Graduate Student Learning Outcomes Assessment Plan

(Programs) With Helpful Suggestions
(Year)

I.   Introduction

Student outcome assessment is part of our commitment to continuous improvement of our graduate programs at Michigan Tech. Programs set Graduate Learning Objectives (GLOs) for their graduate degree programs. Programs annually assess Graduate Student Learning Outcomes against these objectives. This template document details the content and suggested structure of a Program's Graduate Assessment Plan.

Programs submit an annual 2-page Annual Assessment Report to the Graduate School (separate template) indicating graduate assessment results and proposed actions for improvement.

This document describes the Graduate Student Outcomes Assessment Program for the *(name graduate program(s); indicate masters(s), PhD(s), or other). For masters programs indicate which pathways to masters are included: thesis, report, professional (coursework-only).*

II. PhD Program(s)
A. PhD Graduate Learning Objectives (GLOs)

Articulate here the learning objectives that your program has adopted for its PhD candidates. The number of objectives is not limited, but programs are encouraged to have no more than five objectives. These objectives must differentiate the expectations for PhD candidates compared to non-PhD (e.g. masters) candidates.

The PhD Graduate Learning Objectives of our program are:
1. Demonstrate mastery of the subject matter
2. Demonstrate advanced research skills (for example, design and execute a research project)
    a) Master application of existing research methodologies and techniques
    b) Critically analyze and evaluate one's own findings and the findings of others
3. Make an original and substantial contribution to the discipline
4. Demonstrate professional skills
    a) Effective written communication skills
    b) Effective oral communication skills
5. Practice responsible conduct of research (field-appropriate)

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B. Assessment Points for Measuring PhD Graduate Student Learning Outcomes (GSLO)

Articulate here the assessment points your program has adopted to measure Graduate Student Learning Outcomes for its PhD candidates. . If desired, the programs may adopt, without change, the example list of assessment points listed in black below. Those in grey are extra suggested tools.

Assessment Points for Graduate Student Learning Outcomes (GSLO) (a measure of student attainment of Graduate Learning Objectives)	PhD Graduate Learning Objectives (GLO) addressed	Notes
Grades in graduate courses	GLO1	Data come from Banner reports; use, e.g., "more than one C" as deficient, "only one C" as marginal, "no grade <B" as satisfactory, "all A's" as excellent
Qualifying Exam	GLO1, GLO4	Evaluation form used by examiners (see appendix)
Research Proposal	GLO1, GLO2, GLO3, GLO4, GLO5	Evaluation form used by evaluators (see appendix)
Dissertation and Defense	GLO1, GLO2, GLO3, GLO4, GLO5	Evaluation form used by dissertation committee (see appendix)
Peer Reviewed Publications	GLO3	Data collected by program; use, e.g. "1 in preparation" as deficient, "1" as satisfactory and ">1" as excellent
Conference Presentations	GLO3, GLO4	Data collected by program; use, e.g. "1 in preparation" as deficient, "1" as satisfactory and ">1" as excellent
Seminars	GLO4	Evaluation form applied by faculty attendees (see appendix)
Teaching	GLO4	Evaluation form applied by teaching supervisor (see appendix)
Exit Surveys	GLO4	Conducted by the Graduate School; use, e.g., student placement numbers as a metric (see appendix)

III. MS Program(s)
A. MS Graduate Learning Objectives (GLOs)

Articulate here the learning objectives that your program has adopted for its MS candidates. The number of objectives is not limited, but programs are encouraged to have no more than five objectives. When there is more than one pathway to the masters (e.g. thesis, report, coursework-only) the learning objectives may be different, but they must be equivalent. For example, a thesis or report masters would typically have a research objective while a coursework-only masters would not, but the coursework-only masters would instead include an objective of, for example, additional depth in a particular subject.

If desired, the programs may adopt, without change, the example list of Graduate Learning Objectives (GLOs) listed below. The number of objectives is not limited, but programs are encouraged to have no more than five objectives.

1. Research Path to the MS (thesis, report).

When the path to the MS includes a thesis, the MS Graduate Learning Objectives of our program are:

1. Demonstrate proficiency of the subject matter
2. Demonstrate research skills (e.g. execute a research project)
    a) Apply existing research methodologies and techniques
    b) Critically analyze and evaluate one's own findings and the findings of others
3. Make a contribution to the discipline
4. Demonstrate professional skills
    a) Effective written communication skills
    b) Effective oral communication skills
5. Practice responsible conduct of research (field-appropriate)

2. Professional (Coursework-only) Path to the MS.

When the path to the MS includes coursework only, the MS Graduate Learning Objectives of our program are:
1. Demonstrate core proficiency of the subject matter
2. Demonstrate knowledge of subject matter in selected, elective areas
3. Demonstrate professional skills
    a) Effective written communication skills
    b) Effective oral communication skills
4. Practice responsible conduct of the profession (field-appropriate)

A. Assessment Points for Measuring MS Graduate Student Learning Outcomes (GLSO)

Articulate here the assessment points your program has adopted to measure Graduate Student Learning Outcomes for its MS candidates.

If desired, the programs may adopt, without change, the example list of assessment points listed in black below. Those in grey are extra suggested tools.

Assessment Points for Graduate Student Learning Outcomes (GSLO) (a measure of student attainment of Graduate Learning Objectives)	MS Graduate Learning Objectives addressed	Notes
Grades in graduate courses	GLO1	Data come from Banner reports; use, e.g., "more than one C" as deficient, "only one C" as marginal, "no grade <B" as satisfactory, "all A's" as excellent
Thesis and Defense	GLO1, GLO2, GLO3, GLO4, GLO5	Evaluation form used by dissertation committee (see appendix)
Peer Reviewed Publications	GLO3	Data collected by program; use, e.g. "1 in preparation" as deficient, "1" as satisfactory and ">1" as excellent
Conference Presentations	GLO3, GLO4	Data collected by program; use, e.g. "1 in preparation" as deficient, "1" as satisfactory and ">1" as excellent
Seminars	GLO4	Evaluation form applied by faculty attendees (see appendix)
Teaching	GLO4	Evaluation form applied by teaching supervisor (see appendix)
Exit Surveys	GLO4	Conducted by the Graduate School; use, e.g., student placement numbers as a metric (see appendix)

IV. Rubrics and Evaluation Forms (PhD and MS)

Rubrics and Evaluation Forms are used to collect results from a variety of assessment points. There are typically four levels assigned to the student performance, for example: Deficient, Marginal, Satisfactory, Excellent. Individual evaluation forms are designed for each assessment point, depending on which Graduate Learning Outcomes (GLO) they address. A common rubric within each degree (PhD, masters) may be used (makes the system simpler). ==**Masters and PhD rubrics should not be the same, however. In addition, research masters (thesis and report) and professional masters (coursework-only) may need different rubrics.**==

Examples follow. In these example rubrics, highlighted text shows how expectations for masters and PhD candidates differ. Note that thesis, report, and professional (coursework-only) masters programs all result in the masters degree and must therefore be equivalent. Research expectations are not part of the professional masters degree, but these expectations are replaced by equivalent expectations in another valuable area, in this example, specialized knowledge. For this reason, the different masters pathways may need different rubrics.

Sample Rubric for Evaluations (PhD) (print on back of PhD evaluation forms)

Graduate Learning Obj.	What is being assessed	Unacceptable	Marginal / Needs Improvement	Satisfactory	Excellent
1 - Demonstrates mastery of the subject matter	**Synthesizes existing knowledge**	e.g. Does not understand basic concepts or conventions. Misinterprets or misuses sources.	Displays a basic understanding of the field.	Displays a solid understanding of the field. Adequate exploration of interesting issues and connections.	Demonstrates thorough mastery as well as creativity in drawing on multiple sources. Synthetic and interdisciplinary. Demonstrates a deep understanding of relevant literatures
2 - Demonstrates advanced research skills	**Mastered application of existing methodologies and techniques**	e.g. Misapplies or uses non-standard techniques without adequate rationalization.	Applies standard techniques. Does not recognize limitations of data / techniques were applicable.	Uses appropriate, theory, methods and techniques. Appropriately explains limitations of data / techniques were applicable.	Suggests and utilizes improvements to standard methods and techniques. Limitations are thoroughly and competently discussed.
	Critically analyzes and evaluate their own findings and those of others	e.g. Does not recognize improbable results.	Relies on others to suggest data that are relevant to solving a problem. Literature review is adequate but not critical.	Identifies weaknesses in own work but discussion is not comprehensive.	Provides critical evaluation of previous works. Identifies and corrects weaknesses or flaws in referenced work. Identifies and discusses shortcomings in own work.
3 - Make an original and substantial contribution to the discipline	**Think originally & independently to develop concepts & methodologies; identify new opportunities**	e.g. No independent research. Question or problem is trivial, weak, unoriginal, or previously solved.	Demonstrates competence but is not very original or significant. Displays little creativity, imagination, or insight.	Argument is strong, comprehensive, and coherent. Has some original ideas, insights, and observations.	Has a compelling question or problem. Project is original, ambitious, creative, and thoughtful. Asks or addresses new / important questions.
4 - Demonstrates professional skills	**Displays effective written communication skills**	e.g. Writing is disorganized, has frequent spelling and grammatical errors. Illustrations poorly selected or illegible.	Writing is adequate. Structure and organization are weak, but sufficient. Illustrations legible, technically correct, and appropriate.	Well written and organized.	Concise, elegant, engaging. Technical content and graphic design of illustrations well planned / executed.
	… oral communication skills	e.g. Disorganized or unable to articulate an argument. Does not grasp intent of questions.	Clear and coherent, partially understands or addresses questions, responses may have some gaps in logic or inconsistencies.	Clear & coherent. Engages appropriate audiences. Grasps intent.	Compelling, persuasive, and accessible to multiple audiences. Articulately addresses questions.
5. 5. Practice responsible conduct of research (field-appropriate)	**Understand and abide by the principles of Responsible Conduct of Research (RCR)**	Little knowledge and understanding of RCR and/or displays willingness to violate principles of RCR	Partial but inadequate knowledge and understanding of principles of RCR and/or displays tendency to violate principles of RCR unintentionally or through negligence	Adequate knowledge and understanding of principles of RCR and abides by principles of RCR	Thorough knowledge and understanding of principles of RCR and strives to promote RCR in his/her own research and the research of others

Sample Rubric for Evaluations (research masters) (print on back of masters evaluation forms)

Graduate Learning Obj.	What is being assessed	Unacceptable	Marginal / Needs Improvement	Satisfactory	Excellent
1 - Demonstrates proficiency of the subject matter	**Is proficient in existing knowledge**	e.g. Does not understand basic concepts or conventions. Misinterprets or misuses sources.	Displays a basic understanding of the field.	Displays an understanding of the field. Adequate exploration of interesting issues and connections.	Demonstrates proficiency as well as creativity in drawing on multiple sources. Synthetic and interdisciplinary.
2 - Demonstrates research skills (thesis & report only)	**Applied existing methodologies and techniques**	e.g. Misapplies or uses non-standard techniques without adequate rationalization.	Applies standard techniques. Does not recognize limitations of data / techniques were applicable.	Uses appropriate, techniques. Appropriately explains limitations of data / techniques were applicable.	Suggests and utilizes improvements to standard techniques. Limitations are competently discussed.
	Critically analyzes and evaluate their own findings and those of others	e.g. Does not recognize improbable results.	Relies on others to suggest data that are relevant to solving a problem. Literature review is adequate but not critical.	Identifies weaknesses in own work but discussion is not comprehensive.	Provides critical evaluation of previous works. Identifies and corrects weaknesses or flaws in referenced work. Identifies and discusses shortcomings in own work.
3 - Make a contribution to the discipline (thesis & report only)	**Thinks to develop concepts & methodologies; identify opportunities**	e.g. Question or problem is trivial, weak, or previously solved.	Demonstrates competence but is not much of a contribution. Displays little insight.	Argument is present with reasonable structure. Is connected to observations.	Argument is strong, comprehensive, and coherent. Has some original ideas, insights, and observations
4 - Demonstrates professional skills	**Displays effective written communication skills**	e.g. Writing is disorganized, has frequent spelling and grammatical errors. Illustrations poorly selected or illegible.	Writing is adequate. Structure and organization are weak, but sufficient. Illustrations legible, technically correct, and appropriate.	Well written and organized.	Concise, elegant, engaging. Technical content and graphic design of illustrations well planned / executed.
	... oral communication skills	e.g. Disorganized or unable to articulate an argument. Does not grasp intent of questions.	Clear and coherent, partially understands or addresses questions, responses may have some gaps in logic or inconsistencies.	Clear & coherent. Engages appropriate audiences. Grasps intent.	Compelling, persuasive, and accessible to multiple audiences. Articulately addresses questions.
5. Practice responsible conduct of research (field-appropriate)	**Understand and abide by the principles of Responsible Conduct of Research (RCR)**	Little knowledge and understanding of RCR and/or displays willingness to violate principles of RCR	Partial but inadequate knowledge and understanding of principles of RCR and/or displays tendency to violate principles of RCR unintentionally or through negligence	Adequate knowledge and understanding of principles of RCR and abides by principles of RCR	Thorough knowledge and understanding of principles of RCR and strives to promote RCR in his/her own research and the research of others

Sample Rubric for Evaluations (professional masters, i.e. coursework-only) (print on back of masters evaluation forms)

Graduate Learning Obj.	What is being assessed	Unacceptable	Marginal / Needs Improvement	Satisfactory	Excellent
1 - Demonstrates proficiency of the subject matter	**Is proficient in existing knowledge**	e.g. Does not understand basic concepts or conventions. Misinterprets or misuses sources.	Displays a basic understanding of the field.	Displays an understanding of the field. Adequate exploration of interesting issues and connections.	Demonstrates proficiency as well as creativity in drawing on multiple sources. Synthetic and interdisciplinary.
2 - Demonstrates proficiency of selected, elective subject matter	**Is proficient in existing selected, elective knowledge**	e.g. Does not understand basic concepts or conventions. Misinterprets or misuses sources.	Displays a basic understanding of the field.	Displays an understanding of the field. Adequate exploration of interesting issues and connections.	Demonstrates proficiency as well as creativity in drawing on multiple sources. Synthetic and interdisciplinary.
3 - Demonstrates professional skills	**Displays effective written communication skills**	e.g. Writing is disorganized, has frequent spelling and grammatical errors. Illustrations poorly selected or illegible.	Writing is adequate. Structure and organization are weak, but sufficient. Illustrations legible, technically correct, and appropriate.	Well written and organized.	Concise, elegant, engaging. Technical content and graphic design of illustrations well planned / executed.
	… oral communication skills	e.g. Disorganized or unable to articulate an argument. Does not grasp intent of questions.	Clear and coherent, partially understands or addresses questions, responses may have some gaps in logic or inconsistencies.	Clear & coherent. Engages appropriate audiences. Grasps intent.	Compelling, persuasive, and accessible to multiple audiences. Articulately addresses questions.
4. Practice responsible conduct of research (field-appropriate)	**Understand and abide by the principles of Responsible Conduct of Research (RCR)**	Little knowledge and understanding of RCR and/or displays willingness to violate principles of RCR	Partial but inadequate knowledge and understanding of principles of RCR and/or displays tendency to violate principles of RCR unintentionally or through negligence	Adequate knowledge and understanding of principles of RCR and abides by principles of RCR	Thorough knowledge and understanding of principles of RCR and strives to promote RCR in his/her own research and the research of others

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Evaluation of PhD Graduate Student Learning Outcomes—PhD Qualifying exam written & oral

Semester / Year _____

Committee decisions

GLO1: Demonstrate mastery of the subject matter

Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **oral** communication)

Circle one: Deficient   Marginal   Satisfactory   Excellent

Overall Determination: Fail   Provisional Pass   Pass

Consensus comments of the reviewing faculty (comments required if *Deficient* or *Marginal* scores are earned):

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Evaluation of PhD Graduate Student Learning Outcomes   - Dissertation and Defense

Semester / Year _____

Committee decisions

GLO1: Demonstrate mastery of the subject matter

      Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO2: Demonstrate advanced research skills

      Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO3: Make an original and substantial contribution to the discipline

      Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **written** communication)

      Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **oral** communication)

      Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO5: Practice responsible conduct of research (field-appropriate)

      Circle one: Deficient   Marginal   Satisfactory   Excellent

Overall Determination: **Fail**   **Provisional Pass**   **Pass**

Consensus comments of the reviewing faculty (comments required if *Deficient* or *Marginal* scores are earned):

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Evaluation of PhD Graduate Student Learning Outcomes   - Research Proposal

Semester / Year _____

Committee decisions

GLO1: Demonstrate mastery of the subject matter

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO2: Demonstrate advanced research skills

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO3: Make an original and substantial contribution to the discipline

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **written** communication)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **oral** communication)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO5: Practice responsible conduct of research (field-appropriate)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

Overall Determination: **Fail**   **Provisional Pass**   **Pass**

Consensus comments of the reviewing faculty (comments required if *Deficient* or *Marginal* scores are earned):

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Evaluation of MS Graduate Student Learning Outcomes   - Thesis and Defense

Semester / Year _____

Committee decisions

GLO1: Demonstrate mastery of the subject matter

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO2: Demonstrate advanced research skills

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO3: Make an original and substantial contribution to the discipline

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **written** communication)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO4: Demonstrate professional skills (effective **oral** communication)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

GLO5: Practice responsible conduct of research (field-appropriate)

        Circle one: Deficient   Marginal   Satisfactory   Excellent

Overall Determination: **Fail**   **Provisional Pass**   **Pass**

Consensus comments of the reviewing faculty (comments required if *Deficient* or *Marginal* scores are earned):

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V.   Data Compilation Plan

Departmental faculty are to compile and review annually the graduate student learning outcomes data, compare graduate student learning outcomes from prior years to the current year, and compare student learning outcomes against the intended Graduate Learning Objectives. Indicate here how your program plans to meet this requirement.

Departments are directed to retain annual Data Compilations for all the years between external review cycles. Access to these may be requested by reviewers during external program review visits.

Care should be taken in assessment plan design that the assessment program is sustainable.   Use this section to assess the effort of the program you design, and make adjustments, if necessary.