Mining Engineering Student Learning Outcome Assessment Report

1. Department/Program Mission

The Mining Engineering Program at Missouri S&T provides superb education and training to undergraduate and graduate students for the mining and construction industries of Missouri, USA and those global mining companies with strategic interests in the USA. The programs provide students with total quality education and research capabilities to make a difference in our State and the technological world.

Our program educational outcomes are:

1. Graduates will become frontline supervisors and middle-level managers within three to five years in industry.
2. Graduates will have a vital interest and a passion to remain and promote industry growth.
3. Graduates will be capable of solving industrial problems toward growth and competitiveness of their respective companies.
4. Graduates will become functional and effective leaders or members of industrial teams for carrying out the mission of their respective companies.
5. Graduates will communicate effectively the technical, social and economic aspects of the job requirements to subordinates, peers and superiors.
6. Graduates will carry out their functional responsibilities with supreme understanding of safety and health, environment and ethics.
7. Graduates will cultivate and maintain an interest in life-long learning through professional development and memberships in professional societies.
8. Graduates will continue to grow in the knowledge of relevant technologies, skills and tools for modern mining engineering practice.

2. Graduate Learning Outcomes (GLO)

a. Campus-Wide Student Learning Outcomes:

Programs must demonstrate that their graduates have:

I. Knowledge: An ability to apply knowledge of subject matter within their field of study
II. Communication: An ability to communicate effectively within their field of study.
III. Critical Thinking: An ability to engage in productive critical thinking within their field of study
IV. Professional Development: An ability to develop professional within their field of study.
3. **Mapping of Program’s Student Outcomes to Campus Student Learning Outcomes**

Not applicable.

4. **Methods/Instruments and Administration**

Mining engineering uses direct assessments of thesis/dissertation student performance on major exams.

5. **Findings**

The table below shows the average scores of assessments by the PhD/MS advisory committees of 6 students during the 2016/2017 academic year. This data covers assessments administered at 4 comprehensive examinations, one PhD defense and one MS defense. Based on this results, on average, the advisory committees rank the mining engineering students as proficient in their knowledge and communication skills. The committees rank the students as above acceptable but below proficient in critical thinking and professional development. With regards to professional development three of the six students were ranked below proficient while three were ranked above proficient. With regards to critical thinking, two of the six were ranked below proficient while the remaining four were ranked above proficient.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Knowledge</th>
<th>Communication</th>
<th>Critical thinking</th>
<th>Professional development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average score</td>
<td>4.03</td>
<td>3.87</td>
<td>4.01</td>
<td>3.94</td>
</tr>
</tbody>
</table>

6. **Continuous Improvement Changes**

Based on the findings, the program will work to improve the communication and professional development outcomes within the graduate student population. We intend to engage the main advisors to better mentor the graduate students in the coming year to improve these outcomes.