

## Chemistry Major, Research Emphasis JMS

Chemistry majors who qualify for the JMS Honors program have the same requirements for their major as non-honors students. JMS requires an honors research project as does the research emphasis. But JMS students can also follow the biochemistry, business or secondary education emphasis requirements. JMS students take different University requirements however. These are outlined in the scheduling sheets.

**Core Requirements** We require 24 hours of core courses:

- Chemistry 151, 152: Introductory Chemistry Laboratory I, II
- Chemistry 224: General Inorganic Chemistry
- Chemistry 232: Analytical Chemistry
- Chemistry 251, 253: Intermediate Chemistry Laboratory I, III
- Chemistry 254: Introduction to Research
- Chemistry 301, 302: Organic Chemistry I, II
- Chemistry 303: Physical Chemistry I,
- IN 491, 492 JMS Honors Study Project
- Chemistry 481 or 482: Seminar

**Research Emphasis Requirements** Students interested in a research career in either industry or graduate school should take the research emphasis.

- Core Requirements As Above
- Chemistry 252, Intermediate Chemistry Laboratory II( Organic-Inorganic Synthesis)
- Chemistry 304, Physical Chemistry II
- Chemistry 351, Advanced Chemistry Laboratory I
- Chemistry 352, Advanced Chemistry Laboratory II
- Chemistry 353, Advanced Chemistry Laboratory III
- Chemistry 406, Advanced Inorganic Chemistry
- Chemistry 420, Instrumental Analysis

**ACS Certified Degree** The American Chemical Society (ACS) Certified Degree will be given to students who successfully complete the requirements for Research Emphasis and complete the following additional requirements:

- Chemistry 331, Biochemistry
- A minimum of three additional credits in chemistry from the following list: CH 354, CH 422, CH 432, CH 491, CH 492

**Suggested Schedule** Suggested schedules are not meant to prescribe when you take a class. They simply tell you what semesters a given class is offered and guides you to choose courses to help you progress in an orderly way towards graduation.

### FRESHMAN YEAR

Fall Semester		Spring Semester	
CH 121 General Chemistry or CH131 Accelerated General Chemistry	3	CH 224 General Inorganic Chemistry§	3
CH 151 Introductory Lab I	1	CH 152 Introductory Lab II	1
IN 183 Honors University Seminar	3	IN 151 Critical Writing, Reading, Research II	3
IN150 Critical Writing, Reading, Research I	3	Mathematics	4
Mathematics (determined by placement)	4	IN 200-207	3
Elective	3	Elective	3
<b>TOTAL CREDITS</b>	<b>17</b>	<b>TOTAL CREDITS</b>	<b>17</b>

### SOPHOMORE YEAR

Fall Semester		Spring Semester	
CH 301 Organic Chemistry I	3	CH 302 Organic Chemistry II	3
CH 251 Intermediate Lab I	1	CH 232 Analytical Chemistry	3
PY 151/171 Physics I	4	CH 253 Intermediate Lab III	1
IN 200-207	3	PY 152/172 Physics II	4
Historical Studies (A&S requirement)*	3	IN 200-207	3
Elective	3	Elective	3
<b>TOTAL CREDITS</b>	<b>17</b>	<b>TOTAL CREDITS</b>	<b>17</b>

### JUNIOR YEAR

Fall Semester		Spring Semester	
CH 254 Introduction to Research	1	IN 350 Global Studies	3
CH 303 Physical Chemistry I	3	CH 392 Undergraduate Research	1
CH 351 Advanced Lab I	1	CH 353 Advanced Lab III	1
Literature (A&S requirement)*	3	CH 304 Physical Chemistry II	3
IN 491 JMS Research	2	IN 491 JMS Research	1
IN 492 JMS Seminar	1	IN 492 JMS Seminar	1
Electives	6	Electives	6
<b>TOTAL CREDITS</b>	<b>17</b>	<b>TOTAL CREDITS</b>	<b>16</b>

### SENIOR YEAR

Fall Semester		Spring Semester	
CH 331 Biochemistry	3	CH 482 Chemistry Senior Seminar	1
CH 391 Undergraduate Research	1	CH 406 Advanced Inorganic Chemistry	3
CH 420 Instrumental Analysis	3	IN 491 JMS Research	1
CH 352 Advanced Lab II	1	IN 492 JMS Seminar	1
IN 491 JMS Research	2	Electives	10
IN 492 JMS Seminar	1		
Electives	6		
<b>TOTAL CREDITS</b>	<b>17</b>	<b>TOTAL CREDITS</b>	<b>16</b>

*Tagged course requirements (\*) will be offered under a variety of departmental prefixes. Certain IN250 and/or IN350 courses may simultaneously fulfill Historical Studies and Literature requirements for A&S students if they are designated as meeting these requirements. International Cultures and Structures courses may be met by studying a foreign language as well as via other courses that are tagged as meeting the university requirements.*

*Students are encouraged to select upper-division Chemistry or Tabor School of Business courses for senior year electives. CH 304, CH 406, CH420, CH 351, CH 352, CH 353 are required for an ACS certified degree.*

§ Students who enter Millikin with a strong background in chemistry can receive proficiency credit in CH 121 by

- Scoring 3,4 or 5 on the Advanced Placement Chemistry exam.
- Passing the department's proficiency exam.

