

College of Science, Technology, Engineering and Mathematics
Program Requirements for:
BA Chemistry – Pre-Pharmacy Track

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|----------------|------------------|---------------------|--|
| Student Name | | Banner # | |
| Cell Phone # | | E-Mail Address | |
| Street Address | | City/State/Zip Code | |
| Birth Date | Date Entered YSU | Date Declared Major | |

| | | | |
|---------------|---|--|---|
| Department | Chemistry | Dept. Location | 5053 Ward Beecher Hall |
| Chairperson | Dr. Timothy Wagner trwagner@ysu.edu | Dept. Web Address | http://chemistry.ysu.edu/ |
| Dept. Phone # | (330) 941-3662 | Effective Date of Program Requirements | |

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|-------------------------------------|------------------------|--|--|
| Requirements for Graduation: | | | |
| | GER model complete | Foreign Language through 2600 level (8 sh) | Minimum of 120 total sh for the degree |
| | Minimum 39 sh in major | (Foreign Lang. is required for a BA in CHEM) | Residency requirement (see notes) |
| | Minimum 18 sh in minor | Minimum 48 sh of upper-division credit | Minimum of 2.00 GPA |

| General Education Requirements (GER) | | | | |
|---|--------|--|-----|----|
| Subject | Crs. # | Course Title | SH | Gr |
| STEM | 1520 | STEM First Year Experience | 2 | |
| ENGL | 1550 | Writing 1 (CRPT or ENGL 1539/1540) | 3 | |
| ENGL | 1551 | Writing 2 (ENGL 1550) | 3 | |
| CMST | 1545 | Communication Foundations (eligibility for ENGL 1550) | 3 | |
| MATH | 1571 | Calculus 1 (Level 70 on the MPT or MATH 1513) | 4 | |
| A variety of MATH courses may satisfy the MATH GER, although your major may require a specific one. | | | | |
| General Education Knowledge Domains | | | | |
| Some courses are categorized in more than one knowledge domain. Courses can only be used <u>once</u> within the General Education model. Consult the GER website or your advisor for the list of approved courses meeting General Education requirements: https://cms.ysu.edu/general-education/ysu-general-education-courses | | | | |
| Arts & Humanities (AH): 2 courses (6 sh) | | | | |
| | | | | |
| Natural Sciences (NS): 2 courses, one must be include a lab | | | | |
| PHYS | 2610/L | General Physics 1 & Lab | 4+1 | |
| PHYS | 2611/L | General Physics 2 & Lab | 4+1 | |
| | | | | |
| Social Sciences (SS): 2 courses (6 sh) | | | | |
| | | | | |
| Social & Personal Awareness (SPA): 2 courses (6 sh) | | | | |
| | | | | |
| General Education Elective: 1 course | | | | |
| Bachelor of Arts Degree Requirement: Foreign Language (8 sh) | | | | |
| FNLG | 1550 | | 4 | |
| FNLG | 2600 | | 4 | |

Advisement:
Freshman, athletes, and students on warning and probation are **required** to meet with an advisor before registration.
It is recommended that all majors meet with a faculty advisor every semester.

| Remedial Coursework | | | | |
|---|---------|--|----|----|
| Students take the following coursework based on scores from their placement exams or ACT/SAT scores. Please see your advisor to determine which courses you are required to complete. These courses do NOT count toward graduation hours. | | | | |
| Subject | Crs. # | Course Title | SH | Gr |
| RSS | 1510A | Advanced College Success Skills | 3 | |
| RSS | 1510B | Basic College Success Skills | 3 | |
| RSS | 1510C | STEM Adv College Success Skills | 3 | |
| ENGL | 1509/12 | Aca Conv for Non-native Speakers | 3 | |
| ENGL | 1512 | Eng Conv for Non-native Speakers | 1 | |
| ENGL | 1539 | Fundamentals of College Writing | 4 | |
| ENGL | 1540 | Introduction to College Writing | 3 | |
| MATH | 1501 | Elementary Algebraic Models | 5 | |
| MATH | 1505 | Intermediate Algebra with Applications | 5 | |
| MATH | 1507 | Intermediate Algebra | 3 | |

The Undergraduate Catalog is found at:
<http://catalog.ysu.edu/courses/>

General Education courses can be found at:
<https://cms.ysu.edu/general-education/ysu-general-education-courses>

BA Chemistry – Pre-Pharmacy Track

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|---|-----|
| Required Hours for the Major | 61 |
| Required Hours for the Minor | 18 |
| Required Upper-Division Hours for the Degree | 48 |
| Total Hours Required for the Degree | 123 |

Grade of "C" or better is required. Courses cannot be taken "CR/NC".

The following CHEM core courses are required (29 sh):

| Subj. | Crs. # | Course Title | SH | Gr |
|-------|--------|--|-----|----|
| CHEM | 1515/L | General Chemistry 1 & Lab (chem 1501 or equivalent; MATH 1513 or equivalent; concurrent 1515R) | 4+0 | |
| CHEM | 1515R | Recitation for Gen. Chemistry 1 (concurrent CHEM 1515) | 1 | |
| CHEM | 1516/L | General Chemistry 2 & Lab ("C" or better in CHEM 1515; concurrent 1516R) | 4+0 | |
| CHEM | 1516R | Recitation for Gen. Chemistry 2 (concurrent CHEM 1516) | 1 | |
| CHEM | 2604/L | Quantitative Analysis (CHEM 1516) | 5+0 | |
| CHEM | 3719/L | Organic Chemistry 1 & Lab ("C" or better in CHEM 1516; concurrent 3719R) | 4+0 | |
| CHEM | 3719R | Recitation for Organic Chem. 1 (concurrent CHEM 3719) | 1 | |
| CHEM | 3720/L | Organic Chemistry 2 & Lab ("C" or better in CHEM 3719; concurrent 3720R) | 4+0 | |
| CHEM | 3720R | Recitation for Organic Chem. 2 (concurrent CHEM 3720) | 1 | |
| CHEM | 3739/L | Physical Chemistry 1 & Lab ("C" or better in CHEM 3720; PHYS 2611/2611L; MATH 1572) | 4+0 | |

The following capstone is required (1 sh):

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| CHEM | 4850 | Chemistry Research | 1 | |
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The following non-CHEM courses are required (22 sh):

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|------------|------------|--|-----|--|
| MATH | 1571 | Calculus 1 (MATH 1513 or level 50 on MPT) | 4 | |
| MATH | 1572 | Calculus 2 (MATH 1571) | 4 | |
| STAT | 3717 | Statistical Methods (MATH 1549 or 1570 or 1571 or 1585H or equivalent) | 4 | |
| or STAT | or 3743 | or Probability and Statistics (MATH 1572 or 1585H) | | |
| PHYS | 2610/L | General Physics 1 & Lab (HS physics or PHYS 1505 and prereq. or concurrent: MATH 1571) | 4+1 | |
| PHYS | 2611/L | General Physics 2 & Lab (PHYS 2610 & prereq. or concurrent: MATH 1572) | 4+1 | |

Electives:

Select nine (9) sh of upper-level CHEM electives (3000 or higher) from the list below.

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|------|--------|--|-----|--|
| CHEM | 3729 | Inorganic Chemistry (Pre-req or concurrent: CHEM 3739) | 3 | |
| CHEM | 3740/L | Physical Chemistry 2 & Lab ("C" or better in CHEM 3739; MATH 2673) | 4+0 | |
| CHEM | 3764 | Chemical Toxicology (CHEM 3720) | 3 | |
| CHEM | 3785 | Biochemistry 1 (CHEM 3720) | 3 | |
| CHEM | 3786 | Biochemistry 2 (CHEM 3785) | 3 | |
| CHEM | 3790 | Undergraduate Seminar (Prereq. or concurrent: CHEM 2604 and CHEM 3720) | 1 | |
| CHEM | 4850L | Research Lab (Prereq. or concurrent: CHEM 4850 and approval of department chairperson) | 2-4 | |
| CHEM | 4860 | Regulatory Aspects of Industrial Chemistry (CHEM 3720) | 1 | |
| CHEM | 5804/L | Chemical Instrumentation (CHEM 3739) | 2+2 | |
| CHEM | 5821 | Intermediate Organic Chemistry (CHEM 3720) | 3 | |
| CHEM | 5822/L | Advanced Organic Lab (CHEM 3720) | 2+2 | |
| CHEM | 5830 | Intermediate Inorganic Chemistry (CHEM 3729; pre-req or concurrent: CHEM 3740) | 2 | |
| CHEM | 5831 | Inorganic Lab (Pre-req or concurrent: CHEM 3729 and CHEM 3739) | 2 | |
| CHEM | 5832/L | Solid State Structural Methods (CHEM 3729) | 2+1 | |

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|------|--------|--|-----|--|
| CHEM | 5836 | Quantum Chemistry (CHEM 3740) | 3 | |
| CHEM | 5861/L | Polymer Science 1 (CHEM 3739) | 2+1 | |
| CHEM | 5862/L | Polymer Science 2 (CHEM 5861) | 2+1 | |
| CHEM | 5876 | Enzyme Analysis (CHEM 3785 or equivalent and CHEM 3785L or equivalent) | 2 | |
| CHEM | 3785L | Biochemistry 1 Lab (Pre-req or concurrent: CHEM 3785) | 1 | |
| CHEM | 4891 | Special Topics | 1-3 | |

Important Notes:

- View the online YSU *Undergraduate Catalog* (<http://catalog.ysu.edu/courses/>) for information including course descriptions and prerequisites, major and minor requirements, academic policies, etc.
- An accumulated GPA of 2.00 or above is required to graduate.
- All students must satisfy General Education requirements; some majors prescribe specific GE courses.
- A grade of "C" or better is required in all required major and minor courses. Courses taken as "CR/NC" will not count towards the major or minor. Courses taken out of sequence will not count toward graduation.
- Courses cannot count toward both the major and minor.
- Courses taken for the major and minor may be applied toward satisfying General Education requirements but credit hours toward graduation cannot be double counted.
- Eight semester hours of foreign language through the 2600 level are required of some majors; check your major requirements.
- Course numbers of 3700 and higher are considered upper-division courses.
- You must complete coursework totaling a minimum of 124 sh to graduate (at least 60 sh must be completed at the 2600 level or higher and 48 sh must be at the 3700 level or higher).
- The following courses do NOT count as hours toward graduation: MATH 1501, 1505 and 1507; ENGL 1509, 1512, 1539 and 1540; and RSS 1510A, 1510B and 1510C.
- The residency rule requires the last 30 sh of your degree and at least 16 sh in your major and 21 sh in upper-division courses to be completed at YSU.
- Eligibility to continue receiving federal financial aid is affected by your "satisfactory academic progress." Carefully review details on the Office of Financial Aid and Scholarship website: <http://www.ysu.edu/content/office-financial-aid-and-scholarships>
- Meet with your advisor on a regular basis to ensure you are meeting requirements for graduation.

Graduation Process

- **One Year Before Expected Graduation**
 - Request a Graduation Evaluation after you have completed 80-85 sh from the STEM Advising Center, 2325 Moser Hall, 330-941-2512.
 - When your evaluation is complete, make an appointment with the chairperson of your department.
- **Semester You Plan To Graduate**
 - Apply for graduation during the *first three weeks of the semester* you plan to graduate (you must have a graduation evaluation completed in advance).



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Program Requirements for:

BA Chemistry – Pre-Pharmacy Track

Suggested 4-Year Semester Plan

| Year 1 - Fall Semester | | | | | Year 1 – Spring Semester | | | | |
|------------------------|----------|-------------------------------|-----------|----|--------------------------|----------|---------------------------------|-----------|----|
| Subj. | Course # | Course Title | SH | Gr | Subj. | Course # | Course Title | SH | Gr |
| CHEM | 1515/L | General Chemistry 1 & Lab | 4 | | CHEM | 1516/L | General Chemistry 2 & Lab | 4 | |
| CHEM | 1515R | Recitation for Gen. Chem. 1 | 1 | | CHEM | 1516R | Recitation for Gen. Chem. 2 | 1 | |
| MATH | 1571 | Calculus 1 | 4 | | MATH | 1572 | Calculus 2 | 4 | |
| STEM | 1520 | STEM First Year Experience | 3 | | ENGL | 1550 | Writing 1 | 3 | |
| | 1550 | Foreign Language - Elementary | 4 | | | 2600 | Foreign Language - Intermediate | 4 | |
| TOTAL | | | 15 | | TOTAL | | | 16 | |

| Year 2 - Fall Semester | | | | | Year 2 – Spring Semester | | | | |
|------------------------|----------|--------------------------------|-----------|----|--------------------------|----------|--------------------------------|-----------|----|
| Subj. | Course # | Course Title | SH | Gr | Subj. | Course # | Course Title | SH | Gr |
| CHEM | 3719/L | Organic Chemistry 1 & Lab | 4 | | CHEM | 3720/L | Organic Chemistry 2 & Lab | 4 | |
| CHEM | 3719R | Recitation for Organic Chem. 1 | 1 | | CHEM | 3720R | Recitation for Organic Chem. 2 | 1 | |
| BIOL | 2601/L | Molecules and Cells | 4 | | CHEM | 2604/L | Quantitative Analysis & Lab | 5 | |
| PHYS | 2610/L | General Physics 1 & Lab | 5 | | PHYS | 2611/L | General Physics 2 & Lab | 5 | |
| ENGL | 1551 | Writing 2 | 3 | | | | | | |
| TOTAL | | | 17 | | TOTAL | | | 15 | |

| Year 3 - Fall Semester | | | | | Year 3 – Spring Semester | | | | |
|------------------------|-----------------|--|-----------|----|--------------------------|----------|---------------------------|-----------|----|
| Subj. | Course # | Course Title | SH | Gr | Subj. | Course # | Course Title | SH | Gr |
| CHEM | 3739/L | Physical Chemistry 1 & Lab | 4 | | CHEM | 3786 | Biochemistry 2 | 3 | |
| CHEM | 3785 | Biochemistry 1 | 3 | | CHEM | 5876 | Enzyme Analysis | 2 | |
| CHEM | 3785L | Biochemistry 1 Lab | 1 | | BIOL | 3702/L | Microbiology & Lab | 4 | |
| BIOL | 2602/L | Organisms and Ecology | 4 | | BIOL | 3705/L | Human Gross Anatomy & Lab | 4 | |
| STAT | 3717 or 3743 | Statistical Methods or Probability and Statistics | 4 | | GER | | | 3 | |
| TOTAL | | | 16 | | TOTAL | | | 16 | |

| Year 4 - Fall Semester | | | | | Year 4 – Spring Semester | | | | |
|------------------------|----------|---------------------------|-----------|----|--------------------------|----------|-----------------------------|-----------|----|
| Subj. | Course # | Course Title | SH | Gr | Subj. | Course # | Course Title | SH | Gr |
| CHEM | 4850 | Chemistry Research | 1 | | BIOL | | 4800 or 5800-level elective | 4 | |
| BIOL | 3730/L | Human Physiology & Lab | 5 | | | | Upper-Level GER | 5 | |
| CMST | 1545 | Communication Foundations | 3 | | GER | | | 4 | |
| GER | | | 6 | | | | | | |
| TOTAL | | | 15 | | TOTAL | | | 13 | |

| | |
|--|------------|
| Required Hours for the Major | 61 |
| Required Hours for the Minor | 18 |
| Required Upper-Division Hours for the Degree | 48 |
| Total Hours Required for the Degree | 123 |