

## Combined B.S./M.S. Program in Chemical Engineering

### *General Description*

The purpose of this program is to give outstanding undergraduate students an opportunity to obtain both BS and MS degrees in chemical engineering with relatively little additional time required beyond the BS degree. Our program requirements are modeled on other combined programs in the College of Engineering, specifically those in electrical engineering and mechanical engineering. Students eligible for this program should have substantial room in their senior year schedule projection in order to incorporate the required graduate coursework. Also, interested students should attempt to complete some undergraduate research to get a feel for their interest in graduate work.

### *General and Specific Educational Goals*

The program does not change any existing goals of the BS or MS degree in chemical engineering but streamlines those requirements that substantially overlap, namely, the technical elective program of the BS degree and the "Advanced ChE" and "Other" course requirements for the MS degree.

### **Contact Information:**

There are three contact points for the combined BS/MS program:

Dr. David Tomasko  
233 Koffolt Lab  
[tomasko.1@osu.edu](mailto:tomasko.1@osu.edu)

Angela Jones  
Graduate Programs Assistant  
125 Koffolt  
[jonesa@chbmeng.ohio-state.edu](mailto:jonesa@chbmeng.ohio-state.edu)

Mary Hoy  
Undergraduate Advisor  
314 Koffolt  
[hoy.50@osu.edu](mailto:hoy.50@osu.edu)

### **Program Admission Requirements and Curriculum**

To be admitted to the combined BS/MS program, the applicant must submit documentation that demonstrates satisfactory fulfillment of the following admission criteria:

1. Current registration in the Department.
2. Rank of senior (rank 4).
3. A minimum of 3.5 cumulative point hour ratio in all previous undergraduate work.

### *Application Procedures*

- 1.1. The student should apply to the BS/MS program just as if he/she were applying to the MS program, by first obtaining the required forms from the Graduate Committee Secretary, who will handle all status inquiries.
- 1.2. The student should be enrolled in the BS/MS program by the time he/she takes the first Technical Elective to be credited towards the MS degree. Students should submit:
  - 1.2.1. All of the normal paperwork necessary for a Graduate Admissions Application. Please see <http://www.chbmeng.ohio-state.edu/graduate/admission.html> for information about admissions requirements for the ChBE masters program. You may also be able to find resources at: <http://gradadmissions.osu.edu/>
  - 1.2.2. A list of graduate courses that will be used for both BS and MS credit. You should contact Mary Hoy ([hoy.50@osu.edu](mailto:hoy.50@osu.edu)) for assistance in completing a schedule projection to outline the overlap in coursework. (An example of the five year BS/MS follows the written information contained in this handbook.)
  - 1.2.3. Students must complete paperwork for the College of Engineering. The form for combined degree students can be found at: <http://www.eng.ohio-state.edu/currentstudents/bsms.php>. During the quarter before you enroll in a combined BS/MS program, and the quarters you graduate with the BS and MS degrees, you must submit this form to Judith McDonald in the Hitchcock Hall, Room 122.
- 1.3. Application deadlines are given below:

Admission Quarter	Deadline
Autumn	June 1
Winter	October 1
Spring	January 15
Summer	April 1

- 1.4. Consideration of the application will begin only when the file is complete, consisting of the following:
- 1.4.1. Completed application form, to be sent to the Graduate Admissions Office. Write BS/MS on the application in the box labeled "Graduate Degree Objective".
  - 1.4.2. Three letters of recommendation, to be sent directly to the ChE Graduate Studies Committee.
  - 1.4.3. Statement of purpose or autobiographical statement, explaining motivation for graduate study, to be sent to the ChE Graduate Studies Committee.
  - 1.4.4. Technical elective plan. Note the restrictions below on the courses to be included in this plan if they are to receive graduate credit. The quarter and year in which the technical elective courses will be taken should also be noted on the technical elective plan.

#### *Status in Graduate Program*

Upon enrollment in the combined program and following receipt of the baccalaureate degree, the student must meet the requirements of the MS program as specified by the Graduate School and the ChBE Department.

#### *Curriculum for Combined BS/MS in Chemical Engineering:*

These course requirements match those for the MS degree in ChE.

	Course Number	Course Title	Credit Hours
CORE ChBE	801	Chemical Engineering Analysis	3
	881	Seminar - How to do research	3
	808	Thermodynamics	3
	812	Kinetics	3
	815.01	Mass	3
	815.08	Momentum	3
<b>Core Subtotal</b>			<b>18</b>
ADVANCED ChE	7xx or 8xx	Technical Elective in Dept.	6
OTHER	5xx or higher	Courses offered for graduate credit and approved by Advisor	12
<b>TOTAL COURSES</b>			<b>36</b>
RESEARCH	999	Graduate research	9 (MIN.)
<b>TOTAL CREDIT HOURS</b>			<b>45</b>

Up to 15 credit hours of BS technical elective courses may receive credit toward the MS degree. In order to be eligible for graduate credit, the courses must meet the following requirements:

- Must be taken at OSU.
- No ChBE courses lower than 600 level may be included.
- ChBE 693 or H783 undergraduate research credits (up to 6) may only be counted toward the ChE 999 requirements of the MS program. Crediting 693 or H783 in this way requires approval of the student's graduate adviser.

NOTE: Please meet with Mary Hoy late in your sophomore year or early in your junior year to lay out the best possible schedule for you to complete all the requirements and the most efficient way for you to do so.

## Frequently Asked Questions – Combined BS/MS Program

*Is there any way that students can check the status of their application to the Combined BS/MS program?*

The student can check online for their admission status on the Admissions website. You may check with the ChE Graduate Program Office a week after your MS application has been approved to check the status of your Combined Program.

*Upon entering the program a student must indicate which classes he/she intends to take for combined credit. Is this list flexible, and if so, who should be informed of changes?*

The list of combined courses may be altered with the approval of the Graduate Studies Chair and the Graduate Studies Committee.

*What are the responsibilities of the Graduate School regarding the BS/MS program?*

The Graduate School is responsible for the approval/denial of all applications to the Combined BS/MS Program. They transfer appropriate graduate credit from the undergraduate program to the MS program once the student has graduated, has matriculated into the MS program and has provided a list of combined undergraduate/graduate courses.

*Is there a student file that contains both the graduate and undergraduate information for the student together?*

No, there are two separate files. The undergraduate file is maintained by the Undergraduate Academic Advisor and the Graduate file, with of the combined program information, is maintained by the Graduate Program Coordinator.

*Is there a tuition difference for the senior year of the combined program? If so, who pays for the increase in cost? (Some departments in the College of Engineering make a policy of paying the difference in cost between graduate and undergraduate tuition using departmental funds for all combined students).*

Combined BS/MS students are assessed graduate student tuition rates. The student usually must pay the increase himself or herself. Sometimes the thesis advisor may have research funds that could be used for this purpose.

*When do combined classes officially transfer as graduate credit? How does a student know if their classes have been transferred for graduate credit?*

Combined credit officially transfers once the Graduate School has a list of the combined courses. A student can find out if the courses have been transferred by contacting the Director of Graduate Services and Degrees at the Graduate School.

*How many class hours can be counted for graduate credit using Senior Petition for students in the combined program? Is this number different for students not in the combined program?*

Students in their Senior Year with a 3.0 cum GPA or higher may take advantage of the Senior Petition option, a student may register for up to 15 credit hours of courses taken beyond their undergrad requirements, which then could count later for a graduate program at Ohio State while their fees continue to be charged at the undergraduate level but cannot count towards their BS degree.

Senior Petition credit is limited to 15-quarter hours of credit to all undergraduate students, regardless of their combined program status.

*Are combined students eligible for undergraduate funding their senior year?*

Yes.

*What funding options are available for combined students as undergraduates or graduates?*

The options are the same for all undergraduate students. In addition, combined program students are eligible for Graduate Research Assistantships (GRA's).

## Chemical & Biomolecular Engineering – Recommended Schedule for Combined BS/MS

YEAR	AUTUMN	WINTER	SPRING	SUMMER
1	Math 151 (Calc & Analyc Geom) ..... 5____ Chem. 121 (Gen Chem.) ..... 5____ Engr 181 (Intro to Engr I) ..... 3____ Engr 100.03 (Engr Survry) ..... 1____	Math 152(Calc & Analyc Geom)..... 5____ Chem. 122 (Gen Chem)..... 5____ Engr 183A (Intro to Engr II) ..... 3____ GEC	Math 153 (Calc & Analyc Geom) ..... 5____ Chem. 123 (Gen Chem)..... 5____ En Graph 167 or (Prob Slv Prog Engr) CS&E 202 (Prog & Alghms for Engrs)4____ GEC	<i>REU Experience or Research Internship Recommended</i>
2	Chem. 251 (Organic Chemistry) ..... 3____ ChBE 200 (Pracs Calc 1) ..... 3____ Math 254 (Calc & Analyc Geom)..... 5____ Physics 131 (Partcls & Motion) ..... 5____	Chem. 252 (Organic Chem) ..... 3____ ChBE 201 (Procs Calcs 2) ..... 3____ Math 415 (Ord& Part Diff Equ)..... 4____ Physics 132 (Electrcy & Magntsm). 5____	Chem. 253 <sup>††</sup> (Organic Chem) ..... 3____ ChBE 420 (Transpt Phn I..... 4____ Physics 133 (Electrdynmc & Quant) . 5____ Chem 254 (Organic Chem Lab) ..... 3____	<i>REU Experience or Research Internship Recommended</i>
3	<b>Chem. 530</b> (Physical Chem) ..... 3____ ChBE 508 (Thermo I) ..... 3____ ChBE 521 (Transp Phn II) ..... 3____ GEC	<b>Chem. 531</b> (Physical Chem) ..... 3____ ChBE 509 (Thermo II) ..... 3____ <b>ChBE 522</b> (Transp Phn III)..... 3____ Chem. 541 (Physical Chem Lab) .... 3____	<b>Chem. 532<sup>††</sup></b> (Physical Chem) ..... 3____ <b>ChBE 610</b> (ChE Kinetics) ..... 4____ <b>ChBE 523</b> (Unit Operations) ..... 4____ <b>ChBE 750</b> (Profs ChE) ..... 1____ GEC	<b>ChBE 630</b> (Operations Lab).....6____  GEC GEC
4	<b>ChBE 624</b> (Procs Dyn & Ctrl) ..... 4____ <b>ChBE 760</b> (Econ & Strat) ..... 4____ ChBE TE 1 (DC)..... 3____ Tech Elec 1..... 3____	ChBE 764 (Procs Dsgn) ..... 4____ ME 410 (Statics)..... 4____ or ECE 300 (Electrical Circuits) .... 3____ Math Elective (DC)..... 3____ ChBE TE 2 (DC) ..... 3____	ChBE 762 (Procs Dsgn) ..... 4____ Tech Elec 2 (DC)..... 3____ Tech Elec 3 (DC)..... 3____ <i>ChBE MS 1</i> ..... 3____	<i>ChBE 999</i>  GEC GEC
5	<i>ChBE 801*</i> ..... 3____ <i>ChBE 815.08</i> ..... 3____ <i>MS Elective 2</i> ..... 3____ <i>CHBE 999</i> ..... 3____	<i>ChBE 812</i> ..... 3____ <i>ChBE 815.01</i> ..... 3____ <i>Chem. 685</i> ..... 3____ <i>ChBE 999</i> ..... 3____	<i>ChBE 881</i> ..... 3____ <i>ChBE 808</i> ..... 3____ <i>ChBE 999</i> ..... 3____	

+ All students are required to take a version of 801 with Dr. Feinberg. Students should consult with Angela Jones in reference to the particular quarter in which the course will be offered for a given year.

\* (DC) = Double counts as a BS elective and MS elective.

\* Quarters shaded in gray are those that a student would be officially enrolled in the BS/MS program. Please note that you must be accepted into the BSMS program by the time you take the first elective that will double count between the degrees. There is no retro-fitting past electives into the MS elective plan.

PLEASE NOTE: THE COMBINED BS/MS PROGRAM IS NOT GUARENTEED TO BE COMPLETED IN FIVE YEARS EVEN IF YOU FOLLOW THE ABOVE PROJECTION GIVEN THE NATURE OF COMPLETING RESEARCH. STUDENTS MAY NOT BE ABLE TO COMPLETE THE RESEARCH IN FOUR QUARTERS DUE A VARIETY OF OUTSIDE CIRCUMSTANCES.