

Chemical Engineering, M.S.Ch.E.

Curriculum in Master of Science in Chemical Engineering

A candidate for the M.S. degree in chemical engineering must comply with the rules and regulations as outlined in the WVU Graduate Catalog and the specific requirements of the Statler College and the Chemical and Biomedical Engineering Department.

Program Requirements

All M.S. degree candidates are required to establish an Advising and Examining Committee (AEC). The student's advisor, in conjunction with the student's AEC will be responsible for determining the plan of study appropriate to the student's needs. The underlying principle of the planned program is to provide the students with the necessary support to complete their degree and prepare them for their career.

Curriculum Requirements

Code	Title	Hours
A minimum GPA of 3.0 is required in all courses		
Course Requirements *		
A maximum of 6 credit hours can be taken at the 400 level		
A grade of C- or higher must be earned in all required courses		
Plan of Study		
CHE 531	Mathematical Methods in Chemical Engineering	3
CHE 615	Transport Phenomena	3
CHE 620	Thermodynamics	3
CHE 625	Chemical Reaction Engineering	3
Graduate Seminar **		
CHE 786	Professional Development Seminar for Chemical and Biomedical Engineering	0
Electives (Select courses from the following based on degree path):		9
Any BIOM, BMEG, CE, CHE, CHEM, CPE, CS, EE, EMGT, FIN, IENG, IH&S, MAE, MATH, MINE, PNGE, PHYS, SAFM, SENG, or STAT courses 400-795, as approved by the student's AEC		
Complete 1 of the following options:		9
Thesis Option - 9 hours		
CHE 697	Research (6 hours)	
Complete 3 additional hours of coursework in CHE (any CHE course 400-795 as approved by the student's AEC)		
Final Oral or Written Examination		
Thesis		
Problem Report Option - 9 hours		
CHE 697	Research (3 hours)	
Complete 6 additional hours of coursework in CHE (any CHE course 400-795 as approved by the student's AEC)		
Formal written report or professional report/paper		
Final Oral or Written Examination		
Coursework Options - 9 hours		
Complete 9 additional hours of coursework in CHE (any CHE course 400-795 as approved by the student's AEC)		
Total Hours		30

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Students who do not hold a baccalaureate degree in chemical engineering may be required to take a set of undergraduate chemical engineering courses above and beyond the minimum coursework requirements.

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Full-time Students are required to take a Seminar course each semester

EXAMINATION

M.S. students following the thesis or problem report option must prepare a written research proposal and oral presentation. The proposal must be approved by the student's AEC at least one semester prior to the final oral examination. This oral defense is administered by the student's AEC and must be completed by the end of the second semester after the student begins his/her research.

All students completing a thesis or problem report are required to pass a final oral or written examination, administered by their AEC, covering the thesis or problem report and/or related course material.

Accelerated Program

- BSCHE Chemical Engineering and MSCHE Chemical Engineering (p. 2)

Accelerated Bachelor's/Master's in Chemical Engineering

Students must fulfill all degree requirements for the B.S.ChE in Chemical Engineering and all the requirements of the M.S.ChE in Chemical Engineering. Students must also meet all the requirements of the ABM.

ABM REQUIREMENTS

Code	Title	Hours
Undergraduate Coursework		116
Shared Bachelor's/Master's Coursework		12
Graduate Coursework		18
Total Hours		146

SHARED COURSEWORK CURRICULUM REQUIREMENTS

Code	Title	Hours
Courses completed must be at the 400 or 500 level. At least one course must be at the 500 level.		
See BSCHE and MSCHE for list of elective course options.		
Courses:		
CHE 475	Chemical Process Safety	3
Engineering Science Elective		3
Engineering Science Elective (500+ level CHE course)		3
Technical Elective		3
Total Hours		12

SUGGESTED PLAN OF STUDY

It is important for students to take courses in the order specified as much as possible; all prerequisites and concurrent requirements must be observed. A typical ABM BSCHE & MSCHE degree program that completes degree requirements in five years is as follows.

First Year

Fall	Hours	Spring	Hours
CHEM 115 & 115L		4 CHEM 116 & 116L	4
ENGL 101		3 ENGR 102	3
ENGR 101		2 MATH 156	4
ENGR 191		1 PHYS 111 & 111L	4
MATH 155		4	
GEF 4		3	
		17	15

Second Year

Fall	Hours	Spring	Hours
CHE 221		4 CHE 230	3
CHEM 233 & 233L		4 MATH 261	4
ENGL 102		3 PHYS 112 & 112L	4
MATH 251		4 GEF 5	3
		GEF 6	3
		15	17

Third Year

Fall	Hours	Spring	Hours
CHE 321		4 CHE 323	4
CHE 322		4 CHE 351L	2
GEF 7		3 CHE 325	3
Life Science Technical Elective		4 CHE 355	3
Advanced Chemistry Elective		3 Technical Elective	3
		18	15

Fourth Year

Fall	Hours	Spring	Hours
CHE 315		3 CHE 435	3
CHE 452L & CHE 452S		3 CHE 456S	3
CHE 455 & 455S		4 CHE 475 [*]	3
Technical Elective [*]		3 Engineering Science Elective (500+ level CHE course) [*]	3
Engineering Science Elective [*]		3 Technical Elective	3
		16	15

Fifth Year

Fall	Hours	Spring	Hours
CHE 531		3 CHE 615	3
CHE 620		3 CHE 625	3
Graduate CHE Elective (problem report or coursework) or CHE 697		3 Graduate CHE Elective (coursework only) or CHE 697	3
CHE 786		0 CHE 786	0
		9	9

Total credit hours: 146

*

Indicates courses that will be shared with the MS requirements

Major Learning Outcomes

CHEMICAL ENGINEERING

Upon graduation, Chemical Engineering students will have:

- Understanding of advanced principles of chemical engineering, which include reaction engineering, transport phenomena, and thermodynamics
- Expert-level understanding of the background and theory/principles of their research topics.
- Ability to plan research projects, to perform the tasks, and to draw conclusions based on sound scientific and engineering principles.
- Ability to write technical articles for publication in refereed journals and to make oral and poster presentations at technical meetings.
- Demonstrated initiative in research planning and management, including safety and environmental issues.
- Been technically prepared for a lifetime of continuing education.
- Understanding of professional and ethical responsibilities.