

## Chemical Engineering M.S.



### Contact Information

#### **Dr. Jan. A. Puszynski**

Department of Chemical and Biological Engineering

Chemistry/Chemical Engineering Bldg. C224

(605) 394-1230 Fax: (605) 394-1232

E-mail: [Jan.Puszynski@sdsmt.edu](mailto:Jan.Puszynski@sdsmt.edu)

<http://cbe.sdsmt.edu>

### Faculty

Professors Bang, Dixon, Puszynski, Salem, Winter; Associate Professors Christopher, Gilcrease; Assistant Professors Benjamin, Hower, Menkhaus, Sani, Shende.

### Chemical Engineering

The Department of Chemical and Biological Engineering offers programs of study leading to the master degree in chemical engineering (ChE). Students may consider either a thesis or non-thesis executive program option. A student who elects the thesis option will be required to present a thesis based upon an original investigation for which 6 credits must be earned toward a total requirement of 30 credits in an approved program of study. For the non-thesis executive program option, a student must earn 32 credits in an approved program of study and complete a special project. In the non-thesis executive program, which is oriented primarily toward industrial needs, students take at least one course in

technology management as part of their required courses for the M.S. in chemical engineering.

Chemical engineers with a M.S. degree obtain graduate education that provides them with an in-depth understanding of the chemistry, mathematics, and physical laws describing systems at both molecular and macroscopic levels. With this knowledge, the chemical engineer can participate in interdisciplinary research, development, and implementation of new and improved technologies in areas such as: biotechnology, catalysis, nanotechnology, chemical technology, energy, environmental processes, as well as manufacturing of high-performance materials for electronic and structural applications. A student who does not have a bachelor's degree in chemical engineering will be expected to take some additional undergraduate chemical engineering courses to provide a solid ChE foundation. The current research interest of the faculty can be found on the departmental website at: <http://cbe.sdsmt.edu>.

A core curriculum for all M.S. candidates in chemical engineering includes the following courses or approved substitutions:

CBE 550	Systems Analysis Applied to Chemical Engineering	3
CBE 612	Transport Phenomena: Momentum	3
CBE 613	Transport Phenomena: Heat	3
CBE 621	Advanced Chemical Engineering Thermodynamics I	3
Kinetics Elective <sup>1</sup>		3
Applied Computation Elective <sup>2</sup>		3
CBE 790	Seminar	1

<sup>1</sup>Kinetics Elective: CBE 544 or MES 728

<sup>2</sup>Applied Computation Elective: CBE/ME 616, MATH 432, or IENG 486

In addition to the core curriculum, students pursuing the non-thesis option must complete a minimum of 2 credits of non-thesis research, CBE 788, 3 credits in engineering management, and 8 credits of chemical engineering approved electives. Students pursuing the thesis option are required to complete, in addition to the core

curriculum, a minimum 6 credits of thesis research, CBE 798, and 5 credits of chemical engineering approved electives.

An oral thesis defense for the thesis degree or oral project examination for the non-thesis degree, as well as final examination in the field of chemical engineering, are required prior to the completion of the graduate study.



*Mines Matters:* The new Chemical and Biological Engineering and Chemistry Building incorporates state-of-the art graduate and undergraduate research space. This new facility will foster the growth of rapidly-emerging technologies, such as ethanol, fuel production, food and agricultural processing, and environmentally-friendly plastics and coatings.