**Graduate Student Outcomes Assessment Plan**

Department of Basic Engineering (MADE UP EXAMPLE)

1 January 2018

1. **Introduction**

This document describes the Graduate Student Outcomes Assessment Program for the Michigan Tech Department of Basic Engineering MS (thesis or report), MS (coursework), and PhD programs. This is the first year of this graduate assessment program.

1. **PhD Program(s)**
   1. **PhD Graduate Learning Objectives (GLOs)**

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)
     1. Master application of existing research methodologies and techniques
     2. 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
     1. Effective written communication skills
     2. Effective oral communication skills
  5. Practice responsible conduct of research (field-appropriate)
  6. **Assessment Points for Measuring PhD Graduate Student Outcomes**

The Department has chosen four assessment points for students in the PhD Program. They are mapped to the five PhD-GLOs as shown in the table below.

|  |  |  |
| --- | --- | --- |
| **Assessment Points for Graduate Student Outcomes** (a measure of student attainment of Graduate Learning Objectives, GLOs) | **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) |

1. **MS Program(s)**
   1. **MS Graduate Learning Objectives (GLO)**

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)(thesis or report path)
3. Apply existing research methodologies and techniques
4. Critically analyze and evaluate one’s own findings and the findings of others

Or, Demonstrate proficiency in selected, elective areas (coursework path)

1. Demonstrate professional skills
2. Effective written communication skills
3. Effective oral communication skills
4. Practice responsible conduct of research (field-appropriate)
   1. **Assessment Points for Measuring MS Graduate Student Outcomes**

The Department has chosen two assessment points for students in the MS (thesis or report) and two assessment points for MS (coursework). They are mapped to the four MS-GLOs as shown in the table below.

|  |  |  |
| --- | --- | --- |
| **Assessment Points for Graduate Student Outcomes** (a measure of student attainment of Graduate Learning Objectives, GLOs) | **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 |
| Proficiency assessment in selected, elective courses | GLO2, GLO3, GLO4 (coursework) | Evaluation form used by Graduate committee (see appendix) |
| Thesis and Defense | GLO1, GLO2 GLO3, GLO4 (thesis, report) | Evaluation form used by student’s advisory committee (see appendix) |

1. **Rubrics and Evaluation Forms (PhD and MS)**

Rubrics and Evaluation Forms are used to collect results from most assessment points. There are typically levels assigned to the student performance in our program: *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 for each degree is used. Rubrics and Evaluation Forms follow.

**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. 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 |

**Rubric for Evaluations (MS) (print on back of MS 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 | **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 | **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 |

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

**Semester / Year \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Committee decisions**

GLO1: Demonstrate mastery of the subject matter

Circle one: Deficient Marginal Satisfactory Excellent

GLO4a: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO4b: 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):**

**Evaluation of PhD Graduate Student 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

GLO4a: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO4b: 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):**

**Evaluation of PhD Graduate Student 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

GLO4a: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO4b: 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):**

**Evaluation of MS Graduate Student Outcomes - Thesis/Report and Defense**

**Semester / Year \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Committee decisions**

GLO1: Demonstrate proficiency in the subject matter

Circle one: Deficient Marginal Satisfactory Excellent

GLO2: Demonstrate research skills

Circle one: Deficient Marginal Satisfactory Excellent

GLO3a: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO3b: Demonstrate professional skills (effective **oral** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO4: 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):**

**Evaluation of MS Graduate Student Outcomes - Coursework**

**Semester / Year \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ This form is to be filled out by the instructor in one or more of the selected, elective courses that address GLO2. The course should have both a written and oral communication component.**

**Committee decisions**

GLO1: Demonstrate proficiency in the subject matter

Circle one: Deficient Marginal Satisfactory Excellent

GLO2: Demonstrate Proficiency in selected, elective areas (list courses in comments below)

Circle one: Deficient Marginal Satisfactory Excellent

GLO3a: Demonstrate professional skills (effective **written** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO3b: Demonstrate professional skills (effective **oral** communication)

Circle one: Deficient Marginal Satisfactory Excellent

GLO4: Practice responsible conduct of research (field-appropriate)

Circle one: Deficient Marginal Satisfactory Excellent

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

1. **Data Compilation Plan**

The Department has developed tables for compiling both the PhD and MS results; the tables are shown below; targets are indicated. These tables will be completed annually and archived between external visits. The data tables are organized around the Graduate Learning Objectives.

**PhD**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD Student Outcome Results: PhD-GLO1,** Mastery of the subject matter | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Grades in graduate courses |  |  |  |  | >80% |
| Qualifying exam |  |  |  |  | >80% |
| Research Proposal |  |  |  |  | >80% |
| Dissertation and Defense |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD Student Outcome Results: PhD-GLO2,** Advanced research skills | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Research Proposal |  |  |  |  | >80% |
| Dissertation and Defense |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD Student Outcome Results: PhD-GLO3,** Original and substantial contribution to the discipline | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Research Proposal |  |  |  |  | >80% |
| Dissertation and Defense |  |  |  |  | >80% |
| Peer Reviewed Publications |  |  |  |  | >80% |
| Conference Presentations |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD Student Outcome Results: PhD-GLO4,** Professional skills | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Qualifying exam |  |  |  |  | >80% |
| Research Proposal |  |  |  |  | >80% |
| Dissertation and Defense |  |  |  |  | >80% |
| Conference Presentations |  |  |  |  | >80% |
| Seminars |  |  |  |  | >80% |
| Teaching |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **PhD Student Outcome Results: PhD-GLO5,** Responsible Research Conduct | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Research Proposal |  |  |  |  | >80% |
| Dissertation and Defense |  |  |  |  | >80% |
| Comments: | | | | | |

**Master’s**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS Student Outcome Results: MS-GLO1,** Proficiency of the subject matter | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Grades in graduate courses (all) |  |  |  |  | >80% |
| Thesis/Report and Defense (thesis/report) |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS Student Outcome Results: MS-GLO2**, Research Skills (thesis/report) or proficiency in selected, elective areas (coursework) | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Thesis/Report and Defense (thesis/report) |  |  |  |  | >80% |
| Proficiency evaluation form (coursework) |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS Student Outcome Results: MS-GLO3**, Professional skills (thesis/report) or proficiency in selected, elective areas (coursework) | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Thesis/Report and Defense (thesis/report) |  |  |  |  | >80% |
| Proficiency evaluation form (coursework) |  |  |  |  | >80% |
| Comments: | | | | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MS Student Outcome Results: MS-GLO4**, Responsible Research Conduct | % satisfactory + excellent; include the number of assessments (n) | | | | Target |
|  | 2019-20 | 2018-19 | 2017-18 | 2016-17 |  |
| Thesis/Report and Defense (thesis/report) |  |  |  |  | >80% |
| Proficiency evaluation form (coursework) |  |  |  |  | >80% |
| Comments: | | | | | |