

Chemistry

Department Chair: Bruce Wilson

Office: PS 220A
Telephone: 801-863-7138
E-mail: Bruce.Wilson@uvu.edu

Advisor: James Holmes
Office: PS 202D
Telephone: 801-863-8616
E-mail: James.Holmes@uvu.edu

Advisor: Calvin Bond
Office: PS 219
Telephone: 801-863-7137
E-mail: bondca@uvu.edu

Advisor, Pre-Health Professions:
Jennifer Orchard
Office: PS 202b
Telephone: 801-863-8116
E-mail: orcharje@uvu.edu

Faculty:

Professor

Dee E. Oyler

Associate Professor

Calvin Bond
Fern Caka
Gamini Gunawardena
Matthew Horn
Craig Thulin
Bruce Wilson

Assistant Professor

Martha Day

Staff:

Administrative Assistant:
Kellie D. Hancock
Lab Facilities Manager:
Tom Strangfeld
Lab Manager/Instructor
Kris Andress
Lab Manager/Instructor:
Bill Vorkink
Organic Lab Manager:
Chin Yeh

College of Science and Health

Dean: Sam Rushforth
Office: PS 201A
Telephone: 801-863-8980

CAREER OPPORTUNITIES

Graduates with a bachelor degree in chemistry will be prepared to work in industry or pursue a graduate degree in chemistry. Current employment opportunities for graduates in

Chemistry programs are good.

Graduates with a bachelor degree in Chemistry and Physics Education will be prepared to teach chemistry and physics in junior and senior high. Current employment opportunities for graduates from Chemistry and Physics Education programs are excellent.

PROGRAMS

Students may receive:

- Bachelor of Science in Chemistry with an Emphasis in Biochemistry
- Bachelor of Science in Chemistry with an Emphasis in Forensic Chemistry
- Bachelor of Science in Chemistry with an Emphasis in Professional Chemistry
- Bachelor of Science in Chemistry and Physics Education

ADMISSION REQUIREMENTS

A student who wants to pursue a chemistry major should meet with the department chair or chemistry advisor for advisement.

PROGRAMS

BS in Chemistry 123-124 CREDITS

General Education Requirements: 41 Credits

- ENGL 1010 Introduction to Writing 3.0
- ENGL 2020 Intermediate Writing--Science and Technology 3.0
- MATH 1210 Calculus I 5.0

Complete one of the following: 3.0

- HIST 1700 American Civilization (3.0)
- HIST 2700 US History to 1877 (3.0)
- and HIST 2710 US History since 1877 (3.0)
- HIST 1740 US Economic History (3.0)
- POLS 1000 American Heritage (3.0)
- POLS 1100 American National Government (3.0)

Complete the following:

- PHIL 2050 Ethics and Values 3.0
- HLTH 1100 Personal Health and Wellness (2.0)

or PES 1097 Fitness for Life 2.0

Distribution Courses: 3.0

- Biology
- or BIOL 1610 College Biology I (Required for Forensic Chemistry) (4.0)
- CHEM 1210 Principles of Chemistry I 4.0
- CHEM 1215 Principles of Chemistry I Laboratory 1.0
- CHEM 1220 Principles of Chemistry II 4.0
- CHEM 1225 Principles of Chemistry II Laboratory 1.0

• Fine Arts 3.0
Complete one of the following sets of distribution courses, dependant on your choice of emphasis: 6.0

For the Professional Chemistry Emphasis:

- Humanities
- Social/Behavioral Science

For the Forensic Chemistry Emphasis:

- COMM 1020 Public Speaking (3.0)
- CJ 1010 Introduction to Criminal Justice (3.0)

Discipline Core Requirements: 41 Credits

- CHEM 2310 Organic Chemistry I 4.0
- CHEM 2315 Organic Chemistry I Laboratory 1.0
- CHEM 2320 Organic Chemistry II 4.0
- CHEM 2325 Organic Chemistry II Laboratory 1.0
- CHEM 3000 Analytical Chemistry 4.0
- CHEM 3100 Advanced Inorganic Chemistry 4.0
- CHEM 3600 Biological Chemistry 3.0
- CHEM 3605 Biochemistry Laboratory 1.0

- CHEM 4000 Instrumental Analysis 2.0
- CHEM 4005 Instrumental Analysis Laboratory 2.0
- MATH 1220 Calculus II 5.0
- PHYS 2210 Physics for Scientists and Engineers I 4.0
- PHYS 2220 Physics for Scientists and Engineers II 4.0
- PHYS 2215 Physics for Scientists and Engineers I Lab 1.0
- PHYS 2225 Physics for Scientists and Engineers II Lab 1.0

Emphasis:

- Complete one of the following:
- Forensic Chemistry 41.0
 - Professional Chemistry 39.0

Graduation Requirements:

- 1 Completion of a minimum of 123 semester credits with a minimum of 40 upper-division credits.
- 2 Overall grade point average of 2.0 (C) or above with a minimum of 2.25 in Major.
- 3 Residency hours -- minimum of 30 credit hours through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
- 4 Completion of GE and specified departmental requirements.
- 5 A minimum of 54 credit hours must be in the major with a minimum of 20 credits taken at UVU. A minimum of 28 chemistry credits must be upper-division.
- 6 Complete all chemistry and physics courses with a minimum grade of "C-" or better.
- 7 Students completing a bachelor degree following the 2008 or later catalog must complete one course that meets the Global/Intercultural Requirement, indicated by a course number ending in G. For a complete listing, see page 25.

Emphasis in Forensic Chemistry 41 Credits

Emphasis Requirements: 32 Credits

- BIOL 1615 College Biology I Laboratory 1.0
- CHEM 3090 Physical Chemistry Applications in Biology 3.0
- CHEM 3700 Forensic Analytical Chemistry 3.0
- MATH 2040 Principles of Statistics 4.0

Forensic Requirements:

- CHEM 482R Chemistry Internship 3.0
- CJ 1330 Criminal Law 3.0
- CJ 1340 Criminal Investigations 3.0
- CJ 1350 Introduction to Forensic Science 3.0
- CJ 135L Introduction to Forensic Science Laboratory 1.0
- CJ 2350 Laws of Evidence 3.0
- CJ 3880 Professional Practices for the Forensic Scientist 3.0

Complete one of the following: 2.0

- BIOL 2500 Environmental Biology (3.0)
- BIOL 3650 Biotechnology (2.0)
- MICR 2060 Microbiology for Health Professions (4.0)
- ZOOL 2320 Human Anatomy (4.0)
- ZOOL 2420 Human Physiology (4.0)

Emphasis Elective Requirements: 9 Credits

Complete 9 credits from the following: 9.0

- BIOL 3400 Cell Biology (3.0)
- BIOL 3500 Genetics (3.0)
- BIOL 3550 Molecular Biology (3.0)
- BIOL 4450 Immunology (3.0)
- MICR 3450 General Microbiology (4.0)
- GEO 3400 Forensic Geology (4.0)
- CJ 3500 Footwear Impression Evidence (3.0)
- CJ 3520 Tire Imprint Evidence (3.0)
- CJ 3540 Forensic Trace Analysis I (3.0)
- CJ 3550 Forensic Trace Analysis II (3.0)
- CJ 3700 Fingerprint Examination I (3.0)
- CJ 3720 Fingerprint Examination II (3.0)
- CJ 3740 Fingerprint Examination III (3.0)
- CJ 3780 Bloodstain Pattern Analysis (3.0)
- CJ 3800 Computer Forensics and Cyber Crime (3.0)
- CJ 3820 Crime Scene Investigation Techniques I (3.0)
- CJ 382L Crime Scene Investigation Techniques Laboratory I (1.0)
- CJ 3850 Marijuana Identification Certificate (3.0)
- CJ 3860 Forensic Microscopy (3.0)
- CJ 4400 Forensic Chemist (3.0)

- Or other Courses in consultation with the Department Academic Advisor

Emphasis in Professional Chemistry 39 Credits**Emphasis Requirements: 33 Credits**

- CHEM 3060 Physical Chemistry I 4.0
- CHEM 3070 Physical Chemistry II 4.0
- CHEM 3115 Physical and Inorganic Chemistry Laboratory 1.0
- CHEM 3200 Chemistry Literature 1.0
- CHEM 490R Chemistry Seminar (0.5 credits, taken 4 times) 2.0
- MATH 2210 Calculus III 3.0
- MATH 2280 Ordinary Differential Equations 3.0
- PHYS 3300 Mathematical Physics 3.0

Complete 12 credits of upper-division CHEM courses not previously taken, with the exception of CHEM 3090. With departmental approval, up to 6 credits of upper-division courses in BIOL, GEO, MATH, or PHYS may be substituted.

Emphasis Elective Requirements: 6 Credits

- Any courses 1000 or higher 6.0

BS in**Chemistry/Physics Education 124 CREDITS****Matriculation Requirements:**

- 1 Students are admitted directly to the Baccalaureate degree program in Chemistry and Physics Education upon acceptance to the Secondary Education Program.
- 2 Students must obtain the departmental Advisor's signature on an approved program plan prior to enrollment in their second semester of study.
- 3 Students must select between chemistry and physics emphases upon matriculation.

General Education Requirements: 41 Credits

- ENGL 1010 Introduction to Writing 3.0
 - ENGL 2020 Intermediate Writing--Science and Technology 3.0
 - MATH 1210 Calculus I 5.0
- Complete one of the following: 3.0
- HIST 1700 American Civilization (3.0)
 - HIST 2700 US History to 1877 (3.0)
 - and HIST 2710 US History since 1877 (3.0)
 - HIST 1740 US Economic History (3.0)
 - POLS 1000 American Heritage (3.0)
 - POLS 1100 American National Government (3.0)

Complete the following:

- PHIL 2050 Ethics and Values 3.0
- HLTH 1100 Personal Health and Wellness (2.0) or PES 1097 Fitness for Life 2.0

Distribution Courses:

- Biology 3.0
- CHEM 1210 Principles of Chemistry I 4.0
- CHEM 1215 Principles of Chemistry I Laboratory 1.0
- CHEM 1220 Principles of Chemistry II 4.0
- CHEM 1225 Principles of Chemistry II Laboratory 1.0
- Humanities 3.0
- Fine Arts 3.0
- Social/Behavioral Science 3.0

Discipline Core Requirements: 83 Credits

- CHEM 2310 Organic Chemistry I 4.0
- CHEM 2320 Organic Chemistry II 4.0
- CHEM 2315 Organic Chemistry I Laboratory 1.0
- CHEM 2325 Organic Chemistry II Laboratory 1.0
- CHEM 3000 Analytical Chemistry 4.0
- CHEM 4200 Teaching Methods in Science 3.0
- HIST 4320 History of Scientific Thought 3.0
- MATH 1220 Calculus II 5.0
- MATH 2210 Calculus III 3.0
- PHYS 2210 Physics for Scientists and Engineers I 4.0
- PHYS 2215 Physics for Scientists and Engineers I Lab 1.0
- PHYS 2220 Physics for Scientists and Engineers II 4.0
- PHYS 2225 Physics for Scientists and Engineers II Lab 1.0
- PHYS 3010 Physics Experiments for Secondary Education 1.0
- PHYS 3740 Modern Physics 3.0

Education Courses:

- EDSC 2540 Development of the Adolescent Student 2.0
- EDSC 3000 Educational Psychology 3.0
- EDSC 3050 Foundations of American Education 2.0

- EDSC 3250 Instructional Media 2.0
 - EDSC 4200 Classroom Management I 1.0
 - EDSC 4250 Classroom Management II 1.0
 - EDSC 4440 Content Area Reading and Writing 3.0
 - EDSC 445G Multicultural Instruction ESL 2.0
 - EDSC 4550 Secondary Curriculum Instruction and Assessment 4.0
 - EDSC 4850 Student Teaching--Secondary (4.0) 8.0
 - EDSP 3400 Exceptional Students 2.0
- Complete one of the following sets: 11.0

CHEMISTRY:

- CHEM 3060 Physical Chemistry I (4.0)
- CHEM 3100 Advanced Inorganic Chemistry (4.0)
- PHYS 3050 Astrophysics (3.0)

PHYSICS:

- PHYS 3210 Introduction to Experimental Physics I (2.0)
- PHYS 490R Seminar* (0.5)

Complete 9 credits from the following:

- PHYS 3050 Astrophysics (3.0)
- PHYS 3230 Principles of Electronics for the Physical Sciences (3.0)
- PHYS 3300 Mathematical Physics (3.0)
- PHYS 3400 Classical Mechanics (3.0)
- PHYS 3500 Thermodynamics (3.0)
- PHYS 3800 Energy use on Earth (3.0)
- PHYS 4700 Acoustics (3.0)

Graduation Requirements:

- 1 Completion of a minimum of 124 semester credits with a minimum of 40 upper-division credits.
- 2 Overall grade point average of 2.0 (C) or above with a minimum of 2.25 in Major.
- 3 Residency hours -- minimum of 30 credit hours through course attendance at UVU, with at least 10 hours earned in the last 45 hours.
- 4 Completion of GE and specified departmental requirements.
- 5 A minimum of 52 credit hours must be in the major with a minimum of 20 credits taken at UVU. A minimum of 24 chemistry and physics credits must be upper-division.
- 6 Complete all chemistry and physics courses with a minimum grade of "C-" or better.
- 7 Students completing a bachelor degree following the 2008 or later catalog must complete one course that meets the Global/Intercultural Requirement, indicated by a course number ending in G. For a complete listing, see page 25.

Footnotes:

- * Must be repeated two times.

Minor in Chemistry 27 CREDITS**Matriculation Requirements:**

- 1 Admitted to a bachelor degree program at UVU

Discipline Core Requirements: 24 Credits

- CHEM 1210 Principles of Chemistry I 4.0
- CHEM 1220 Principles of Chemistry II 4.0
- CHEM 1215 Principles of Chemistry I Laboratory 1.0
- CHEM 1225 Principles of Chemistry II Laboratory 1.0
- CHEM 2310 Organic Chemistry I 4.0
- CHEM 2320 Organic Chemistry II 4.0
- CHEM 2315 Organic Chemistry I Laboratory 1.0
- CHEM 2325 Organic Chemistry II Laboratory 1.0
- CHEM 3000 Analytical Chemistry 4.0

Elective Requirements: 3 Credits

- Any upper-division chemistry class numbered above 3000 with a minimum of 3 credit hours

Graduation Requirements:

- 1 Complete all courses with a minimum grade of "C-" or better.

See Course Descriptions section of the catalog for detailed course information. This department manages the following course prefixes:

- CHEM, Chemistry