

| Courses | Research | Seminar | Other |
|---|---|---|--|
| <i>BA in Chemistry</i> | | | |
| <ul style="list-style-type: none"> • CHEM 141 <i>or</i> CHEM 191 <i>or</i> CHEM 192 • CHEM 205 • CHEM 206 • CHEM 317 • CHEM 300 • CHEM 301 • CHEM 309/314 <i>or</i> CHEM 310/315 • CHEM 300+ elective (1 unit, CHEM 320/321 exclusive) • MATH 212 <i>or</i> MATH 232 • PHYS 127 <i>or</i> PHYS 131 <i>or</i> PHYS 191 • PHYS 132 | | CHEM 322 CHEM 421-422 <i>(requires presentation and written report)</i> | |
| <i>BS in Chemistry</i> | | | |
| <ul style="list-style-type: none"> • ALL BA requirements • CHEM 309/314 <i>and</i> CHEM 310/315 | 1 total unit Includes written report <i>or</i> outside presentation (written report can be met with CHEM 421-422) | CHEM 322 CHEM 421-422 <i>(requires presentation and written report)</i> | |
| <i>ACS Certified – CHEM Majors</i> | | | |
| <ul style="list-style-type: none"> • ALL BS requirements • CHEM 326 <i>(in addition to 300+ elective, can be taken P/F)</i> | 1 total unit Written research report <i>required</i> (satisfies CHEM 421-422 written report) | CHEM 322 CHEM 421-422 <i>(requires presentation and written report)</i> | Must fill out application and turn written report into Assessment Coordinator |
| <i>ACS Certified – BMB Majors</i> | | | |
| <ul style="list-style-type: none"> • ALL BS requirements for BMB Major • CHEM 317 • CHEM 300/301 <i>or</i> CHEM 302 | 1 total unit Written research report <i>required</i> | BMB 310/311 <i>(requires presentation)</i> | Must fill out application and turn written report into Assessment Coordinator |
| <i>Honors in Chemistry (includes ACS Certification)</i> | | | |
| <ul style="list-style-type: none"> • ALL BS requirements • CHEM 326 <i>(in addition to 300+ elective)</i> | 2 total units Written research report <i>required</i> (satisfies CHEM 421-422 written report) | CHEM 322 CHEM 421-422 <i>(requires presentation and written report)</i> | Must fill out application and turn written report into Assessment Coordinator Must maintain 3.3 GPA |

For an ACS Certified degree with a BS in Chemistry

1. Must fill out application found on Chemistry website and return to Assessment Coordinator by the SECOND WEEK of the Spring semester of senior year
2. CHEM 326
 - a. Must be taken *in addition to another* 300+ chemistry elective
 - b. Can be taken P/F
3. 1 total unit of research with a *written research report*
 - a. 1 unit can be completed under any Gottwald faculty
 - b. Can be for-credit research during the semester or summer research (a single summer session counts for 1 unit)
 - c. Written report must be based on research completed and in a style suitable for a journal submission within the particular subdiscipline
 - i. Generally, written research reports should include the following sections: abstract, intro/background, experimental, results and discussion/conclusions
 - ii. Evaluated by research mentor and second reader
 - iii. Written report can also satisfy the report requirement for senior seminar
 - iv. Written report must be turned in to Assessment Coordinator by the end of the final semester

For an ACS Certified degree with a BS in BMB

1. Must fill out application found on Chemistry website and return to Assessment Coordinator by the SECOND WEEK of the Spring semester of senior year
2. CHEM 317
3. CHEM 300/301 *or* CHEM 302
4. 1 total unit of research with a *written research report*
 - a. 1 unit can be completed under any Gottwald faculty
 - b. Can be for-credit research during the semester or summer research (a single summer session counts for 1 unit)
 - c. Written report must be based on research completed and in a style suitable for a journal submission within the particular subdiscipline
 - i. Generally, written research reports should include the following sections: abstract, intro/background, experimental, results and discussion/conclusions
 - ii. Evaluated by research mentor and second reader
 - iii. Written report must be turned in to Assessment Coordinator by the end of the final semester

For Honors in Chemistry (includes ACS Certification)

1. Must fill out application found on Chemistry website and return to Assessment Coordinator by THANKSGIVING of Fall semester of senior year
2. CHEM 326
 - a. Must be taken *in addition to another* 300+ chemistry elective
3. 2 total units of research with a *written research report*
 - a. 1 unit can be completed under any Gottwald faculty
 - b. Can be for-credit research during the semester or summer research (a single summer session counts for 1 unit)
 - c. Written report must be based on research completed and in a style suitable for a journal submission within the particular subdiscipline
 - i. Generally, written research reports should include the following sections: abstract, intro/background, experimental, results and discussion/conclusions
 - ii. Evaluated by research mentor and second reader
 - iii. Written report can also satisfy the report requirement for senior seminar

- iv. Written report must be turned in to Assessment Coordinator by the end of the final semester
4. Must maintain a GPA of at least 3.3 (overall)

Requirements for various degrees and certifications

1. BS: BA + research (1 unit or 1 summer) + PChem I **and** II
2. ACS Certified: BS + research report + CHEM 326 *in addition to* upper-level elective (can be taken P/F)
3. Honors: BS + research report + CHEM 326 *in addition to* upper-level elective + extra research (2 units total) + 3.3 GPA
4. ACS Certified with BMB major: BS + research report + CHEM 317 + CHEM 300/301 **or** CHEM 302

Comparison of Degree Requirements

| Course | Honors | ACS Certification | BS | BA |
|---------------------------------|--------------------------|-------------------|-------------------------------|----------------|
| 141 or 192 | X | X | X | X |
| 205 | X | X | X | X |
| 206 | X | X | X | X |
| 300 (F) | X | X | X | X |
| 301 (F) | X | X | X | X |
| 309 (F) | X | X | X | X ^a |
| 310 (S) | X | X | X | X ^a |
| 314 (S) | X | X | X | X ^a |
| 315 (S) | X | X | X | X ^a |
| 317 | X | X | X | X |
| 322 | X | X | X | X |
| 421 | X | X | X | X |
| 422 | X | X | X | X |
| 406 / 320 | X ^b | X | X | |
| An upper-level elective | X | X | X | X |
| 326 | X | X | | |
| Research Presentation or Report | Report (Thesis) required | Report required | Either report or presentation | Not required |

^aEither CHEM 309 with CHEM 314 or CHEM 310 with CHEM315

^bTwo (2) units required. Note: CHEM 406 counts despite not having a unit value

Suggested course sequence for students taking Chem 141 and not studying abroad

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| CHEM 141 1.0U F/S | x | o | | | | | | |
| CHEM 205 1.0U F/S | | x | o | | | | | |
| CHEM 206 1.0U F/S | | | x | o | | | | |
| CHEM 317 1.0U F/S | | | | x | o | | | |
| MATH 211 F/S | x | o | | | | | | |
| MATH 212 F/S | | x | o | | | | | |
| PHYS 131 F/S | | | x | o | | | | |
| PHYS 132 F/S | | | | x | o | | | |
| CHEM 300 1.0U F | | | | | x | | o | |
| CHEM 301 1.5U F (300) | | | | | o | | o | |
| CHEM 309 1.0 F (M212 P132)* | | | | | o | | o | o |
| CHEM 314 0.5U S (309)* | | | | | | o | | o |
| CHEM 310 1.0U S (M212 P132)* | | | | | | x | | o |
| CHEM 315 0.5U S (310)* | | | | | | x | | o |
| CHEM 326 1.0U F/S" | | | | o | o | o | o | o |
| CHEM 300+ Elective 1.0U varies | | | | o | o | o | o | o |
| CHEM 322 0.0U F/S | | | | | | x | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | | o | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | x | | | | | | |
| BIOL 200" | | o | x | | | | | |
| BIOL 202" | | | o | x | | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |

Note: for ACS certification or Honors, must take a 300+ elective in addition to 326

counts as the 300+ elective and recommended for prehealth

includes a lab

specific lab course

seminar course

research

(###) Pre or coreq

F = Fall only

S = Spring only

F/S = Fall or Spring

x = recommended time to take course

o = student option for when to take the course

*Needed for BS

"Med School

Chemistry Electives

| | |
|----------|------------------------------------|
| CHEM 302 | Spectroscopy & Instrumentation |
| CHEM 313 | The Natures of the Chemical Bond |
| CHEM 316 | Environmental Chemistry |
| CHEM 324 | Experimental Biochemistry |
| CHEM 325 | Experimental Biophysical Chemistry |
| CHEM 330 | Special Topics in Biochemistry |
| CHEM 333 | Chemical Biology |
| CHEM 342 | Medicinal Chemistry |
| CHEM 343 | Organic Reactions and Mechanisms |
| CHEM 344 | Organic Synthesis |
| CHEM 417 | Organometallic Chemistry |
| CHEM 433 | Special Topics in Chemistry |

Note: not all electives offered in a given year

Suggested course sequence for students taking Chem 141 and studying abroad (Fall)

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| CHEM 141 1.0U F/S | x | o | | | | | | |
| CHEM 205 1.0U F/S | | x | o | | | | | |
| CHEM 206 1.0U F/S | | | x | o | | | | |
| CHEM 317 1.0U F/S | | | | x | | o | | |
| MATH 211 | x | o | | | | | | |
| MATH 212 | | x | o | | | | | |
| PHYS 131 | | | x | o | | | | |
| PHYS 132 | | | | x | | o | | |
| CHEM 300 1.0U F | | | | | | | x | |
| CHEM 301 1.5U F (300) | | | | | | | x | |
| CHEM 309 1.0 F (M212 P132)* | | | | | | | x | |
| CHEM 314 0.5U S (309)* | | | | | | | | x |
| CHEM 310 1.0U S (M212 P132)* | | | | | | x | | o |
| CHEM 315 0.5U S (310)* | | | | | | x | | o |
| CHEM 326 1.0U F/S" | | | | o | | o | | o |
| CHEM 300+ Elective 1.0U varies | | | | o | | o | | o |
| CHEM 322 0.0U F/S | | | | | | x | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | | o | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | x | | | | | | |
| BIOL 200" | | o | x | | | | | |
| BIOL 202" | | | o | x | | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |

Note: for ACS certification or Honors, must take a 300+ elective in addition to 326

counts as the 300+ elective and recommended for prehealth

includes a lab

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seminar course

research

(###) Pre or coreq

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"Med School

Chemistry Electives

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| CHEM 324 | Experimental Biochemistry |
| CHEM 325 | Experimental Biophysical Chemistry |
| CHEM 330 | Special Topics in Biochemistry |
| CHEM 333 | Chemical Biology |
| CHEM 342 | Medicinal Chemistry |
| CHEM 343 | Organic Reactions and Mechanisms |
| CHEM 344 | Organic Synthesis |
| CHEM 417 | Organometallic Chemistry |
| CHEM 433 | Special Topics in Chemistry |

Note: not all electives offered in a given year

Suggested course sequence for students taking Chem 141 and studying abroad (Spring)

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| CHEM 141 1.0U F/S | x | o | | | | | | |
| CHEM 205 1.0U F/S | | x | o | | | | | |
| CHEM 206 1.0U F/S | | | x | o | | | | |
| CHEM 317 1.0U F/S | | | | x | | | | |
| MATH 211 | x | o | | | | | | |
| MATH 212 | | x | o | | | | | |
| PHYS 131 | | | x | o | | | | |
| PHYS 132 | | | | x | | | | |
| CHEM 300 1.0U F | | | | | o | | o | |
| CHEM 301 1.5U F (300) | | | | | o | | o | |
| CHEM 309 1.0 F (M212 P132)* | | | | | o | | o | |
| CHEM 314 0.5U S (309)* | | | | | | | | x |
| CHEM 310 1.0U S (M212 P132)* | | | | | | | | x |
| CHEM 315 0.5U S (310)* | | | | | | | | x |
| CHEM 326 1.0U F/S" | | | | o | o | | | |
| CHEM 300+ Elective 1.0U varies | | | | o | o | | o | o |
| CHEM 322 0.0U F/S | | | | | x | | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | o | | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | o | x | | | | | |
| BIOL 200" | | o | o | x | | | | |
| BIOL 202" | | | o | o | x | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |
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| CHEM 344 | Organic Synthesis |
| CHEM 417 | Organometallic Chemistry |
| CHEM 433 | Special Topics in Chemistry |

Note: not all electives offered in a given year

Suggested course sequence for students taking SMART and not studying abroad

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| BIOL 191 1.0U F | x | | | | | | | |
| CHEM 192 1.0U S | | x | | | | | | |
| CHEM 205 1.0U F/S | | | x | | | | | |
| CHEM 206 1.0U F/S | | | | x | | | | |
| CHEM 317 1.0U F/S | | | | | o | o | | |
| MATH 211 | x | | | | | | | |
| MATH 212 | | x | | | | | | |
| PHYS 131 | | | x | | | | | |
| PHYS 132 | | | | x | | | | |
| CHEM 300 1.0U F | | | | | x | | o | |
| CHEM 301 1.5U F (300) | | | | | | | x | |
| CHEM 309 1.0 F (M212 P132)* | | | | | x | | o | |
| CHEM 314 0.5U S (309)* | | | | | | x | | o |
| CHEM 310 1.0U S (M212 P132)* | | | | | | x | | o |
| CHEM 315 0.5U S (310)* | | | | | | o | | o |
| CHEM 326 1.0U F/S" | | | | | o | o | o | o |
| CHEM 300+ Elective 1.0U varies | | | | | o | o | o | o |
| CHEM 322 0.0U F/S | | | | | | x | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | | o | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | x | | | | | | |
| BIOL 200" | | o | x | | | | | |
| BIOL 202" | | | o | x | | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |

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| CHEM 333 | Chemical Biology |
| CHEM 342 | Medicinal Chemistry |
| CHEM 343 | Organic Reactions and Mechanisms |
| CHEM 344 | Organic Synthesis |
| CHEM 417 | Organometallic Chemistry |
| CHEM 433 | Special Topics in Chemistry |

Note: not all electives offered in a given year

Suggested course sequence for students taking SMART and studying abroad (Fall)

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| BIOL 191 1.0U F | x | | | | | | | |
| CHEM 192 1.0U S | | x | | | | | | |
| CHEM 205 1.0U F/S | | | x | | | | | |
| CHEM 206 1.0U F/S | | | | x | | | | |
| CHEM 317 1.0U F/S | | | | | | x | | |
| MATH 211 | x | | | | | | | |
| MATH 212 | | x | | | | | | |
| PHYS 131 | | | x | | | | | |
| PHYS 132 | | | | x | | | | |
| CHEM 300 1.0U F | | | | | | | x | |
| CHEM 301 1.5U F (300) | | | | | | | x | |
| CHEM 309 1.0 F (M212 P132)* | | | | | | | x | |
| CHEM 314 0.5U S (309)* | | | | | | | | x |
| CHEM 310 1.0U S (M212 P132)* | | | | | | x | | o |
| CHEM 315 0.5U S (310)* | | | | | | o | | o |
| CHEM 326 1.0U F/S" | | | | | | o | | |
| CHEM 300+ Elective 1.0U varies | | | | | | o | | o |
| CHEM 322 0.0U F/S | | | | | | x | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | | o | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | x | | | | | | |
| BIOL 200" | | o | x | | | | | |
| BIOL 202" | | | o | x | | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |

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| CHEM 417 | Organometallic Chemistry |
| CHEM 433 | Special Topics in Chemistry |

Note: not all electives offered in a given year

Suggested course sequence for students taking SMART and studying abroad (Spring)

| Course | Year 1 | | Year 2 | | Year 3 | | Year 4 | |
|--------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| BIOL 191 1.0U F | x | | | | | | | |
| CHEM 192 1.0U S | | x | | | | | | |
| CHEM 205 1.0U F/S | | | x | | | | | |
| CHEM 206 1.0U F/S | | | | x | | | | |
| CHEM 317 1.0U F/S | | | | | x | | | |
| MATH 211 | x | | | | | | | |
| MATH 212 | | x | | | | | | |
| PHYS 131 | | | x | | | | | |
| PHYS 132 | | | | x | | | | |
| CHEM 300 1.0U F | | | | | o | | o | |
| CHEM 301 1.5U F (300) | | | | | o | | o | |
| CHEM 309 1.0 F (M212 P132)* | | | | | o | | o | |
| CHEM 314 0.5U S (309)* | | | | | | | | x |
| CHEM 310 1.0U S (M212 P132)* | | | | | | | | x |
| CHEM 315 0.5U S (310)* | | | | | | | | x |
| CHEM 326 1.0U F/S" | | | | | o | | | |
| CHEM 300+ Elective 1.0U varies | | | | | o | | o | o |
| CHEM 322 0.0U F/S | | | | | x | | | |
| CHEM 421 0.0U F/S | | | | | | | x | |
| CHEM 422 0.5U F/S | | | | | | | | x |
| CHEM 320 or 321 or 406 0.5-1.0U* | | | o | o | o | | o | o |
| ADDITIONAL PRE-HEALTH COURSES | | | | | | | | |
| BIOL 199" | o | o | x | | | | | |
| BIOL 200" | | o | o | x | | | | |
| BIOL 202" | | | o | o | x | | | |
| PSYC 100" | | | | | | | | |
| HS 100" | | | | | | | | |
| SOC 101" | | | | | | | | |
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