

## Chemical Engineering M.S.



### Contact Information

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### Faculty

Professor Dixon, Chair; Professors Bang,  
Puszynski, and Winter; Associate Professor  
Gilcrease; Assistant Professors Benjamin,  
Menkhaus, Sani, and Shende.

### Chemical Engineering

The Department of Chemical and Biological Engineering offers programs of study leading to the master of science degree in chemical engineering. 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 six (6) credits must be earned toward a total requirement of thirty (30) credits in an approved program of study. For the non-thesis executive program option, a student must earn thirty-two (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 should be able to 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 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>.

Qualifying examinations may be required of entering graduate students. These examinations, if required, will be administered during a student's first semester of residence. An oral thesis defense 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.

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

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

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

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

In addition to the core curriculum, students pursuing the non-thesis option must complete a minimum of two (2) credits of non-thesis research, CHE 788, three (3) credits in technology management, and nine (9) credits of chemical engineering approved electives. Students

pursuing the thesis option are required to complete, in addition to the core curriculum, a minimum six (6) credits of thesis research, ChE 798 and six (6) credits of chemical engineering approved electives.



*Mines Matters:* In the 2005-2006 academic year, the School of Mines implemented a pilot Tablet PC program on campus. Following the success of the program, all incoming freshmen are issued a tablet PC. The tablet PCs have built in wireless capabilities so that any classroom on campus can be used as a computer lab and students can connect to the Internet and the campus' file servers from anywhere on campus.