April 5, 2016
(Last update: 03/31/16)

Handouts of the Graduate Faculty Council

Michigan Tech
Graduate Programs Review and Assessment

I. \textbf{Graduate Program Self-Review} \textbf{Started}

- How many students?
- Completion and attrition rates?
- Qualifying examinations?
- Time to completion?
- How are students supported?
- Student publications?

II. \textbf{Articulate graduate learning outcomes and outline assessment methods}

\begin{itemize}
  \item Articulate graduate learning outcomes (GLOs) \textbf{Spring 2016}
    - Demonstrate mastery of the subject matter
    - Demonstrate advanced research skills
    - Make an original and substantial contribution to the discipline
    - Demonstrate effective oral and written communication skills

  \item Map GLOs to potential measures \textbf{Spring 2016}

  \item Develop Assessment rubric (Deficient; Satisfactory; Excellent) \textbf{Spring 2016}

  \item Gather data \textbf{Starting Fall 2016}

  \item Analyze data for formative evaluation \textbf{Every year at department retreat?}

  \item Submit (brief) Assessment Reports to Grad School \textbf{Annually, after data analysis}
\end{itemize}
HLC Standards

2.E.1. Students are offered guidance in the ethical use of information resources.

3.A.1. Courses and programs are current and require levels of performance by students appropriate to the degree or certificate awarded.

3.A.2. The institution articulates and differentiates learning goals for its undergraduate, graduate, post-baccalaureate, post-graduate, and certificate programs.

3.A.3. The institution’s program quality and learning goals are consistent across all modes of delivery and all locations.

3.B.3. Every degree program offered by the institution engages students in collecting, analyzing, and communicating information; in mastering modes of inquiry or creative work; and in developing skills adaptable to changing environments.

4.A.1. The institution maintains a practice of regular program reviews.

4.A.6. The institution evaluates the success of its graduates. The institution assures that the degree or certificate programs it represents as preparation for advanced study or employment accomplish these purposes. For all programs, the institution looks to indicators it deems appropriate to its mission, such as employment rates, admission rates to advanced degree programs, and participation rates in fellowships, internships, and special programs (e.g., Peace Corps and Americorps).

4.B. The institution demonstrates a commitment to educational achievement and improvement through ongoing assessment of student learning.

   Including: clearly stated goals for student learning that are assessed, use of assessment information to improve student learning, assessment processes and methodologies reflect good practice, substantial participation of faculty and other instructional staff members.

4.C. The institution demonstrates a commitment to educational improvement through ongoing attention to retention, persistence, and completion rates in its degree and certificate programs.

5.C.2. The institution links its processes for assessment of student learning, evaluation of operations, planning, and budgeting.
## Graduate Learning Outcomes (GLOs) PhD

<table>
<thead>
<tr>
<th>GLO</th>
<th>Potential Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Demonstrate mastery of the subject matter</td>
<td>Grades in graduate courses, Qualifying exams, Research proposal, Dissertation &amp; defense</td>
</tr>
<tr>
<td>2) Demonstrate advanced research skills</td>
<td>Research proposal, Dissertation, Dissertation defense</td>
</tr>
<tr>
<td>- Design a research project</td>
<td></td>
</tr>
<tr>
<td>- Execute a research project</td>
<td></td>
</tr>
<tr>
<td>- Master application of existing methodologies and techniques</td>
<td></td>
</tr>
<tr>
<td>- Critically analyze &amp; evaluate one’s own findings and those of others</td>
<td></td>
</tr>
<tr>
<td>3) Make an original and substantial contribution to the discipline</td>
<td>Research proposal, Dissertation, Peer-reviewed publications, Conference presentations</td>
</tr>
<tr>
<td>- Think originally and independently to develop concepts and methodologies</td>
<td></td>
</tr>
<tr>
<td>- Identify new research opportunities within one’s field</td>
<td></td>
</tr>
<tr>
<td>4) Demonstrate professional skills</td>
<td>Qualifying exams, Research proposal, Dissertation &amp; defense, Teaching, Seminars, Conference presentations, Exit surveys</td>
</tr>
<tr>
<td>- Effective oral and written communication skills</td>
<td></td>
</tr>
<tr>
<td>- Follow ethical guidelines for field</td>
<td></td>
</tr>
<tr>
<td>5) Optional Departmental GLO(s)</td>
<td></td>
</tr>
</tbody>
</table>

## Graduate Learning Outcomes (GLOs) Research MS

<table>
<thead>
<tr>
<th>GLO</th>
<th>Potential measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Demonstrate proficiency of the subject matter</td>
<td>Grades in graduate courses, Thesis &amp; Defense</td>
</tr>
<tr>
<td>2) Demonstrate research skills</td>
<td>Thesis</td>
</tr>
<tr>
<td>- Execute a research project</td>
<td></td>
</tr>
<tr>
<td>- Apply existing research methodologies and techniques</td>
<td></td>
</tr>
<tr>
<td>- Critically analyze &amp; evaluate one’s own findings and those of others</td>
<td></td>
</tr>
<tr>
<td>3) Make a contribution to the discipline</td>
<td>Thesis, Peer-reviewed publications, Conference presentations</td>
</tr>
<tr>
<td>4) Demonstrate professional skills</td>
<td>Thesis &amp; Defense, Teaching, Seminars, Conference presentations, Exit surveys</td>
</tr>
<tr>
<td>- Effective oral and written communication skills</td>
<td></td>
</tr>
<tr>
<td>- Follow ethical guidelines for field</td>
<td></td>
</tr>
<tr>
<td>5) Optional Departmental GLO(s)</td>
<td></td>
</tr>
</tbody>
</table>

1 The possible measurements listed are intended only as starting points rather than an exhaustive list. Programs are expected to identify assessment measures most appropriate for their discipline. Use of both qualitative and quantitative (direct/indirect) measures is encouraged.
Lumina Degree Qualifications Profile for (coursework) MS

Potential method for setting learning goals for coursework-only/professional Masters Degrees.

**NOTE: this is provided as reference only, we need to confer with the HLC on some points (e.g. can we have different goals for people earning the “same” degree, as coursework/report/thesis are not distinguished on the diploma).**

Report: [https://www.luminafoundation.org/resources/dqp](https://www.luminafoundation.org/resources/dqp)

Website: [http://degreeprofile.org/](http://degreeprofile.org/)

**Master’s Coursework** (Lumina framework): Programs would fill these in as part of developing their departmental goals. Programs should be referred to the DQP document for examples of what students should be able to do after completing a Master’s degree, and adapt statements as needed.

- Specialized Knowledge
- Broad and Integrative Knowledge
- Intellectual Skills (rather than being completely independent from the other 4 proficiencies, these can be seen as skills to be practiced within those other contexts)
  - Analytic Inquiry
  - Information Resources
  - Engaging Diverse Perspectives
  - Ethical Reasoning
  - Quantitative Fluency
  - Communication Fluency
- Applied and Collaborative Learning
- Civic and Global Learning

For articulations of what is expected after completing a Master’s degree (according to the Lumina framework) for each of the above, see: [http://degreeprofile.org/grid-viewer/](http://degreeprofile.org/grid-viewer/)
Appendix A

Templates: Evaluation forms and Rubric
Evaluation of PhD GLOs  - Qualifying exam written and oral

Student name _____________________

Committee decisions

GLO1: Demonstrate mastery of the subject matter
Circle one:  Deficient  Satisfactory  Excellent

GLO4: Demonstrate professional skills (effective written communication)
Circle one:  Deficient  Satisfactory  Excellent

GLO4: Demonstrate professional skills (effective oral communication)
Circle one:  Deficient  Satisfactory  Excellent

Overall Determination:   Pass   Provisional Pass   Fail

Faculty signatures          Date

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________
Evaluation of PhD GLOs - Dissertation and dissertation defense

Student name _____________________

Committee decisions

GLO1: Demonstrate mastery of the subject matter

Circle one: Deficient  Satisfactory  Excellent

GLO2: Demonstrate advanced research skills

Circle one: Deficient  Satisfactory  Excellent

GLO3: Make an original and substantial contribution to the discipline

Circle one: Deficient  Satisfactory  Excellent

GLO4: Demonstrate professional skills

Circle one: Deficient  Satisfactory  Excellent

Overall Determination:  Pass  Provisional Pass  Fail

Faculty signatures       Date
________________________________________________________________________
# Sample Rubric for dissertation and dissertation defense

<table>
<thead>
<tr>
<th>University GLO</th>
<th>Departmental sub-component</th>
<th>Deficient</th>
<th>Satisfactory</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Demonstrates mastery of the subject matter</td>
<td>Synthesizes existing knowledge</td>
<td>Gaps in basic knowledge. Does not understand basic concepts or conventions. Misunderstands or misses relevant literature. Misrepresents or misuses sources.</td>
<td>Displays a solid understanding of the field. Adequate exploration of interesting issues and connections.</td>
<td>Demonstrates thorough mastery as well as creativity in drawing on multiple sources. Synthetic and interdisciplinary. Demonstrates a deep understanding of relevant literatures</td>
</tr>
<tr>
<td>2 - Demonstrates advanced research skills</td>
<td>Mastered application of existing methodologies and techniques</td>
<td>Misapplies techniques or uses non-standard methods without adequate rationalization. Does not recognize limitations of data / techniques were applicable.</td>
<td>Uses appropriate, theory, methods and techniques. Appropriately explains limitations of data / techniques were applicable.</td>
<td>Suggests and utilizes improvements to standard methods and techniques. Limitations are thoroughly and competently discussed.</td>
</tr>
<tr>
<td>Critically analyzes and evaluate their own findings and those of others</td>
<td>Literature review is adequate but not critical. Identifies weaknesses in own work but discussion is not comprehensive.</td>
<td>Provides critical evaluation of previous works. Identifies and corrects weaknesses or flaws in referenced work. Identifies and discusses shortcomings in own work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 - Make an original and substantial contribution to the discipline</td>
<td>Think originally &amp; independently to develop concepts and methodologies</td>
<td>No independent research. Question or problem is trivial, weak, unoriginal, or previously solved.</td>
<td>Argument is strong, comprehensive, and coherent. Has some original ideas, insights, and observations.</td>
<td>Has a compelling question or problem. Project is original, ambitious, creative, and thoughtful. Asks or addresses new / important questions.</td>
</tr>
<tr>
<td>4 - Demonstrates professional skills</td>
<td>Displays effective written communication skills</td>
<td>Academic writing lacks structure and organization. Writing has frequent spelling and grammatical errors. Illustrations poorly selected or illegible.</td>
<td>Writing is adequate. Structure and organization are sufficient. Illustrations legible, technically correct, and appropriate.</td>
<td>Concise, elegant, engaging. Technical content and graphic design of illustrations well planned / executed.</td>
</tr>
<tr>
<td>... oral communication skills</td>
<td>Unorganized or unable to articulate an argument. Does not grasp intent of questions</td>
<td>Clear &amp; coherent. Engages appropriate audiences. Grasps intent.</td>
<td>Compelling, persuasive, and accessible to multiple audiences. Articulately addresses questions.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix B: Resources


Cornell University Graduate School

- Doctoral Proficiencies: http://gradschool.cornell.edu/academics/learning-assessment/doctoral-proficiencies
- Research Masters Proficiencies: http://gradschool.cornell.edu/academics/learning-assessment/research-masters-proficiencies
  - Assessment metrics for the Atmospheric Sciences http://gradschool.cornell.edu/sites/gradschool.cornell.edu/files/assessment/Atmospheric.pdf

Rutgers Graduate School – New Brunswick

- Ph.D. Programs: http://gsnb.rutgers.edu/about/phd-degree-learning-goals-and-assessment
- Master’s Programs: http://gsnb.rutgers.edu/about/master%E2%80%99s-degree-learning-goals-and-assessments
  - Mathematics Ph.D.: http://www.math.rutgers.edu/grad/phd_requirements/LearningGoals.html

University of Northern Iowa

- Student Learning Outcomes and Assessment Plans (click on the colleges in the left-side navigation to see files by program/level) https://www.uni.edu/assessment/plans/
Additional Information Regarding GLO Assessment
Response from the Higher Learning Commission

April 5, 2016: Alex Guth spoke with Stephanie Brzuzy who is the Vice President for Accreditation Relations at the HLC and Michigan Tech’s official HLC liaison.

Q1: Can we have different Learning Objectives for coursework, report, and thesis-based Master's if all three paths are awarded the same degree at the end? (would that violate 3.A.3?)

Yes, we can have different learning objectives that recognize that the purpose of the different paths may be preparing students for different things (e.g. careers in industry vs preparation for doctoral research). We just need to justify and clearly articulate why they are different.

Q2: Does the HLC care about the mechanics of how we assess Graduate student learning?

Short answer is “no”.

The HLC does not prescribe any certain assessment path. They are "not in the weeds on these things".

They only care that we have:
- a process that makes sense (for all levels; undergrad, MS, PhD, etc.),
- that we assess student learning horizontally and vertically,
- that data collected are used systematically for continuous improvement (and that is where lots of people fall over - they collect the data but then don't use it).

Course records can certainly be used as one tool for assessment - the biggest issue isn't what we use, but how we use it and why.
No matter what we choose to do, it should be logical / make sense, match what we say our goals are, and be defensible.

Q3: Do we need to set/fixed quantitative targets for all Learning outcomes (e.g. 75% will achieve X or better on outcome Y), or is it okay to leave that up to departments or handle it qualitatively?

Some people like to do this, but HLC certainly doesn't require it. We can set quantified targets like this if we want to, but that is up to us.
## FY16 Current Tuition Rate Structure

<table>
<thead>
<tr>
<th>Tuition Rate</th>
<th>Per Credit Hour &amp; Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Per Credit Hour Rate</td>
<td>$861.50</td>
</tr>
<tr>
<td>Applied Science Education and Peace Corps, OSM/VISTA, and National Graduate Fellowship Students</td>
<td>$561.00</td>
</tr>
<tr>
<td>Graduate Students who are in Research Mode</td>
<td>$287.00</td>
</tr>
<tr>
<td>Engineering/Computer Science Tuition fee per semester for Graduate students taking fewer than 5 credits</td>
<td>$475.00</td>
</tr>
<tr>
<td>Engineering/Computer Science Tuition fee per semester for Graduate students taking 5 credits or more</td>
<td>$950.00</td>
</tr>
</tbody>
</table>

### % of Standard Rate
- 65% of Standard Rate
- 33% of Standard Rate

## FY16 Proposed Revised Tuition Rate Structure

<table>
<thead>
<tr>
<th>Tuition Rate</th>
<th>Per Credit Hour &amp; Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Per Credit Hour Rate Non-Engineering/Computer Science</td>
<td>$861.50</td>
</tr>
<tr>
<td>Standard Per Credit Hour Rate Engineering/Computer Science</td>
<td>$977.50</td>
</tr>
<tr>
<td>Applied Science Education and Peace Corps, OSM/VISTA, and National Graduate Fellowship Students Non-Engineering/Computer Science</td>
<td>$573.00</td>
</tr>
<tr>
<td>Applied Science Education and Peace Corps, OSM/VISTA, and National Graduate Fellowship Students Engineering/Computer Science</td>
<td>$654.00</td>
</tr>
<tr>
<td>Graduate Students who are in Research Mode Non-Engineering/Computer Science</td>
<td>$287.00</td>
</tr>
<tr>
<td>Graduate Students who are in Research Mode Engineering/Computer Science</td>
<td>$323.00</td>
</tr>
</tbody>
</table>

### % of Standard Rate
- 67% of Non Eng. Standard Rate
- 67% of Eng. Standard Rate
- 33% of Non Eng. Standard Rate
- 33% of Eng. Standard Rate