Department of Mining Engineering and Management
Assessment Plan of Program Outcomes for Doctor of Philosophy

Program Outcomes for Doctor of Philosophy

Upon completion of the Doctor of Philosophy degree (specialization in mining engineering) within the Geology, Geological Engineering, and Mining Engineering Program, students will have:

1. An ability to identify, formulate, and solve problems related to the field of mining engineering;
2. An ability to analyze and design systems, components, or processes relevant to the field of mining engineering;
3. An ability to analyze and interpret data to support technical or management-related decisions in mining engineering;
4. An ability to present information clearly in both oral and written formats.

Assessment Plan

The Department of Mining Engineering and Management will employ the following methods to assess the four program outcomes:

5. Student work in selected graduate-level courses to include homework, quizzes, exams, discussions, or reports that relate to the outcome;
6. Program rubric for a dissertation defense (completed by PhD dissertation committee);
7. Student exit survey upon completion of the PhD degree.

In addition, the assessment of any courses taken on-line by students in the PhD program will be assessed for quality of instruction, program delivery, and student support using:

1. A common program-level survey (referred to as the "Distance Program Survey") administered once yearly to all students enrolled in any course taught on-line in the graduate program.
2. Common questions (referred to as the "Course Delivery Survey") administered through the IDEA survey tool that are specific to the quality of on-line instruction.

Rubric for Mining Engineering and Management Dissertation Defense

Student Name:_____   **Date:**_____

Outcome	Highly competent (5)	Competent (3)	Not competent (1)
Identify, Formulate, and Solve Problems	Exhibited highly effective use of critical thinking skills; incorporated content knowledge to identify new solutions/ideas relevant to professional practice; used content appropriate to situation and audience; cited information sources accurately.	Demonstrated critical thinking skills; incorporated content knowledge to identify new solutions/ideas relevant to professional practice; made connection between support and main points.	Displayed poor or ineffective use of basic critical thinking skills; failed to incorporate content knowledge in the development of solutions to professional problems; provided little support for main ideas.
Analysis and Design of Systems, Components, or Processes	Demonstrated significant understanding and application of principles necessary to analyze and design a system, component, or process to develop and support the research conclusions.	Exhibited some understanding and application of principles necessary to analyze and design a system, component, or process to develop and support the research conclusions.	Displayed little to no understanding and application of principles necessary to analyze and design a system, component, or process to develop and support the research conclusions.
Analysis and Interpretation of Data	Demonstrated original thinking; applied scientific theory and knowledge to analyze, synthesize, and interpret data to support research approach and conclusions.	Evidenced some application of scientific theory and knowledge to analyze, synthesize, and interpret data to support research approach and conclusions.	Displayed little to no use of appropriate application of scientific theory and/or knowledge to analyze, synthesize, and interpret data to support research approach and conclusions.
Technical Communications (this criterion applies to both oral and written components)	Used professional terminology; evidenced precise and vivid language; defined unfamiliar terms; varied sentence structure consistently.	Produced some varied sentence structure and word choice; used professional terminology without prompting; displayed appropriate standards of usage for situation and audience.	Displayed inadequate standards of usage; limited variance in sentence structure, professional word choice, and professional terminology not used (even when prompted); divulged slang words or other inappropriate language for situation and audience.

TOTAL RUBRIC SCORE: _____

COMMENTS: _____

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*This form is to be completed by the Major Professor, in collaboration with the Graduate Committee, and returned to the Mining Engineering and Management Graduate Coordinator. This form is to be used for program assessment only.

EXIT SURVEY
FOR DOCTOR OF PHILOSOPHY GRADUATES
DEPARTMENT OF MINING ENGINEERING AND MANAGEMENT

Thank you for taking the time to make a few short comments about your experience as a graduate student in the Department of Mining Engineering and Management at South Dakota School of Mines. Your feedback is very important to us. Your responses will remain anonymous.

Semester of graduation (for example Spring 20xx) _____

Please state whether you agree or disagree with the following statements using the scale below:

	Strongly Disagree				Strongly Agree
I have learned to identify, formulate, and solve problems related to mining engineering.	1	2	3	4	5
I have learned to analyze and interpret data to support technical or management-related decisions in mining engineering.	1	2	3	4	5
I have learned to make effective presentations to peers.	1	2	3	4	5
I have learned to communicate effectively in writing.	1	2	3	4	5
I have learned to analyze and design systems, components, or processes relevant to the field of mining engineering.	1	2	3	4	5
I have gained an awareness of the impact of engineering activities in a global and societal context.	1	2	3	4	5
I understand my professional and ethical responsibilities as they related to my field of study.	1	2	3	4	5
I am aware that I will need to continue learning new information and methods in my professional career.	1	2	3	4	5
I am well-prepared to enter my chosen field.	1	2	3	4	5

Do you have any comments, positive or negative, about the Doctor of Philosophy mining engineering specialization within Mining Engineering and Management at South Dakota Mines?

Any additional comments for changes/improvements to the MEM Program?

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