Chemistry Department Advising Handbook

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.

Table of Contents

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.

	JUMP	ACS	General Chemistry	Biochemistry	Minor
Best For	Masters/Bachelors in five years total ACS Certified degree plus a research-based MS thesis	Students wishing to be chemists, pursuing graduate work in chemistry Research is strongly emphasized, more rigorous than general	Students interested in chemistry as it relates to a different profession, like teaching, medicine, pharmacy, or environmental studies	Students interested in the intersection between chemistry and biology	Students interested in chemistry as it relates to a different profession, but not desiring a full major
Basic Chemistry	General Chemistry: CHEM 120/121, 222/223 Quantitative Analysis: CHEM 330 Organic Chemistry (1 year): CHEM 340/341, 342/343**				
Other Required Courses	Calculus I&II University Physics		Calculus I and Biophysics I	Calculus I, Biophysics I, BIOL 120-123, 319, 322, 411, Electives	None
Upper Division Chemistry	Inorganic: CHEM 320 & CHEM 420/421 Analytical: CHEM 435/436 Biochemistry: CHEM 446 Physical: CHEM 450/451 & 452/453		Physical: CHEM 450/451 ***or*** 412 Biochemistry: CHEM 446 ***or*** Inorganic: CHEM 420	Biochemistry I and II: CHEM 446 and CHEM 467 Biochemistry Lab	None
Research/Seminar	Undergraduate Seminar: CHEM 398 CHEM 399		Can be elective	Can be elective	None
Graduate Courses	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	None	None	None	None
Also Requires	None	None	Minor or second major	None	A separate major

** 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 Educ/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)
- 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) 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

The American Chemical Society offers a list of internships and Co-Op Experiences. Follow this link for information: 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.***

WKU Department of Chemistry

Five Year BS/MS Program in Chemistry
Bachelor/Masters in Science
Chemistry major (623) (no minor required)

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
		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
		16 hrs

Junior Year

Fifth Semester: Fall

CHEM 342/343	Organic II & Lab	5 hrs
CHEM 450/451	P.Chem I & Lab[F]	5 hrs
Foundations	Human Communication	3 hrs
CHEM 399	Lab Research	1 hr
CHEM 398	Undergraduate Seminar	1 hr
		15 hrs

Senior Year

Seventh Semester: Fall

CHEM 435G	Instrumental Analysis[F]	3 hrs
CHEM 436	Instrumental Analysis Lab[F]	2 hrs
CHEM 399	Lab Research	1 hr
Elective	300/400 Chem or Math Elective	3 hrs
Explorations	Social & Behavior Sciences	3 hrs
Elective		3 hrs
CHEM 598	Graduate Seminar	0.5hrs
		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
		15.5 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
		15 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

Sixth Semester: Spring

CHEM 452G/453	P.Chem II & Lab[S]	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
		15 hrs

Eighth Semester: Spring

CHEM 420	Inorganic Chemistry[S]	3 hrs
CHEM 421	Inorganic Chemistry Lab[S]	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	0.5hrs
		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	0.5hrs
		12.5 hrs

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

[S]- Spring semester only
[F]- 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.

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

BS in ACS Certified Chemistry
Bachelor of Science
Chemistry Major (623) (no minor required)

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

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

Junior Year

Fifth Semester: Fall

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

Senior Year

Seventh Semester: Fall

CHEM 435/6	Instrumental Analysis/Lab[F]	5 hrs
CHEM 399	Lab Research (Elective)	1 hrs
Elective		6 hrs
Connections	Systems	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

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

Sixth Semester: Spring

CHEM 452/453	P.Chem II & Lab[S]	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

Eighth Semester: Spring

CHEM 420	Inorganic Chemistry II[S]	3 hrs
CHEM 421	Inorganic Chemistry Lab[S]	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

[F]- 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.

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

BS in ACS Certified Chemistry
Bachelor in Science
Biochemistry major (519)

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
CHEM 320	Inorganic Chemistry I	3 hrs
PHYS 231/232	Phy/Biophysics I & Lab	4 hrs
Foundation	Human Communications	3 hrs
		15 hrs

Junior Year

Fifth Semester: Fall

CHEM 342/343	Organic II & Lab	5 hrs
CHEM 450/451	P.Chem I & Lab[F]	5 hrs
CHEM 398	Undergraduate Seminar	1 hr
Explorations	Arts & Humanities	3 hrs
		14 hrs

Senior Year

Seventh Semester: Fall

CHEM 435	Instrumental Analysis[F]	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
		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
		16 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
		15 hrs

Sixth Semester: Spring

CHEM 452/453	P.Chem II & Lab[S]	5 hrs
CHEM 446	Biochemistry I	3 hrs
BIOL 319/322	Intro Cell Molec Biol[S]	4 hrs
Connections	Local to Global	3 hrs
CHEM 399	Lab Research (Elective)	1 hr
		16 hrs

Eighth Semester: Spring

CHEM 467	Biochemistry II[S]	3 hrs
CHEM 420	Inorganic Chemistry II[S]	3 hrs
CHEM 421	Inorganic Chemistry	1 hr
BIOL 411	Cell Biology[S]	4 hrs
Elective		3 hrs
		14 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, stuart.burris@wku.edu

[S]- Spring semester only
[F]- 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.

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

BS in Chemistry
Bachelor in Science
Chem Major 623/ Biol Major 617

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 122/123	Biol Conc Evol	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 224/225	Animal Bio and Div & Lab	4 hrs
Foundation	Writing in Disciplines	3 hrs
		16 hrs

Fourth Semester: Spring

CHEM 340/341	Organic I & Lab	5 hrs
PHYS 232/332	Phy/Biophysics II & Lab	4 hrs
BIOL	Elective	4 hrs
Elective		3 hrs
		16 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
		17 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
		15 hrs

Senior Year

Seventh Semester: Fall

BIOL 411	Cell Biology	3 hrs
Elective		6 hrs
Connections	Social & Cultural	3 hrs
BIOL	Electives	3 hrs
		15 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
		16 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, stuart.burris@wku.edu

[F]- 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.
- 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 or the filing of a degree program.

Commonly used for Pre-Med/Dent.

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

BS in Chemistry
Bachelor in Science
Chem Major 623/ Biol Minor 326

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
		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
		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
		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
		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
		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
		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
		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
		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, stuart.burris@wku.edu

- 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.

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

BS in Chemistry
Bachelor in Science
Chemistry Major 623/Biophysics Minor 320
Recommended for Pre-Pharm

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[S]	3 hrs
Electives		9 hrs
Connections	Systems	3 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, stuart.burris@wku.edu

[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.
- 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.

WESTERN KENTUCKY UNIVERSITY BS in Biochemistry
Ogden College of Science and Engineering
Bachelor of Science
Department of Chemistry
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 Biol[S]	4 hrs
Foundation	World History	3 hrs
		16 hrs

Sixth Semester: Spring

BIOL/CHEM	Elective	9 hrs
BIOL 411	Cell Biology[S]	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

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, Chair, stuart.burris@wku.edu

[F]- 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.
- 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.

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

BS in Chemistry with teacher certification
Bachelor in Science
Chem Major 623/SMED 774

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

- 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 or the filing of a degree program.

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, stuart.burris@wku.edu