was added to Section 5.3.3 to indicate that documentation to reprint materials is needed for all items not created by the student or items that have been previously published. This does not change our current practice.
- Sections detailing submission of documents and deadlines have been deleted (6.2, 6.3.1, 6.3.1.2, 6.3.2, 6.4, 6.5). The students are pointed to current web resources in Section 2.
- Clarifying text has been added to Appendix A to indicate that names are typed in italic text and that the line “Department Chair/School Dean” should be edited to delete the title that doesn’t apply to the named individual.
- Appendix B, detailing suggested reference formats, has been deleted. The formatting of references is at the discretion of the committee.
GUIDE TO PREPARING A DISSERTATION, THESIS, OR REPORT
AT MICHIGAN TECHNOLOGICAL UNIVERSITY

By:
The Graduate School

MICHIGAN TECHNOLOGICAL UNIVERSITY

2015
Presented to GFC 3-3-15
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1. Overview

This edition of the *Guide to Preparing a Dissertation, Thesis or Report at Michigan Technological University* (referred to as the *Guide* throughout the remainder of this document) is revised from the 2012 version. Some important changes are:

- The sections pertaining to submitting a document have been removed and links to finding the relevant information and instructions on the web have been provided in Section 2.1 on page 2.

- For deadlines to complete a degree, students are referred to the Graduate School’s web site for dates. See: http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/

- A summary of web resources has been added so that students can more easily find resources provided by the Graduate School. See Section 2.2 on page 2.
2. Graduate School Online Resources

2.1. Degree completion and deadlines

Complete instructions on degree completion are found online on the Graduate School’s web page. Instructions are online for:


Deadlines for upcoming semesters for scheduling defenses, holding defenses, and submitting documents are found online:

[http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/](http://www.mtu.edu/gradschool/administration/academics/forms-deadlines/)

Students can log into [www.MyMichiganTech.mtu.edu](http://www.MyMichiganTech.mtu.edu) for a detailed and personalized summary of their degree progress to date. Resources available on the “Current students” tab include the:

- **Student checklist**: a personalized list of items that are needed now (marked with an open checkbox) or that are overdue (marked with an exclamation mark).
- **Degree completion timeline**: a personalized list of every item needed to complete each degree along with which items are complete or incomplete.
- **Dissertation, Thesis, or Report status**: a summary of a student’s status of these documents

2.2. Formatting Resources

The Graduate School has a number of formatting resources available to assist students with document preparation, including templates and step-by-step tutorials. These resources are summarized online:
• Dissertations and Theses:
  http://www.mtu.edu/gradschool/administration/academics/thesis-dissertation/formatting/

• Reports:
  http://www.mtu.edu/gradschool/administration/academics/report/formatting/

Resources for using EndNote, bibliographic management software, is also found online: http://www.mtu.edu/gradschool/administration/academics/thesis-dissertation/formatting/endnote/

2.3. Writing Resources

2.3.1. Turnitin
Students are encouraged to use Turnitin to evaluate their documents for plagiarism. Information about how to access Turnitin is found on the formatting pages referenced in Section 2.2 above. For more information about academic and research integrity, refer to Section 5 on page 16.

2.3.2. Graduate School Communications Assistance Program
One-on-one assistance with writing and formatting is available through the Graduate School Communications Assistance Program (GS-CAP). There is a fee for this service. More information is available online at:

http://www.mtu.edu/graschool/gscap

2.3.3. Michigan Tech Multiliteracies Center
The Michigan Tech Multiliteracies Center (MTMC) is also available to assist students with writing as well as preparing oral, poster, or other presentations. Please see their website for more information about their services:

http://www.mtu.edu/humanities/mtmc/what-we-offer/
3. Formatting guidelines

The formatting required for dissertations and theses ensures acceptance of documents by ProQuest/UMI. Graduate School formatting requirements are underlined in this section.

Students completing a report are not required to adhere to the requirements in this section unless a bound copy of the report is desired or required by the student, advisor, or graduate program. In order to print a bound copy, the formatting requirements in Sections 3.1, 3.2, and 3.3 must be followed. If double-sided printing or oversized pages or media are desired, the formatting requirements in Sections 3.5 and 3.9 also must be followed.

3.1. Typefaces

The typefaces and sizes listed in Table 3.1 are recommended for the main body of the text of a dissertation or thesis. Other typefaces are acceptable as long as they are legible. Type 1, Open Type, or True Type fonts are required for the text of a document. All fonts must be embedded in the document.

Table 3.1.
Examples of some of the typefaces recommended for use in the main body of dissertations or theses. Helvetica, Times, or Geneva fonts are also recommended for Macintosh users.

<table>
<thead>
<tr>
<th>Typeface (Shown at the minimum size)</th>
<th>Minimum Size for Body Text</th>
<th>Web Font</th>
<th>Minimum Size for Headings</th>
<th>Maximum Size for Headings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arial</td>
<td>10 pt</td>
<td>Yes</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
<tr>
<td>Century</td>
<td>11 pt</td>
<td>No</td>
<td>13 pt</td>
<td>25 pt</td>
</tr>
<tr>
<td>Garamond</td>
<td>12 pt</td>
<td>No</td>
<td>14 pt</td>
<td>26 pt</td>
</tr>
<tr>
<td>Georgia</td>
<td>11 pt</td>
<td>Yes</td>
<td>13 pt</td>
<td>25 pt</td>
</tr>
<tr>
<td>Lucida Bright</td>
<td>10 pt</td>
<td>No</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
<tr>
<td>Microsoft Sans Serif</td>
<td>10 pt</td>
<td>No</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
<tr>
<td>Tahoma</td>
<td>10 pt</td>
<td>No</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
<tr>
<td>Times New Roman</td>
<td>12 pt</td>
<td>Yes</td>
<td>14 pt</td>
<td>26 pt</td>
</tr>
<tr>
<td>Trebuchet MS</td>
<td>10 pt</td>
<td>Yes</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
<tr>
<td>Verdana</td>
<td>10 pt</td>
<td>Yes</td>
<td>12 pt</td>
<td>24 pt</td>
</tr>
</tbody>
</table>
3.2. Margins

The binding edge margin of all pages must be between 1.5 and 1.6 inches. The margins of the remaining sides must be between 1.0 and 1.25 inches. The required margins apply to all components of the document, including page numbers, footnotes, and appendices. See Figure 3.1 for a sample page that includes a page number and footnotes.

3.3. Paper size

The main body of a dissertation, thesis, or report must be formatted to print on 8.5 × 11 inch paper. Oversize maps or tables are allowed (see Section 3.9).

3.4. Page numbers

The title page and approval page are included in the page count; however, a page number is not placed on these pages. This means that the table of contents will normally be numbered page iii (or 3) in a single-sided document. All other non-blank pages are numbered and have numbers placed on them. Blank pages are included in the page count but do not have page numbers printed on them.

Each page in a document must be assigned a unique and sequential number. In a traditional document, page numbers on pages preceding the main body of the document are printed using lower case Roman numerals (e.g., i, ii, iii, etc.). Arabic numerals (e.g., 1, 2, 3, etc.) are used for page numbers in the main body of the document and any subsequent materials (e.g., a reference list or appendix). It is allowable to use Arabic numerals for page numbers throughout the document.

Page numbers may either be placed at the center of the bottom of the page or in the upper corner of the page on the side opposite the binding. Page numbers must fall within the printable area of the page (see Figure 3.1). Page numbers must appear in the same place throughout the document, even if the orientation of pages changes. Some software packages will automatically place page numbers within a header or footer that may or may not account for the size of the margins in an intuitive way. It is important to confirm that all page numbers fall within the document’s printable area.
3.5. Double-sided printing

Double-sided documents are allowable and may cost less to print and bind. Double-sided documents must adhere to the following requirements that relate to margins and page numbering. Also see Section 3.9 regarding the use of oversize pages or media in documents that are prepared for double-side printing.

- **Margins:** The binding edge margin must be 1.5 to 1.6 inches on all pages. For portrait pages in a double-sided document, the binding edge will be on the left hand side for odd pages, and on the right hand side for even pages. For landscape pages, the binding edge will be on the top for odd pages, and at the bottom for even pages.

- **Page numbers:** Page numbers placed at the bottom center of the page require no special treatment. If numbers are placed in the upper outside corner, they will appear in the upper right corner on odd pages, and the upper left corner on even pages.

- **Blank pages:** The title page, approval page, and dedication page (if present) are always printed as one-sided sheets. When a document is prepared for double-sided printing, the back of each of these sheets must be left blank. One way to accomplish this is to insert blank “pages” that will correspond to the reverse side of each of these one-sided sheets. These blank pages do not have numbers printed on them, but they are included in the page count. In a double-sided document, the table of contents is the first page with a number on it; it will be page v (or 5) if no dedication is present, and page vii (or 7) if a dedication is present. Blank “pages” may also be inserted as desired to ensure that major sections (such as the start of a chapter) begin on odd-numbered pages. Blank “pages” are only allowed to occur on even-numbered sides of sheets of paper. Two or more blank “pages” in a row are not allowed.

3.6. Line spacing

Single-spacing, one and one-half line spacing, and double-spacing are allowed. Blank lines may be inserted before and/or after headings in the body of a document. If the first lines of paragraphs are not indented, blank lines should be inserted between each paragraph.

3.7. Figures

Figures should be formatted in a consistent way and the same type(s) and size(s) of fonts should be used in all figures if possible. Sans serif fonts such as Arial or Tahoma are generally preferred for figures. In all cases, any text used in a figure must be legible.
All images must be clear, readable, and reproducible. Images that look good on a computer screen may not be of sufficient resolution to print well. A minimum resolution of 300 ppi is typically recommended for printed materials. Screenshots have a maximum resolution of 72 dpi, and should be used only when absolutely necessary.

Each figure must have a caption that identifies the figure number. Each figure must be assigned a unique, sequential number. In a traditional dissertation or thesis, figures are numbered using the chapter number followed by a period and the figure number (e.g., Figure 3.1). Figure captions are located below each figure. The first sentence of a caption must be an overview of the figure. Subsequent sentences must include, as necessary, detailed information about the figure. Captions should be descriptive enough that the figure can be understood by someone who has not read the body text. If a figure contains multiple parts, each part is generally identified with a letter that is placed within the figure. The caption for a figure with multiple parts typically contains a description of each part, which begins with the part’s letter (usually italicized), followed by a comma.

### 3.8. Tables

Tables should be formatted in a consistent way. The size and font used for text in a table will generally be the same as that used in the main body of a document. Bold text may be used to denote headings in a table. A consistent style of borders should be used for all tables in the document if possible.

Each table must have a caption that identifies the table number. Each table must be assigned a unique, sequential number. In a traditional thesis or dissertation, tables are numbered using the chapter number, followed by a period and the table number (e.g., Table 3.1). Table captions are located above each table. The first sentence of a caption must be a general description of the table. Captions should be brief. Discussion of the significance of the data presented in a table should be included in the body of the document.

### 3.9. Including oversize pages or media

Note that there is an extra charge for documents that require oversize materials or pockets. Current pricing information is available from the Graduate School or on the Degree completion form.

Oversize pages can be incorporated into the document in several ways.

- Pages of up to 11 × 17 inches can be included within the body of the document so that the pages fold out from the binding edge.
For single-sided documents with one or more 11 x 17 inch page(s): Two electronic copies of the dissertation, thesis, or report must be submitted to the Graduate School. One copy must contain the oversize page(s) in the appropriate location. The second copy must include one blank 8.5 × 11 inch page inserted at each location where an oversize page will go in the final printed version. If there are multiple oversize pages in the document, one blank page must be inserted at each site. Each blank page must have text on it that refers the bindery to a .pdf file that contains the oversize page. Each oversize page must be submitted as a separate .pdf file. The bindery will print and bind these pages as directed.

For double-sided documents with one or more 11 x 17 inch page(s): Two electronic copies of the dissertation, thesis, or report must be submitted to the Graduate School. One copy must contain the oversize page(s) in the appropriate location. The second copy must include two blank 8.5 × 11 inch pages inserted at each location where an oversize page will go in the final printed version. If there are multiple oversize pages in the document, two blank pages must be inserted at each site. Each pair of blank pages must have text on it that refers the bindery to a .pdf file that contains the oversize page. Each oversize page must be submitted as a separate .pdf file. The bindery will print and bind these pages as directed. The oversize pages themselves will be printed on one side only.

Larger materials can be folded and placed in a pocket constructed by the bindery. These oversize materials can be printed by the student or the bindery. If printed by the student, a number of copies equal to the number of bound copies to be ordered needs to be provided to the Graduate School before the Graduate School will submit the order for bound copies.

Media, such as CDs, can also be included in a pocket. An appropriate number of copies of the media must be provided to the Graduate School before the Graduate School will submit the order for bound copies.

3.10. Use of color
Color should be used only when necessary. Color is more expensive to print than black and white, it does not reproduce equally well on different printers or computer monitors, and may be difficult for visually impaired readers to interpret. Some word processors use RGB color to present black text in a PDF file. See the Graduate School web site [http://gradschool.mtu.edu/td/formatting] for guidance on how to present these pages in black and white to minimize printing costs.
4. Sections and order

Dissertations and theses should contain the sections described in this section. Some sections are required (as noted) and some are optional. When optional sections are included they should appear in the order recommended in this section of the Guide.

4.1. Title page (required for Dissertations, Theses, and Reports)

Sample title pages are shown in Appendix A. The typeface, style and size of text should be the same as that used for the body text of the document. A title page must contain the following elements in the following order:

- The title – shown in all capital letters. For example, “MY DISSERTATION”, or “MY THESIS”, or “MY REPORT”, where My Dissertation (or My Thesis, or My Report) is the exact title of the document.

- The author’s full name – shown in a mix of upper and lower case letters. For example, “Jane E. Doe”, where Jane E. Doe is the name of the author.

- Type of document – shown in all capital letters. This will be one of the following: “A DISSERTATION”, “A THESIS”, or “A REPORT”.

- The following statement – written exactly as shown here but without the quotations: “Submitted in partial fulfillment of the requirements for the degree of”.

- Type of degree – shown in all capital letters. For example, “DOCTOR OF PHILOSOPHY”, or “MASTER OF SCIENCE”.

- The name of the degree program – shown using upper and lower case letters. The word “In” should precede the name of the degree program. Note that the name of the degree program will generally not be the same as the name of a department or school. See [http://www.mtu.edu/gradschool/programs/degrees/] for a current list of all degree programs.

- The University name – shown in all capital letters, as shown here but written without the quotation marks: “MICHIGAN TECHNOLOGICAL UNIVERSITY”.

- The year of completion of the final document. Note that this may not be the same year that the dissertation, thesis, or report was defended.
• A copyright notice – printed using a mix of upper and lower case letters and with the format: “©Year Owner’s Name”. For example: “©2012 Jane E. Doe” “Copyright” or “Copr.” may be used instead of “©”. Note that copyrights may be registered, for a fee, when documents are submitted to ProQuest/UMI.

4.2. Approval page (required for Dissertations, Theses, and Reports)

Sample approval pages are shown in Appendix A. The style and size of font should be the same as that used for the body text of the document. An undated approval page must be included in the electronic document submitted to the Graduate School prior to the defense.

The following elements must be included on an approval page in the following order:

• For a dissertation, the text: “This dissertation has been approved in partial fulfillment of the requirements for the Degree of DOCTOR OF PHILOSOPHY (note that the name of the degree is written in all capital letters) in Degree Program (where the appropriate name is entered and is written in a mix of upper and lower case letters and is not italicized).” Note that the name of the degree program will generally not be the same as the name of a department or school. See [http://www.mtu.edu/gradschool/programs/degrees/] for a current list of all degree programs.

• For a thesis, the text: “This thesis has been approved in partial fulfillment of the requirements for the Degree of DEGREE TYPE (where the appropriate name of the degree, e.g., Master of Science, is inserted and is written in all capital letters) in Degree Program” (where the appropriate name is entered and is written in a mix of upper and lower case letters and is not italicized). Note that the name of the degree program will generally not be the same as the name of a department or school. See [http://www.mtu.edu/gradschool/programs/degrees/] for a current list of all degree programs.

• For a report, the text: “This report has been approved in partial fulfillment of the requirements for the Degree of DEGREE TYPE (where the appropriate name of the degree, e.g., Master of Science, is inserted and is written in all capital letters) in Degree Program” (where the appropriate name is entered and is written in a mix of upper and lower case letters and is not italicized). Note that the name of the degree program will generally not be the same as the name of a department or school. See [http://www.mtu.edu/gradschool/programs/degrees/] for a current list of all degree programs.
• Name of the student’s administrative home department or school written in upper and lower case letters. Note that the name of the department or school will generally not be the same as the name of a degree program.

• Names of members of the Graduate Faculty who served as advisor (or co-advisors, if applicable) and as committee members and approved the dissertation, thesis, or report.

  o The top line is for the name of the advisor. When there is a single advisor, this line should be preceded by the words: “Dissertation Advisor:” (or “Thesis Advisor:” or “Report Advisor:” as appropriate). If there are two co-advisors, the name of the first co-advisor is given on the first line and the name of the second co-advisor is given on the second line. When there are two co-advisors, the name of each co-advisor should be preceded with the words “Dissertation Co-Advisor:” (or “Thesis Co-Advisor:” or “Report Co-Advisor:”).

  o List each committee member on a separate line. The names should be preceded by the words: “Committee Member:”. All of the Committee Members must be listed.

• The second to the last line is reserved for the title and name of the department chair or school dean of the unit which served as the student’s academic home at the time they completed the degree. The individual’s title (e.g., “Department Chair:”, or “School Dean:”) should precede the name of the individual.

4.3. Dedication (optional)

Dissertations, theses, or reports may be dedicated to an individual, several people, or a group. The word “dedication” is usually not needed on this page. Customarily, the dedication is short, such as, “To my mother.”

4.4. Table of contents (required for Dissertations and Theses)

Each chapter or section heading, with the exception of the table of contents, must be listed in the table of contents. Additional subheadings may also be included. The table of contents must be formatted so that each level of heading is clearly distinguished and page numbers are easily found. Page numbers must align flush right and must be preceded by a leader of periods. One way to clearly identify section headings is to increase the indentation of successively lower levels of subheadings. Formatting for a Table of Contents is illustrated in the table of contents for this Guide.

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4.5. **List of figures (optional)**

If a list of figures is included, it should consist of a table that lists the figure number, the first line of the figure caption, and the page number on which the figure occurs. The formatting of the list of figures is similar to that of a table of contents, except that there are no subheadings.

4.6. **List of tables (optional)**

If a list of tables is included, it should consist of a table that lists the table number, the first line of the table caption, and the page number on which the table occurs. The formatting of the list of tables is similar to that of a list of figures.

4.7. **Preface (required in certain instances for Dissertations and Theses)**

A preface is required in two situations:

1. A document includes previously published materials, or
2. A document includes materials developed collaboratively.

A single preface at the beginning of the dissertation or thesis is required if published material, such as a journal article, is republished in its entirety as a chapter in the document. For the purposes of this *Guide*, published materials include those already in print, accepted for publication, in review, or planned for submission in the near future.

A preface is also required if part of the dissertation or thesis was prepared collaboratively. For example, if a chapter of a dissertation was prepared jointly by the author of the dissertation and another student (who worked together on the research project and in the writing of the text of the chapter), the preface must clearly describe the contributions made by each individual.

4.8. **Acknowledgements (optional)**

This page is used to thank individuals, groups, or organizations for their support.

4.9. **Definitions (optional)**

If a list of definitions is included, it should be alphabetized. A definition list may include a key to foreign terms and phrases used in the document.
4.10. List of abbreviations (optional)
If a list of abbreviations is included, it should be alphabetized.

4.11. Abstract (required for Dissertations, Theses, and Reports)
An abstract is a concise summary of the document. It is not an introduction. It should clearly identify the topic and major findings of the research. The abstract in the document will be used for the ProQuest/UMI index and to advertise the oral defense on campus. Publication with ProQuest/UMI is required for dissertations and theses. ProQuest/UMI does not accept reports at this time. Dissertation abstracts should be less than 350 words and thesis and report abstracts should be less than 150 words in order to ensure that they are not truncated by automated search engines. Under no circumstances may an abstract be longer than two pages (double-spaced) or one page (single-spaced).

4.12. Main body (required for Dissertations and Theses)
If the student’s program has requirements for the content of a dissertation or thesis, those requirements should be used in place of the recommendations in this section.

A traditional document presents the research in the form of a single document (similar to a book). Dissertations and theses can also be presented as a collection of articles, some of which may have been published previously. Both formats are acceptable.

If material included in a dissertation, thesis, or report has been previously published, that prior publication must be cited in the dissertation, thesis, or report. Reproduction of any section of an article that is larger than allowed for by “fair use” policies requires appropriate copyright permission.

4.12.1. Common sections in a traditional document

4.12.1.1. Introduction
The introduction lays the foundation for the current research and places the work in context within the disciplinary field. It should be an analysis of the existing body of research that has a bearing on the current project. It should both review the literature and provide a critical analysis of it. It should outline some of the limitations of prior research and describe areas that are in need of further exploration. This section provides context for the goals of the current research project.

4.12.1.2. Goals and hypotheses
Following the introduction is usually a section outlining the goals or purpose of the current work and the hypotheses being tested or problems being addressed.
4.12.1.3. **Methods**

The methods section describes all of the methods used in the study. Methods may include activities such as modeling, conducting simulations, performing field work or experiments, implementing surveys, among many other techniques. If the description of one or more of the methods is lengthy, it is appropriate to include an overview in this section of the document and to include more details in an appendix.

4.12.1.4. **Results (data and observations)**

The results section presents all of the data obtained using the methods described in the methods section. A common mistake is to include a description of methods within the results section. This should be avoided in nearly all circumstances. If the data are extensive, a summary may be included in the main body of the document with additional information located in an appendix. Appendices may also be used to present data in different formats.

4.12.1.5. **Discussion**

In the discussion section, results are interpreted and are put in context with the current state of research in the discipline. The discussion section should clearly explain the meaning of the results and their implications, in particular as they relate to the hypothesis(es) tested. It is common to use citations to refer to the primary disciplinary literature in order to compare and contrast the results of the current project with results obtained and reported by other researchers. Sources of discrepancies, limitations, or errors in the current work and their implications should also be presented in the discussion section. New data should not be presented in this section.

4.12.1.6. **Future work**

This section highlights additional work that could be done at a later date to build upon the current research.

4.12.1.7. **Conclusions**

Conclusions summarize the main findings of the current research. This section reiterates the main findings and limitations of the research and may highlight some of the areas for future work.

4.12.2. **Collection of articles**

In this type of document each chapter is typically developed as a stand-alone section. If any chapter contains published material (such as a journal article) or was prepared collaboratively, a preface section should be included in the dissertation or thesis to clarify the status and origin of the material. For the purposes of this Guide, published
materials include those already in print, accepted for publication, in review, or planned for submission in the near future.

When the document consists of a collection of articles, an introductory chapter must be included that describes the connection between all other chapters. A dissertation or thesis is not simply a collection of articles; it is the presentation, synthesis, and analysis of an entire research project which was conducted over a period of time. It is most helpful when the introductory chapter states the goals and hypotheses for the overall project and describes how each chapter relates to the overall goal.

Formatting of published items included in a thesis or dissertation must either:

- Conform to the guidelines to authors of the publishing organization, or
- Be consistent with the rest of the thesis or dissertation.

Photocopies or PDF versions of previously published papers will not be accepted.

A footnote must be placed on the first page of a chapter containing published material with the following information:

- “The material contained in this chapter was previously published in OR has been accepted for publication in OR has been submitted to the Title of Source of Publication.”

4.13. Reference List/Bibliography (required for Dissertations and Theses)

A reference list or bibliography presents all of the sources cited in the document. It may also include works consulted. The style used in the list of references should be consistent with the style used in a well-respected journal in the student’s discipline. A single reference list for the entire document may be included or separate reference lists may be included at the end of each chapter.

4.14. Appendices (optional)

Appendices are used to place lengthy and detailed material that supports the main body of work. Appendices should be formatted in the same way as the body of the dissertation, thesis, or report.
5. Academic integrity and responsible conduct for research

Dissertations, theses, and reports are expected to be completed with the highest level of integrity and must adhere to all University policies and the accepted standards of practice in the relevant disciplinary field.

5.1. Research misconduct

Michigan Tech addresses academic integrity and misconduct in research, scholarly, and creative endeavors (hereafter, “misconduct”) in separate policies and procedures. The integrity of academic assignments is addressed by the Academic Integrity Policy (Senate Proposal 8-06, [http://www.sas.it.mtu.edu/usenate/propose/06/8-06.htm]), while the integrity of research is addressed by the Misconduct in Research, Scholarly, and Creative Endeavors Policy (Senate Proposal 4-08, [http://www.sas.it.mtu.edu/usenate/propose/08/04-08.htm]). A dissertation, thesis, or report is considered research, and allegations of misconduct are handled according to the misconduct procedures: [http://www.admin.mtu.edu/research/vpr/documents/Misconduct_Procedures.pdf].

Misconduct includes, but is not limited to, fabrication, falsification, or plagiarism.

- Fabrication is making up data or results and recording or reporting them.

- Falsification is manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented.

- Plagiarism is the appropriation of another person’s ideas, processes, results, or words without giving appropriate credit to the originator. Policies related to plagiarism also cover instances of self-plagiarism.

Misconduct does not include honest errors or differences in opinion.

5.2. Human and animal subjects and recombinant DNA

All research projects that involve human subjects, animal subjects, or recombinant DNA must be reviewed by the Office of Research Integrity and Compliance. Projects that are approved will receive an approval number from the Office of Research Integrity and Compliance that can be referred to in a dissertation, thesis, or report as evidence that approval was sought and granted.
5.3. Using copyrighted materials

Materials obtained from another source may be covered by a copyright. This section provides information pertaining to the use of copyrighted materials.

5.3.1. Determining if permission is needed

All material reused or obtained from another source must be properly cited. This includes previously published material that was originally created by the author of the dissertation, thesis, or report being submitted to Michigan Tech’s Graduate School.

Permission is needed to republish any material, including that created by the author of the dissertation, thesis, or report being submitted to Michigan Tech’s Graduate School, with the following exceptions:

- Material in the public domain. This includes material created by employees of the federal government. This may also include some materials produced in other countries or by other governments.

- Material for which the copyright has expired.

- Material that is covered under the “fair use” clause of copyright law, which allows for the reuse of some materials without permission.

- Text or figures substantially altered from their original source.

A full discussion of copyright law is beyond the scope of this Guide. The Graduate School maintains a web site that contains links to helpful websites and resources to assist students in obtaining permissions: [http://www.gradschool.mtu.edu/td/copyright]. ProQuest maintains a site entitled “Copyright Law & Graduate Research” that provides information about copyrights in general, what items require permission, and how to obtain permission: [http://www.proquest.com/en-US/products/dissertations/copyright/]. Stanford University also maintains a site that that describes copyright and fair use in academia in addition to addressing the use of copyrighted materials in the classroom: [http://fairuse.stanford.edu/Copyright_and_Fair_Use_Overview/].

5.3.2. Obtaining permission to use copyrighted materials

If permission is required to use previously published materials, it must be given in writing by the holder of the copyright (typically a publisher). Obtaining permission to use previously published material can take a great deal of time. Sample permission letters are available from ProQuest: [http://www.proquest.com/en-US/products/dissertations/copyright/].
If permission is not granted, the previously published material must not be used in its published form. In many cases text, figures, or tables can be substantially modified so that they can be used as long as they are properly cited.

5.3.3. Documenting permission to use copyrighted materials

In cases where copyrighted material is used in a dissertation, thesis, or report, it is expected that permission to use the material will be clearly documented. Many publishers explicitly describe the way that their permission to allow re-use of copyrighted material should be documented. Two ways this is typically done include the following.

- Include an acknowledgement of the permission granted by the holder of the copyright in the acknowledgement section of the dissertation, thesis, or report.
- Include a reference to the permission either in the text of the document, as a footnote, or in the caption of a figure or table.

In addition, students must submit documentation to the Graduate School that they have permission to use copyrighted materials in a dissertation or thesis or documentation that materials are exempt from copyright restrictions. This is required because ProQuest/UMI expects Michigan Tech to ensure that written permission to use copyrighted material has been obtained whenever necessary, and the Graduate School is not automatically aware of what materials are exempt from copyright restrictions. Evidence of permission to use material created by others or previously published can be documented in two ways.

1. It can be included in an appendix to the dissertation or thesis. This is the preferred method because these materials will always be readily available to the author of the document in case they need access to the written evidence at some point in the future after they have completed their degree.
2. It can be submitted to the Graduate School as a separate file. The file should be named in some logical way so that it can be easily located by staff members.

With either method, label each piece of evidence with the corresponding figure number, table number, or chapter so that the reader can easily match the evidence to the corresponding material in the dissertation or thesis.

5.4. Originality Certification

The Publishing agreement includes an originality statement that students must sign to certify they are submitting an original document.

Plagiarism-detection software (e.g., turnitin.com) can be used to assist in ensuring that a document is free of plagiarism. See [http://gradschool.mtu.edu/td/formatting] for links and instructions about accessing the plagiarism-detection software.
Several important facts should be kept in mind when using plagiarism-detection software.

- Plagiarism-detection software compares the text in a dissertation, thesis, or report to other sources that are available from the internet or from materials archived by the software provider.

- The software will alert the user to the presence of matching segments of text, even if the matching segment consists of a commonly used phrase that does not constitute plagiarized material.

- The software will not detect paraphrased material that is not cited or is improperly cited.
6. Electronic Document preparation and publication

6.1. Electronic document preparation

Dissertations, theses, and reports will be available electronically in the Library. Dissertations and theses will also be electronically available via the ProQuest Dissertations and Theses @ Michigan Technological University database (database access requires Michigan Tech ISO ID and password if off campus). ProQuest does not accept report submissions at this time.

Dissertations, theses, and reports must be submitted to the Graduate School as a single .pdf file with all fonts embedded. Compression, password protection, or digital signatures are not allowed. Supplemental files that do not lend themselves to inclusion in a written document (such as music or video) may also be included but must be linked to text or described within the .pdf document. Supplemental files must conform to ProQuest/UMI specifications as detailed in their publishing agreement. See the “Support/Training” area of their web site: [http://dissertations.umi.com/michigantech] for a complete listing of allowable file types.

The single .pdf file can be bookmarked and hyperlinked to aid navigation. It is recommended that, at a minimum, the table of contents contains hyperlinks to each section, and each item in the table of contents and the table of contents itself are listed as a bookmark. Figures and tables may be linked to the table of contents or to text within the main body of the document. See the Graduate School website [http://gradschool.mtu.edu/td/formatting] for information about using common types of software to prepare a dissertation, thesis, or report.

To avoid possible cross-platform problems and difficulties in future archival processes, the names of all files must follow standard naming conventions. File types must be indicated at the end of a document’s name using a period followed by letters. Document names must consist of English letters and Arabic numbers only; no extra punctuation or diacritical marks or spaces are allowed. For example: “JJSthes.pdf”, not “John Smith Thesis.pdf”; “Fig04.jpg”, not “Figure 4.jpg”. File names are limited to 15 characters (not including the file extension) so that URLs do not become overly long.

When including supplemental files, it is recommended that files are named so that a computer will sort them in some logical manner. For example, each file name can begin with a 1- or 2-digit number to ensure they will sort logically: “01Smith.pdf”, “02Music.wav”, “03Movie.mov”, etc.

6.2. Publication

All dissertations, theses, and reports are normally published and available as soon as the Library processes the submission. Students can request that their document be
embargoed for a finite period of time on the *Publishing agreement* form. This prevents it from being made available for a certain period of time. Embargoes are typically requested when students wish to publish their document as a book after graduation or when they have included proprietary material in their document. Students may also request that access to their electronic document be restricted to the Michigan Tech community when they submit the *Publishing agreement*.

Requests for embargoes must include a justification for the request and must be approved by the advisor or graduate program director. Graduate School staff will review requests for one year or less. The dean of the Graduate School will review requests for longer than one year. Approval for an embargo of more than one year is not automatic and is rarely granted.

Once an embargo or restriction is in place, students may request to have their embargo or restriction extended by submitting a request in writing to the Graduate School at least 2 weeks before the embargo or restriction expires.

All embargo requests will incur a 25% surcharge on the binding costs. Binding of an embargoed document does not occur until the embargo has expired.
7. References


Appendix A

Sample title and approval pages

See Section 4.1 for a description of the title page and Section 4.2 for a description of the approval page. Examples are shown on the pages that follow.

The samples included for a thesis can be modified for use with a report by substituting the word “REPORT” for the word “THESIS”.

Sample pages in Word format along with instructions on how to convert them to PDF format and include them in a dissertation, thesis, or report can be found online [http://gradschool.mtu.edu/td/formatting].
INCREASING COMPUTATIONAL EFFICIENCY THROUGH NANOSCALE COMPONENT MODIFICATIONS

By

Jane E. Smith

A DISSERTATION
Submitted in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY
In Computer Engineering

MICHIGAN TECHNOLOGICAL UNIVERSITY
2012

© 2012 Jane E. Smith
Sample Approval Page for a Dissertation

This dissertation has been approved in partial fulfillment of the requirements for the Degree of DOCTOR OF PHILOSOPHY in Computer Engineering.

Department of Electrical and Computer Engineering

Dissertation Advisor:  *Type the name of the advisor here in italics. If there are co-advisors, replace the word “Advisor” with “Co-advisor”.*

Dissertation Co-Advisor:  *If there are co-advisors, type the name of the second co-advisor here in italics.*

Committee Member:  *Type the name of a Committee Member here in italics.*

Committee Member:  *Type the name of a Committee Member here in italics.*

Committee Member:  *Type the name of a Committee Member here in italics.*

Committee Member:  *Type the name of a Committee Member here in italics.*

Department Chair/School Dean:  *Type the name of the Department Chair or School Dean here in italics. Delete the title that doesn’t apply to the named individual.*
IMPROVING PERFORMANCE OF DIESEL ENGINES UNDER LOW TEMPERATURE CONDITIONS

By

Mary A. Doe

A THESIS

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

In Mechanical Engineering

MICHIGAN TECHNOLOGICAL UNIVERSITY

2012

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Sample Approval Page for a Thesis

This thesis has been approved in partial fulfillment of the requirements for the Degree of MASTER OF SCIENCE in Mechanical Engineering.

Department of Mechanical Engineering – Engineering Mechanics

Thesis Advisor:  Type the name of the advisor here in italics. If there are co-advisors, replace the word “Advisor” with “Co-advisor”.

Thesis Co-Advisor:  If there are co-advisors, type the name of the second co-advisor here in italics.

Committee Member:  Type the name of a Committee Member here in italics.

Committee Member:  Type the name of a Committee Member here in italics.

Committee Member:  Type the name of a Committee Member here in italics.

Committee Member:  Type the name of a Committee Member here in italics.

Department Chair/School Dean:  Type the name of the Department Chair or School Dean here in italics. Delete the title that doesn’t apply to the named individual.