Program Description

The Master of Engineering program at SDSM&T is a course-based professional master’s degree program. The Master of Engineering (MENG) program builds upon the undergraduate engineering degree as a ‘capstone’ sequence composed of advanced engineering discipline courses and applied management and leadership courses. The MENG degree is a coursework-only professional program with a substantive management component for engineers employed in or preparing to enter technical management roles in business and industry.

The Master of Engineering (MENG) includes three emphasis areas in:

- Civil and Environmental Engineering
- Electrical Engineering
- Materials Engineering and Science.

The Industrial Engineering department delivers many of the management courses used to fulfil the applied management and leadership portion of the curriculum.

Administration

The Dean of Graduate Education is appointed as the MENG Program Director and is charged with oversight and management of the program. The Program Director shall assemble a Steering Committee composed of the program director (chair), one representative from the department or program for each emphasis area, and one representative from the Industrial Engineering department.

Institutional Advisory Board

Each discipline is different, with different requirements for core and elective courses. To ensure the relevance of the program outcomes, and to gather advisory board input and direction for the degree program, the MENG Program Director will:

- meet separately with the individual industrial advisory board of the department/program that participates in the MENG degree, during their regularly scheduled meetings;
- will present the status, challenges, and opportunities to each advisory board and solicit feedback on the MENG program;
- will compile the feedback into an annual report and call a meeting of the emphasis area department heads/program directors to discuss the findings and develop action items for maintaining and strengthening the program as a whole; and
- will provide a summary report of the annual meeting and action items to each advisory board.

Outcomes

Graduates of the Master of Engineering program can:

- understand and apply technical principles at level suitable for professional practice,
- articulate and apply sound management techniques to projects and teams,
- communicate effectively.

Approved 12/8/2017
Assessment Plan

Each student is required to complete a written Master’s examination to graduate from the program. The Master’s exam is administered by the department or program for each emphasis area, and is given in the student’s final semester before graduation. The student is presented with a list of problems or issues drawn from the degree emphasis and is asked to prepare a proposal for a project intended to solve one of them. The proposal should address the technical background of the problem, the promised deliverables, the management structure of the project team, a work plan for completion, and a costing and budget analysis.

Each department or program will score the proposal using a standard rubric and provide the scored proposal and rubric to the Program Director. The MENG Steering Committee will meet annually to review the scored proposals and develop recommendations for program improvement.

Program Goal

Every graduate of the program will receive a three or better on each outcome score in the Master’s exam.

Scoring rubric for the Master’s exam

<table>
<thead>
<tr>
<th>Outcome</th>
<th>(5) Mastery</th>
<th>(3) Proficient</th>
<th>(1) Outcome not met</th>
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<tbody>
<tr>
<td>Applies technical principles</td>
<td>Technical background review and proposed methods are thorough and sound; commensurate with work of an experienced engineer; would require little oversight in professional practice.</td>
<td>Technical background review and proposed methods contain minor errors or problems; commensurate with work of a starting engineer; practice would require some oversight in professional practice.</td>
<td>Technical background review and proposed methods contain major errors or problems that render it inadmissible for professional practice.</td>
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<tr>
<td>Applies sound management techniques</td>
<td>Develops strong and well-articulated management structure for the project, including identifying team roles, developing a work plan, and completing a valid costing analysis.</td>
<td>Management structure for the project has minor weaknesses or omissions that do not substantially affect the likely success of the project.</td>
<td>Management structure for the project has minor weaknesses or omissions that substantially affect the likely success of the project.</td>
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<td>Effective communication</td>
<td>Communication is clear, professionally phrased, and virtually free of grammatical errors.</td>
<td>Communication is understandable, but falls somewhat short in clarity, professional phrasing, or grammar.</td>
<td>Communication is unclearly written with frequent errors, or lacks professional style.</td>
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Approved 12/8/2017