Hello scholars. Chemistry Department faculty have put together this handbook to give you information about the department. You can find the most updated version of this handbook on the department website, wku.edu/chemistry. The WKU University Catalog is the final authority on policies and procedures.

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I’ve been asked from time to time, “How does it happen that you have made so many discoveries? Are you smarter than other scientists?” And my answer has been that I am sure that I am not smarter than other scientists. I don’t have any precise evaluation of my IQ, but to the extent that psychologists have said that my IQ is about 160, I recognize that there are one hundred thousand or more people in the United States that have IQs higher than that. So I have said that I think I think harder, think more than other people do, than other scientists. That is, for years, almost all of my thinking was about science and scientific problems that I was interested in.

- Linus Pauling

Last updated 10/03/2017
Chemistry Department Mission:

WKU Chemistry empowers students of all backgrounds to think critically about the molecular sciences and promotes a vibrant regional economy through training, public service, and industrial collaboration. We ignite a spirit of life-long learning through engaged classroom and laboratory instruction, hands-on experience in nationally-recognized research, and direct mentoring by faculty. This enables our students to define their own career path and to make an impact both locally and globally.

Comparing the programs:

The table below outlines the different majors and minors available within the Chemistry Department.

<table>
<thead>
<tr>
<th>JUMP</th>
<th>ACS</th>
<th>General Chemistry</th>
<th>Biochemistry</th>
<th>Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best For</td>
<td>Masters/Bachelors in five years total</td>
<td>Students wishing to be chemists, pursuing graduate work in chemistry</td>
<td>Students interested in chemistry as it relates to a different profession, like teaching, medicine, pharmacy, or environmental studies</td>
<td>Students interested in the intersection between chemistry and biology</td>
</tr>
<tr>
<td>Basic Chemistry</td>
<td>General Chemistry: CHEM 120/121, 222/223</td>
<td>Calculus I and Biophysics I</td>
<td>Calculus I, Biophysics I, BIOL 120-123, 319, 322, 411, Electives</td>
<td>None</td>
</tr>
<tr>
<td>Other Required Courses</td>
<td>Calculus I&amp;II University Physics</td>
<td>Calculus I and Biophysics I</td>
<td>Calculus I, Biophysics I, BIOL 120-123, 319, 322, 411, Electives</td>
<td>None</td>
</tr>
<tr>
<td>Research/Seminar</td>
<td>Undergraduate Seminar: CHEM 398 CHEM 399</td>
<td>Can be elective</td>
<td>Can be elective</td>
<td>None</td>
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<tr>
<td>Graduate Courses</td>
<td>Take up to 9 hours of 400G (double counting ok), plus 9 hours of 500-level, plus 6 hours of thesis, 2 hours of seminar, and 6 hours of writing</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Also Requires</td>
<td>None</td>
<td>None</td>
<td>Minor or second major</td>
<td>None</td>
</tr>
</tbody>
</table>

** Minors and General Chemistry Majors may elect to take CHEM 320 instead of CHEM 342/343.
Chemistry Advising:

Each Chemistry major will be assigned an advisor within the department. That information is available to you in TopNet (under “Advisor Contact Information”). Students who do not have a Chemistry advisor listed should contact the department office to get an advisor. The department office is in 444 TCCW (temporarily located on the 2nd floor of College High Hall during the renovation). They can also be contacted by email (chemistry@wku.edu) or by phone at 270-745-3457.

Students should meet with their advisor every semester to talk about their progress, to discuss strategies for success, and to plan for the next semester and for their career. Advisors can help students compare different programs (ACS Major, General Major, JUMP, minor), match career paths with courses, and identify research, scholarship, and internship opportunities. They may also be able to connect students with part-time employment within the department, such as in the chemistry stockroom, or as a teaching assistant or tutor.

Chemistry Placement:

Detailed help on placement for all 100-level chemistry courses is available through the chemistry website (http://www.wku.edu/chemistry/info_for_advisors.php). For chemistry majors and minors, the initial chemistry course is CHEM 120, but placement into that course relies on satisfying one of the following conditions:

- An ACT Math score of 26 or greater
- Credit for (or successful placement out of) WKU MATH 116 (College Algebra)

Take CHEM 116 before CHEM 120 if both of the following are true:

- You have completed OR are enrolled in MATH 116
- You feel that you need additional preparation in chemistry

Credit for Chemistry coursework can be granted through CLEP, Advanced Placement (AP) exams, or by International Baccalaureate (IB) work.

Advanced Placement/CLEP

The latest guidelines for the Advanced Placement credits and CLEP scores are found online for all WKU departments (https://www.wku.edu/registrar/documents/form_creditbyexam.pdf). As of April 2017:

With a score of 3 on the AP chemistry exam, credit can be awarded for CHEM 116 or CHEM 101.

With a score of 4 or higher, credit can be awarded for either CHEM 105/106 or CHEM 120/121 (the latter for chemistry majors and minors).
International Baccalaureate (IB)

The latest guidelines for the International Baccalaureate credits are found online for all courses at WKU (https://www.wku.edu/international/ib.php). As of April 2017, credit for CHEM 120/121 can be obtained by a minimum score of 5 on the HL level exam.

WKU General Education Requirements (Colonnade Plan):

The colonnade plan at WKU includes 39 credit hours of general education requirements for all students at WKU; some of these requirements will be met within your major. Full details about the WKU Colonnade Plan are available at https://www.wku.edu/colonnade/. The courses are divided into 3 categories:

**Foundations (18 hours):**
- College Composition: Usually ENG 100
- Writing in the Discipline: Usually ENG 300
- Human Communication: Usually COMM 145.
- Quantitative Reasoning: Met automatically within chemistry major via MATH support courses
- Literary Studies: Usually ENG 200.
- World History: Requires HIST 101 or HIST 102

**Explorations (12 hours):**
- Arts and Humanities: Several to choose from
- Social and Behavioral Sciences: Several to choose from
- Natural and Physical Sciences with lab: CHEM 120/121 meet this requirement
- National Sciences #2: Must take one non-CHEM science class (often fulfilled by course in minor or PHYS)

**Connections (9 hours):**
- Social and Cultural: Several to choose from
- Local to Global: Several to choose from
- Systems: Several to choose from

**Pre-professional Program Information:**

The pre-professional programs require a substantial number of chemistry classes. It would be a great idea for you to take a few additional courses to obtain a major or minor in chemistry. See the plans of study in the last few pages of this handbook: they include examples for creating a four-year plan, including with the various pre-professional majors.
Pre-Medicine

http://www.wku.edu/wkuhpa/pre_medical.php
CHEM 446 must be taken during the junior year. CHEM 330 should be taken after CHEM 340-343 or be taken during a summer term.
Additional classes needed for a chemistry major: CHEM 330, CHEM 412 and PHYS 231
Additional classes needed for a chemistry minor: CHEM 330

Pre-Pharmacy

http://www.wku.edu/wkuhpa/pre_pharmacy.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 412, CHEM 446 (all are highly recommended for PCAT preparation)
Additional classes needed for a chemistry minor: CHEM 330

Pre-Dental

http://www.wku.edu/wkuhpa/pre_dental.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 412 and PHYS 231
Additional classes needed for a chemistry minor: CHEM 330

Pre-Optometry

http://www.wku.edu/wkuhpa/pre_optometry.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 412 and PHYS 231
Additional classes needed for a chemistry minor: CHEM 330

Pre-Physical Therapy

http://www.wku.edu/wkuhpa/pre_physical_therapy.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 340/341, CHEM 342/343, CHEM 412, CHEM 446, MATH 136
Additional classes needed for a chemistry minor: CHEM 330, CHEM 340/341

Pre-Physician Assistant

http://www.wku.edu/wkuhpa/pre_physician_assistant.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 342/343, CHEM 412, MATH 136, PHYS 231
Additional classes needed for a chemistry minor: CHEM 330

Pre-Podiatry

http://www.wku.edu/wkuhpa/pre_podiatry.php
Additional classes needed for a chemistry major: CHEM 330, CHEM 412 and PHYS 231
Additional classes needed for a chemistry minor: CHEM 330
Pre-Veterinary

http://www.wku.edu/wkuhpa/pre_veterinary.php

Additional classes needed for a chemistry major: CHEM 330 and CHEM 412
Additional classes needed for a chemistry minor: CHEM 330

Joint Undergraduate-Master’s Program (JUMP):

WKU Chemistry offers a five-year integrated program of study for students to simultaneously earn both a BS in Chemistry (with ACS certification) and an MS (through the traditional research track). The program is designed with research emphasized early so that an effective, impactful research thesis will be written at the end of year five. JUMP students should be ready to begin the program and enter JUMP advising around the end of the second year, but can sign up any time before 90 total hours are reached. Students in our program:

• Take many of their 400-level chemistry courses at the G-level, earning graduate credit for them
• Complete several advanced courses not usually covered by undergraduate students
• Work closely with a faculty member to write a Master’s thesis based on their years of excellent research
• Can still graduate through the Honors College, and remain eligible for Undergraduate Scholarships for the full four years as an undergraduate

• **Receive priority funding for their time as graduate students through research and teaching assistantships (including help paying tuition!)**

If you are considering a Master’s degree in chemistry along with your undergraduate work, please contact coordinator Dr. Matthew Nee (matthew.nee@wku.edu) or advisor Dr. Bangbo Yan (mailto:bangbo.yan@wku.edu) or the Chemistry Department office to learn more. For a representative plan of study, see the website (http://www.wku.edu/chemistry/bs_ms.php) or one of the advisors. Please note the following important features:

• JUMP students may double count up to 12 hours of 400G coursework between both undergraduate and graduate transcripts. However, we encourage students to minimize double counting, instead focusing on 500-level courses.
• JUMP students should begin research no later than Year 3 to ensure ample time to gather enough work to complete the Master’s thesis.
• Some accommodations are available to ease this path for the students in the Honors Program or Honors College.
• Students may transition from undergraduate status to graduate status at any time once graduate work has begun, but must transfer once 18 hours of graduate work are earned. Students on graduate status are no longer allowed to receive undergraduate fellowships and scholarships through WKU, but only graduate students are eligible for TA/RA positions with tuition remission. The transition can occur only once, unless the student elects to leave JUMP to receive only a BS degree.

Get Involved With the Chemistry Department:

Chemistry Club: Join our award-winning WKU Chemistry Club! They meet once a week, usually on a Thursday evening, for a variety of chemistry, service, and social activities. Look for flyers, contact the club advisor at David.wolfgang@wku.edu, or ask in the department office for more information.

Research: Explore the many different ways new chemistry knowledge is created by working with a faculty mentor on a research project. This is great experience for those interested in graduate work or a laboratory career, but is also excellent for pre-professional students. See more details in the Research section below.

Departmental Employment: The chemistry stockroom, tutor center, and undergraduate laboratories all rely on student workers to keep our department running smoothly. Why not get paid to hone your chemistry skills… it beats waiting tables!

• Tutors – Please email haley.smith@wku.edu if you are interested in becoming a paid chemistry tutor.
• Teaching Assistant – Please email chemistry@wku.edu if you are interested in becoming a teaching assistant for a chemistry laboratory course.
• Stock Room – Please contact alicia.mcdaniel@wku.edu if you are interested in working in the chemistry stock room.

Internships – The Chemistry Department hears from various companies needing interns. You can register for CHEM 369, Co-op Edu/Chemistry I. You must be a sophomore or junior to register for this course. This course involves practical out-of-the-classroom experience emphasizing laboratory skills in chemistry in a supervised work situation with a cooperating business, industry, or government agency. Contact chemistry@wku.edu for information regarding Internships and Co-ops.

Undergraduate Research

Undergraduate research is a chance to work on a unique and independent project with a faculty mentor. There are a number of reasons students should try research as an undergraduate, including:

• A chance to learn chemistry on a deeper level than can be learned in a classroom
• Hands-on experience with instrumentation and techniques not often available to students in the teaching laboratories
• A chance to work closely with a faculty mentor (especially helpful to get strong letters of recommendation in the future)
• Opportunities to present your research locally, within the state, or at national meetings (recent meeting sites include San Diego, San Francisco, Boston, and New Orleans)
• Publication of your research in faculty-level chemistry and biochemistry journals (a great way to stand out from other undergraduate students)
• Opportunities to obtain course credit and/or get paid for your research time and effort

How do I find a research mentor?
Most faculty in the Department of Chemistry have active research programs. You can e-mail a faculty member or stop by their offices to talk about research opportunities. To find out more information, you can also try:

• The department website ([https://wku.edu/chemistry/research_areas.php](https://wku.edu/chemistry/research_areas.php))
• Poster displays
• Interacting with other students involved in research

What are the opportunities for research credit or pay?
Students can sign up for course credit via CHEM 299 or CHEM 399; each hour of course credit corresponds to roughly 3 hours of research time per week. Before signing up for the course, talk to a faculty mentor to work out a schedule for the semester. The courses require a short written paper at the end of the semester to receive the credit, but most of your time will be spent in the laboratory doing experiments (with careful mentoring at first, becoming more independent as you progress).

Students who do not sign up for credit or who work more hours than required for the credit can receive pay for the research IF the faculty member has appropriate funding through research grants. Working for pay requires some pre-planning because background checks are required prior to employment.

Can I obtain my own funding for my research?
YES! The Faculty-Undergraduate Student Engagement (FUSE) grant program allows students to submit a one-page proposal in the middle of a semester. If the FUSE grant is funded, the student and mentor will receive funding to support the research and also to travel to an external (usually national) meeting to present the research. There are also various state-wide scholarships available to help support undergraduate research at WKU.
Chemistry Careers:

What can I do with a chemistry major?

The American Chemical Society has many resources on its website that will give you information about chemistry careers, trends, internships, etc. on a national level. You are invited to go to [https://www.acs.org/content/acs/en/careers.html?cid=home_careers](https://www.acs.org/content/acs/en/careers.html?cid=home_careers) and look at the many resources.

**Medical, Pharmacy, or other health professional schools.** At WKU, many of our chemistry majors go to health professional schools after receiving their chemistry degree. Students interested in entering medical, pharmacy, dental, or other health professional schools often choose a non-ACS certified major in chemistry (paired with an appropriate minor or second major) or biochemistry as an undergraduate. Students are encouraged to work closely with an advisor to select appropriate coursework to prepare for success in applying to and proceeding through the professional school.

**Graduate schools.** Many students are interested in a research career. A Ph.D. degree will enable scientists to work in academic, government, or industrial settings; usually scientists with a Ph.D. supervise other researchers and help determine strategic directions for the research. Students interested in pursuing a Ph.D. should consider an ACS-certified chemistry major (or a biochemistry major for students interested in biomedical research). An M.S. degree is sufficient in some industry or government positions for supervisory roles; students interested in an M.S. degree should talk to an advisor about our JUMP (5-year B.S./M.S.) program.

**Teaching.** Students interested in teaching high school chemistry are encouraged to enter the SKyTeach program; this program combines a major in Science and Math Education (SMED) with a content area (e.g. chemistry) to train future high school teachers. An M.S. in chemistry is required to teach at the community college level or to teach 100- and 200-level coursework at a university as an instructor. A Ph.D. degree is usually required to teach upper-level courses and become a professor at a 4-year college or university.

**Other careers with a B.S. degree.** Many industries hire scientists with a background in chemistry. These industries would include: waste management, paints and coatings, pharmaceuticals, food, and water quality analysis. There are companies within approximately 100 miles of Bowling Green that employ one or more chemists in these industries; however, jobs are more plentiful in other areas of the country. If you are interested in a particular type of position, consider consulting with your advisor and the Center for Career and Professional Development early in your time at WKU to become aware of opportunities.

Follow this link for careers in chemistry: [https://www.acs.org/content/acs/en/careers/college-to-career/chemistry-careers.html](https://www.acs.org/content/acs/en/careers/college-to-career/chemistry-careers.html)
The American Chemical Society offers a list of internships and Co-Op Experiences. Follow this link for information: [http://getexperience.acs.org/](http://getexperience.acs.org/)

**Advice from the Chemistry Department Faculty:**

Professionals want not only to see your competence in the discipline but also your skill sets such as problem solving. Determine the skills/talents setting you apart from other people. Then, work with your advisor(s) to help identify what activities and courses will leverage those skills to get you where you want to be.

**Plans of Study:**

The Plans of Study shown on the pages that follow are also available from the department website. Check with your advisor and consult your iCap on TopNet for up-to-date information. Use TopNet’s “What-if Analysis” tool to see how your credits will apply to a different major. Remember, you will need to declare a major, a concentration, and, if required, a minor. *The ACS, JUMP, and Biochemistry degrees do not require a minor or second major.*
**Freshman Year**

**First Semester:** Fall  
CHEM 120/121 College Chemistry I  5 hrs  
MATH 136 Calculus I  4 hrs  
Foundation College Composition  3 hrs  
Elective  3 hrs  
**Total:** 15 hrs

**Second Semester:** Spring  
CHEM 222/223 College Chemistry II  5 hrs  
MATH 137 Calculus II  4 hrs  
Foundation World History  3 hrs  
Foundation Literary Studies  3 hrs  
**Total:** 15 hrs

**Sophomore Year**

**Third Semester:** Fall  
CHEM 330 Quantitative Analysis & Lab  5 hrs  
PHYS 255/256 Univ Physics I & Lab  5 hrs  
CHEM 320 Inorganic Chem I  3 hrs  
Foundation Writing in Discipline  3 hrs  
**Total:** 16 hrs

**Fourth Semester:** Spring  
CHEM 340/341 Organic I & Lab  5 hrs  
PHYS 265/266 Univ Physics II & Lab  5 hrs  
MATH 237 Multivariable Calculus  4 hrs  
**Total:** 14 hrs

**Junior Year**

**Fifth Semester:** Fall  
CHEM 342/343 Organic II & Lab  5 hrs  
CHEM 450/451 P.Chem I & Lab$^5$  5 hrs  
Foundations Human Communication  3 hrs  
CHEM 399 Lab Research  1 hr  
CHEM 398 Undergraduate Seminar  1 hr  
**Total:** 15 hrs

**Sixth Semester:** Spring  
CHEM 452G/453 P.Chem II & Lab$^5$  5 hrs  
CHEM 446 Biochemistry I  3 hrs  
Explorations Arts & Humanities  3 hrs  
Connections Local to Global  3 hrs  
CHEM 399 Lab Research  1 hr  
**Total:** 15 hrs

**Senior Year**

**Seventh Semester:** Fall  
CHEM 435G Instrumental Analysis$^6$  3 hrs  
CHEM 436 Instrumental Analysis Lab$^6$  2 hrs  
CHEM 399 Lab Research  1 hr  
Elective  3 hrs  
Explorations Social & Behavior Sciences  3 hrs  
Elective  3 hrs  
CHEM 598 Graduate Seminar  0.5 hrs  
**Total:** 15.5 hrs

**Eighth Semester:** Spring  
CHEM 420 Inorganic Chemistry$^6$  3 hrs  
CHEM 421 Inorganic Chemistry Lab$^6$  1 hr  
CHEM 5XX  3 hrs  
Connections Systems  3 hrs  
CHEM 588 Research Proposal  3 hrs  
CHEM 399 Lab Research  1 hr  
CHEM 598 Graduate Seminar  0.5 hrs  
**Total:** 15.5 hrs

**Graduate Year**

**Ninth Semester:** Fall  
CHEM 595 Scientific Writing in Chemistry  3 hrs  
CHEM 599 Thesis Writing  3 hrs  
CHEM 5XX  3 hrs  
Elective  3 hrs  
Connections Social/Cultural  3 hrs  
CHEM 598 Graduate Seminar  0.5 hrs  
**Total:** 15.5 hrs

**Tenth Semester:** Spring  
CHEM 5XX  6 hrs  
Elective Upper Division Electives  3 hrs  
CHEM 599 Thesis Writing  3 hrs  
CHEM 598 Graduate Seminar  0.5 hrs  
**Total:** 12.5 hrs

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For more information, email us at: chemistry@wku.edu  
Department of Chemistry  
444 Thompson Complex Central Wing  
Western Kentucky University  
1906 College Heights Blvd. #11079  
Bowling Green, KY 42101-1079  
Phone: (270) 745-3457  
Web: www.wku.edu/chemistry

$^5$ Spring semester only  
$^6$ Fall semester only  
• The ordering of certain courses is important, although some shuffling is possible, especially with respect to general education and elective courses. Please see your advisor.  
• WKU requires 42 hours of upper-division courses (not counting 500-level courses) for graduation; this plan double counts nine hours towards both the graduate and undergraduate plans  
• These plans of study are kept as accurate and up-to-date as possible and designed to be an aid for advising.
Freshman Year

First Semester: Fall
CHEM 120/121 College Chemistry I 5 hrs  
MATH 136 Calculus I 4 hrs  
Foundation College Composition 3 hrs  
Exploration Arts and Humanities 3 hrs  
15 hrs

Second Semester: Spring
CHEM 222/223 College Chemistry II 5 hrs  
MATH 137 Calculus II 4 hrs  
Foundation Literary Studies 3 hrs  
Foundation World History 3 hrs  
15 hrs

Sophomore Year

Third Semester: Fall
CHEM 330 Quantitative Analysis & Lab 5 hrs  
PHYS 255/256 Univ Physics I & Lab 5 hrs  
CHEM 320 Inorganic Chemistry I 3 hrs  
Foundation Writing in Discipline 3 hrs  
16 hrs

Fourth Semester: Spring
CHEM 340/341 Organic I & Lab 5 hrs  
PHYS 265/266 Univ Physics II & Lab 5 hrs  
MATH 237 Multivariable Calculus 4 hrs  
14 hrs

Junior Year

Fifth Semester: Fall
CHEM 342/343 Organic II & Lab 5 hrs  
CHEM 450/451 P.Chem I & Lab 5 hrs  
Foundation Human Communication 3 hrs  
CHEM 399 Lab Research 1 hr  
CHEM 398 Undergraduate Seminar 1 hr  
15 hrs

Sixth Semester: Spring
CHEM 452/453 P.Chem II & Lab 5 hrs  
CHEM 446 Biochemistry I 3 hrs  
Explorations Social & Behavior Sciences 3 hrs  
Connections Local to Global 3 hrs  
CHEM 399 Lab Research 1 hr  
15 hrs

Senior Year

Seventh Semester: Fall
CHEM 435/6 Instrumental Analysis/Lab 5 hrs  
CHEM 399 Lab Research (Elective) 1 hr  
Elective 6 hrs  
Connections Systems 3 hrs  
15 hrs

Eighth Semester: Spring
CHEM 420 Inorganic Chemistry II 3 hrs  
CHEM 421 Inorganic Chemistry Lab 1 hr  
CHEM 399 Lab Research (Elective) 2 hrs  
Connections Social & Cultural 3 hrs  
Elective 6 hrs  
15 hrs

For more information
Contact
Department of Chemistry
Western Kentucky University
1906 College Heights Blvd. #11079
Bowling Green, KY 42101-1079
Office: 444 Thompson Complex Central Wing
Phone: (270) 745-3457
Fax: (270) 745-5361
Web: www.wku.edu/chemistry

Department Chair
Dr. Stuart Burris, chemistry@wku.edu

FL- Fall semester only
S- Spring semester only
• The ordering of certain courses is important, although some shuffling is possible, especially with respect to general education and elective courses. Please see your advisor.
• A total of 2 hours of CHEM 399 are required; the remaining hours indicated could be replaced with minor or other CHEM
• WKU requires 42 hours of upper-division courses for graduation.
• These plans of study are kept as accurate and up-to-date as possible and designed to be an aid for advising.
**Freshman Year**

**First Semester:** Fall  
- CHEM 120/121 College Chemistry I 5 hrs  
- BIOL 120/121 Biol Conc Cell 4 hrs  
- MATH 136 Calculus I 4 hrs  
- Foundation College Composition 3 hrs  
**Total:** 16 hrs  

**Second Semester:** Spring  
- CHEM 222/223 College Chemistry II 5 hrs  
- BIOL 122/123 Biol Conc Evol 4 hrs  
- MATH 137 Calculus II 4 hrs  
- Foundation Literary Studies 3 hrs  
**Total:** 16 hrs  

**Sophomore Year**

**Third Semester:** Fall  
- CHEM 330 Quantitative Analysis & Lab 5 hrs  
- CHEM 320 Inorganic Chemistry I 3 hrs  
- PHYS 231/232 Phy/Biophysics I & Lab 4 hrs  
- Foundation Human Communications 3 hrs  
**Total:** 15 hrs  

**Fourth Semester:** Spring  
- CHEM 340/341 Organic I & Lab 5 hrs  
- PHYS 232/332 Phy/Biophysics II & Lab 4 hrs  
- Foundation Writing in Disciplines 3 hrs  
- Foundation World History 3 hrs  
**Total:** 15 hrs  

**Junior Year**

**Fifth Semester:** Fall  
- CHEM 342/343 Organic II & Lab 5 hrs  
- CHEM 450/451 P.Chem I & Lab 5 hrs  
- CHEM 398 Undergraduate Seminar 1 hr  
- Explorations Arts & Humanities 3 hrs  
**Total:** 14 hrs  

**Sixth Semester:** Spring  
- CHEM 452/453 P.Chem II & Lab 5 hrs  
- CHEM 446 Biochemistry I 3 hrs  
- BIOL 319/322 Intro Cell Molec Biol 4 hrs  
- Connections Local to Global 3 hrs  
- CHEM 399 Lab Research (Elective) 1 hr  
**Total:** 16 hrs  

**Senior Year**

**Seventh Semester:** Fall  
- CHEM 435 Instrumental Analysis 3 hrs  
- CHEM 398 Undergraduate Seminar 1 hr  
- CHEM 447 Biochemistry Lab 2 hrs  
- CHEM 436 Instrumental Analysis lab 1 hr  
- Connections Social & Cultural 3 hrs  
- Explorations Social & Behavior Sciences 3 hrs  
- Connections Systems 3 hrs  
**Total:** 16 hrs  

**Eighth Semester:** Spring  
- CHEM 467 Biochemistry II 3 hrs  
- CHEM 420 Inorganic Chemistry II 3 hrs  
- CHEM 421 Inorganic Chemistry 1 hr  
- BIOL 411 Cell Biology 4 hrs  
- Elective 3 hrs  
**Total:** 14 hrs  

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**For more information**  
**Contact**  
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Web: [www.wku.edu/chemistry](http://www.wku.edu/chemistry)

**Department Chair**  
Dr. Stuart Burris, [stuart.burris@wku.edu](mailto:stuart.burris@wku.edu)

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5. Spring semester only  
6. Fall semester only  
- The ordering of certain courses is important, although some shuffling is possible, especially with respect to general education and elective courses. Please see your advisor.  
- WKU requires 42 hours of upper-division courses for graduation.  
- These plans of study are kept as accurate and up-to-date as possible and designed to be an aid for advising.
### Freshman Year

**First Semester: Fall**

- **CHEM 120/121** College Chemistry I 5 hrs
- **BIOL 120/121** Biol Conc Cell 4 hrs
- **MATH 136** Calculus I 4 hrs
- **Foundation** College Composition 3 hrs

**Second Semester: Spring**

- **CHEM 222/223** College Chemistry II 5 hrs
- **BIOL 122/123** Biol Conc Evol 4 hrs
- **Foundation** Literary Studies 3 hrs
- **Foundation** Human Communication 3 hrs

**16 hrs**

### Sophomore Year

**Third Semester: Fall**

- **CHEM 330** Quantitative Analysis & Lab 5 hrs
- **PHYS 231/232** Phy/Biophysics I & Lab 4 hrs
- **BIOL 224/225** Animal Bio and Div & Lab 4 hrs
- **Foundation** Writing in Disciplines 3 hrs

**Fourth Semester: Spring**

- **CHEM 340/341** Organic I & Lab 5 hrs
- **PHYS 232/332** Phy/Biophysics II & Lab 4 hrs
- **BIOL** Elective 3 hrs

**15 hrs**

### Junior Year

**Fifth Semester: Fall**

- **CHEM 342/343** Organic II & Lab 5 hrs
- **Foundation** World History 3 hrs
- **Explorations** Arts & Humanities 3 hrs
- **Explorations** Social & Behavior Sciences 3 hrs
- **BIOL** Electives 3 hrs

**Sixth Semester: Spring**

- **CHEM 412** Intro Phys.Chem 5 hrs
- **BIOL 327** Genetics & Lab 4 hrs
- **CHEM 446** Biochemistry I 3 hrs
- **Connections** Local to Global 3 hrs

**17 hrs**

### Senior Year

**Seventh Semester: Fall**

- **BIOL 411** Cell Biology 3 hrs
- **Elective** 6 hrs
- **Connections** Social & Cultural 3 hrs
- **BIOL** Electives 3 hrs

**Eighth Semester: Spring**

- **CHEM 467** Biochemistry II$^s$ 3 hrs
- **BIOL 328** Immunology & Lab 4 hrs
- **BIOL 430** Evol Theory and Processes 3 hrs
- **Elective** 3 hrs
- **Connections** Systems 3 hrs

**15 hrs**

$^s$- Fall semester only
$^f$- Spring semester only

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**For more information**

**Contact**
Department of Chemistry
Western Kentucky University
1906 College Heights Blvd. #11079
Bowling Green, KY 42101-1079
Office: 444 Thompson Complex Central Wing
Phone: (270) 745-3457
Fax: (270) 745-5361
Web: [www.wku.edu/chemistry](http://www.wku.edu/chemistry)

**Department Chair**
Dr. Stuart Burris, stuart.burris@wku.edu

**Commonly used for Pre-Med/Dent.**
### Freshman Year
**First Semester: Fall**
- CHEM 120/121 College Chemistry I, 5 hrs
- BIOL 120/121 Biol Conc Cell, 4 hrs
- Foundation College Composition, 3 hrs
- MATH 136 Calculus I, 3 hrs
  - **Total: 15 hrs**

### Sophomore Year
**Third Semester: Fall**
- CHEM 330 Quantitative Analysis & Lab, 5 hrs
- PHYS 231/232 Phy/Biophysics I & Lab, 4 hrs
- BIOL 224/225 Animal Bio and Div & Lab, 4 hrs
- Foundation Writing in Disciplines, 3 hrs
  - **Total: 16 hrs**

### Junior Year
**Fifth Semester: Fall**
- CHEM 342/343 Organic II & Lab, 5 hrs
- Explorations Arts & Humanities, 3 hrs
- Explorations Social & Behavior Sciences, 3 hrs
- BIOL Electives, 3 hrs
  - **Total: 14 hrs**

### Senior Year
**Seventh Semester: Fall**
- CHEM 447 Biochemistry Lab, 2 hrs
- BIOL 411 Cell Biology, 3 hrs
- Elective, 6 hrs
- Connections Social & Cultural, 3 hrs
  - **Total: 14 hrs**

### Second Semester: Spring
- CHEM 222/223 College Chemistry II, 5 hrs
- BIOL 122/123 Biol Conc Evol, 4 hrs
- Foundation Human Communication, 3 hrs
- Foundation Literary Studies, 3 hrs
  - **Total: 15 hrs**

### Fourth Semester: Spring
- CHEM 340/341 Organic I & Lab, 5 hrs
- PHYS 233/332 Phy/Biophysics II & Lab, 4 hrs
- BIOL Elective, 3 hrs
- Foundation World History, 3 hrs
  - **Total: 15 hrs**

### Sixth Semester: Spring
- CHEM 412 Intro P.Chem, 5 hrs
- BIOL 319/322 Intro Mol and Cell Biol, 4 hrs
- CHEM 446 Biochemistry I, 3 hrs
- Elective, 3 hrs
  - **Total: 15 hrs**

### Eighth Semester: Spring
- CHEM 399 Lab Research (Elective), 3 hrs
- Elective, 6 hrs
- Connections Local to Global, 3 hrs
- Connections Systems, 3 hrs
  - **Total: 15 hrs**

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WESTERN KENTUCKY UNIVERSITY  
Ogden College of Science and Engineering  
Department of Chemistry

<table>
<thead>
<tr>
<th>BS in Chemistry</th>
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<tbody>
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<td>Chemistry Major 623</td>
<td>Biophysics Minor 320</td>
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<td>Recommended for Pre-Pharm</td>
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</tbody>
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**Freshman Year**

**First Semester:** Fall  
CHEM 120/121  College Chemistry I  5 hrs  
BIOL 120/121  Biol Conc Cell  4 hrs  
MATH 136  Calculus I  4 hrs  
Foundation  College Composition  3 hrs  
**16 hrs**

**Second Semester:** Spring  
CHEM 222/223  College Chemistry II  5 hrs  
BIOL 131  Human Anat and Phys  4 hrs  
Foundation  Literary Studies  3 hrs  
Foundation  Human Communication  3 hrs  
**15 hrs**

**Sophomore Year**

**Third Semester:** Fall  
CHEM 330  Quantitative Analysis& Lab  5 hrs  
PHYS 231/232  Phy/Biophysics I & Lab  4 hrs  
BIOL 207/208  Gen Microbiol & Lab  4 hrs  
Foundation  Writing in Discipline  3 hrs  
**16 hrs**

**Fourth Semester:** Spring  
CHEM 340/341  Organic I & Lab  5 hrs  
PHYS 232/332  Phy/Biophysics II & Lab  4 hrs  
MATH 183  Intro to Stat  3 hrs  
Elective  3 hrs  
**15 hrs**

**Junior Year**

**Fifth Semester:** Fall  
CHEM 342/343  Organic II & Lab  5 hrs  
Foundation  World History  3 hrs  
Explorations  Arts & Humanities  3 hrs  
Explorations  Social & Behavior Sciences  3 hrs  
**14 hrs**

**Sixth Semester:** Spring  
CHEM 412  Intro P.Chem  5 hrs  
PHYS 335  General Biophysics  4 hrs  
CHEM 446  Biochemistry I  3 hrs  
Elective  3 hrs  
**15 hrs**

**Senior Year**

**Seventh Semester:** Fall  
Electives  9 hrs  
Connections  Social & Cultural  3 hrs  
Connections  Local to Global  3 hrs  
**15 hrs**

**Eighth Semester:** Spring  
CHEM 467  Biochemistry II\(^{\text{s}}\)  3 hrs  
Electives  9 hrs  
Connections  Systems  3 hrs  
**15 hrs**

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\(^{\text{s}}\)Spring semester only

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WESTERN KENTUCKY UNIVERSITY  BS in Biochemistry
Ogden College of Science and Engineering
Commonly used for Pre-Med/Vet

Freshman Year

**First Semester: Fall**
- CHEM 120/121  College Chemistry I  5 hrs
- BIOL 120/121  Biol Conc Cell  4 hrs
- MATH 136  Calculus I  4 hrs
- Foundation  College Composition  3 hrs
- **16 hrs**

Sophomore Year

**Third Semester: Fall**
- CHEM 330  Quantitative Analysis& Lab  5 hrs
- PHYS 231/232  Phy/Biophysics I & Lab  4 hrs
- Elective  3 hrs
- Foundation  Writing in Discipline  3 hrs
- **15 hrs**

Junior Year

**Fifth Semester: Fall**
- CHEM 342/343  Organic II & Lab  5 hrs
- BIOL/CHEM  Elective  3 hrs
- Explorations  Social and Behavior Sciences  3 hrs
- Explorations  Arts & Humanities  3 hrs
- **14 hrs**

Senior Year

**Seventh Semester: Fall**
- CHEM 447  Biochemistry Lab  2 hrs
- Connections  Social & Cultural  3 hrs
- Connections  Local to Global  3 hrs
- Elective  6 hrs
- **14 hrs**

**Second Semester: Spring**
- CHEM 222/223  College Chemistry II  5 hrs
- BIOL 122/123  Biol Conc Evol  4 hrs
- Foundation  Literary Studies  3 hrs
- Foundation  Human Communication  3 hrs
- **15 hrs**

**Fourth Semester: Spring**
- CHEM 340/341  Organic I & Lab  5 hrs
- PHYS 232/332  Phy/Biophysics II & Lab  4 hrs
- BIOL 319/322  Intro Mol and Cell BiolS  4 hrs
- Foundation  World History  3 hrs
- **16 hrs**

**Sixth Semester: Spring**
- BIOL/CHEM  Elective  9 hrs
- BIOL 411  Cell BiologyS  3 hrs
- CHEM 446  Biochemistry I  3 hrs
- **15 hrs**

**Eighth Semester: Spring**
- CHEM 467  Biochemistry II$^S$  3 hrs
- CHEM 399  Lab Research (Elective)  3 hrs
- Elective  3 hrs
- Elective  3 hrs
- Connections  Systems  3 hrs
- **15 hrs**

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Freshman Year

First Semester: Fall
CHEM 120/121 College Chemistry I 5 hrs
MATH 117 Trigonometry 3 hrs
SMED 101 Inquiry-Based Approaches 1 hr
Foundation World History 3 hrs
Foundation College Composition 3 hrs
15 hrs

Sophomore Year

Third Semester: Fall
CHEM 330 Quantitative Analysis & Lab 5 hrs
PHYS 231/232 Biophysics I & Lab 4 hrs
SMED 310 Knowing and Learning 3 hrs
MATH 136 Calculus I 4 hrs
16 hrs

Junior Year

Fifth Semester: Fall
CHEM 320 Inorganic Chemistry 3 hrs
Explorations Arts & Humanities 3 hrs
Explorations Social & Behavior Sciences 3 hrs
SPED 300 Diversity in Learning 3 hrs
SMED 320 Classroom Interactions 3 hrs
15 hrs

Senior Year

Seventh Semester: Fall
CHEM 446/447 Biochemistry I & Lab 5 hrs
SMED 470 Project Based Instruction 3 hrs
CHEM 399 Research 2 hrs
Connections Local to Global 3 hrs
Connections Systems 3 hrs
16 hrs

Second Semester: Spring
CHEM 222/223 College Chemistry II 5 hrs
SMED 102 Inquiry-Based Lessons 2 hrs
GEOL 111/113 The Earth 4 hrs
Foundation Human Communication 3 hrs
Foundation Literary Studies 3 hrs
17 hrs

Fourth Semester: Spring
CHEM 340/341 Organic I & Lab
(or 314 Intro to Organic Chemistry) 5 hrs
PHYS 232/332 Biophysics II & Lab 4 hrs
SMED 340 Perspectives 3 hrs
Foundation Writing in Disciplines 3 hrs
15 hrs

Sixth Semester: Spring
CHEM 412 Intro Phys.Chem 5 hrs
SMED 360 Research Methods 3 hrs
LTCY 421 Content-area reading 3 hrs
Connections Social and Cultural 3 hrs
14 hrs

Eighth Semester: Spring
SEC 490 Student teaching 10 hrs
SMED 489 Student teaching seminar 3 hrs
13 hrs

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