CHEMISTRY (CHEM)

CHEM 000 - Summer Research (0 Credits)
Open to qualified students by permission of the department. Supervised on-campus or off-campus summer research experience developed in consultation with the department. POI, requires permission of instructor.

CHEM 101 - Foundations of Chemistry (3 Credits)
Foundations of Chemistry is designed to develop fundamental mathematical skills and introduce foundational chemistry concepts underlying this central science. The use of mathematics is stressed in the context of chemical problems involving measurement, atoms, molecules, reactions and solutions. This course prepares students interested in pursuing a science major for the General Chemistry course curriculum. This course does not count toward the chemistry major, minor nor fulfillment of the General Education requirement in the Natural Science. Students who have received credit for CHEM 111 may not enroll in this course.

CHEM 105A - Chemistry and Society with Laboratory I (4 Credits)
A study of societal problems and issues involving an understanding of important chemical principles with emphasis on relevant applications and the enhancement of chemical literacy for the non-scientist. Laboratory. Does not satisy any major program requirements or serve as a prerequisite to any other chemistry courses. Credits for only one sequence (Chemistry 105-106 or 111-112) can count toward degree requirements. Only in sequence.

CHEM 107 - Societal Chemistry (3 Credits)
Prerequisite: CHEM 105A. A study of societal problems and issues involving an understanding of important chemical principles with emphasis on relevant applications and the enhancement of chemical literacy for the non-scientist. CHEM 105, 106 have a laboratory component. Does not satisfy any major program requirement or serve as a prerequisite to any other chemistry course. Credit for only one sequence (Chemistry 105-106, Chemistry 105-107, or 111-112) can count toward the degree requirement. Only in sequence (105-106 or 105-107).

CHEM 111 - General Chemistry I (4 Credits)
Introduction to the fundamental principles of chemistry and the more important elements and their compounds. Laboratory. The entry-level course for additional work in chemistry, biology, and environmental science. Credit for only one sequence (Chemistry 105-106, 105-107, or 111-112) can count toward degree requirements. Completion of the UMW Chemistry Placement Exam required prior to registration for CHEM 111. Contact department for schedule.

CHEM 112 - General Chemistry II (4 Credits)
Prerequisite: CHEM 111. Introduction to the fundamental principles of chemistry and the more important elements and their compounds. Laboratory. The entry-level course for additional work in chemistry, biology, and environmental science. Credit for only one sequence (Chemistry 105-106, 105-107, or 111-112) can count toward degree requirements. Only in sequence with a grade of C- or better in CHEM 111. Completion of the UMW Chemistry Placement required prior to registration for CHEM 111. Contact department for schedule.

CHEM 211 - Organic Chemistry I (4 Credits)
Prerequisite: a grade of C or better in CHEM 112. The comprehensive study of the structure and reactivity of carbon compounds. Laboratory.

CHEM 212 - Organic Chemistry II (4 Credits)
Prerequisite: CHEM 211. The comprehensive study of the structure and reactivity of carbon compounds. Laboratory. Only in sequence with a grade of C or better in CHEM 211.

CHEM 253 - Chemical Analysis I (4 Credits)
Prerequisite: a grade of C or better in CHEM 112. Introduction to principles of chemical analysis, statistical treatment of measurements, volumetric and gravimetric analyses, and electrochemical analysis. Laboratory.

CHEM 254 - Chemical Analysis II (4 Credits)
Prerequisite: a grade of C or better in CHEM 112. Introduction to sampling in chemical analysis as well as instrumental methods. Laboratory.

CHEM 317 - Biochemistry I (3 Credits)
Prerequisite: a grade of C or better in CHEM 212. The application of chemical principles to the study and understanding of the living state.

CHEM 318 - Biochemistry II (3 Credits)
Prerequisite: a grade of C or better in CHEM 212, and CHEM 317. The application of chemical principles to the study and understanding of the living state.

CHEM 319 - Biochemistry Laboratory I (1 Credits)
Corequisites: CHEM 317. CHEM 253 and CHEM 254 are highly recommended. Selected research techniques involving the chemical composition and properties of cells, tissues, and organisms.

CHEM 320 - Biochemistry Laboratory II (1 Credits)
Corequisites: CHEM 318. CHEM 253 and CHEM 254 are highly recommended. Selected research techniques involving the chemical composition and properties of cells, tissues, and organisms. Only in sequence with CHEM 319.

CHEM 343 - Inorganic Chemistry (3 Credits)
Prerequisite: a grade of C or better in CHEM 112. Modern theories of atomic structure and chemical bonding and their applications to molecular and metallic structures and coordination chemistry.

CHEM 345 - Inorganic Chemistry Laboratory (1 Credits)
Prerequisite: CHEM 212 or CHEM 254. Co-requisite: CHEM 343. Selected experiments in the principles of inorganic chemistry, including preparation and characterization of selected inorganic compounds.

CHEM 383A - Physical Chemistry I (3 Credits)
Prerequisites: MATH 122, PHYS 105 and PHYS 106 or PHYS 101 and PHYS 102, and a grade of C or better in CHEM 112. Thermodynamic, kinetic, quantum mechanical, and spectroscopic properties of chemical systems.

CHEM 384A - Physical Chemistry II (3 Credits)
Prerequisites: MATH 122, and PHYS 105 and PHYS 106 or PHYS 101 and PHYS 102, a grade of C or better in CHEM 112, and CHEM 383A. Thermodynamic, kinetic, quantum mechanical and spectroscopic properties of chemical systems.

CHEM 387A - Physical Chemistry Laboratory I (2 Credits)
Corequisites: CHEM 383A, CHEM 384A sequence. Prerequisites: CHEM 253, CHEM 254. Selected experiments involving the investigation of the thermodynamic, electrochemical, kinetic and spectroscopic properties of chemical systems.

CHEM 388A - Physical Chemistry Laboratory II (2 Credits)
Corequisites: CHEM 383A, CHEM 384A sequence. Prerequisites: CHEM 253, CHEM 254, and CHEM 387A. Selected experiments involving the investigation of the thermodynamic, electrochemical, kinetic and spectroscopic properties of chemical systems.

CHEM 399 - Science Careers After UMW (1 Credits)
This course will prepare students for careers in scientific industry or graduate school with a focus on chemistry or physics. Students will learn about the job search/graduate school application process and how to prepare application materials needed for these positions. Cross-listed as PHYS 399.

CHEM 423 - Experimental Methods in Chemistry (4 Credits)
Prerequisites: CHEM 212 and CHEM 253, CHEM 254. Spectroscopic, chromatographic, and chemical functional group techniques used in synthesizing and characterizing chemical systems. Laboratory.

CHEM 453 - Seminar (2 Credits)
Open to graduating majors only with a major GPA of 2.0 or higher, except by permission of the department. Introduction to the chemical literature and information retrieval; oral reports and discussion of selected topics in chemistry.

CHEM 471 - Advanced Topics in Chemistry (1-4 Credits)
Advanced treatment of selected topics in chemistry

CHEM 491 - Individual Study (1-4 Credits)
Individual investigation of a chemical topic or system under the direction of a member of the department. Students pursuing Honors in Chemistry register for 4 credits of CHEM 491H each semester of the senior year.

CHEM 492 - Special Problems in Chemistry (1-4 Credits)

CHEM 493 - Chemical Outreach (1-2 Credits)
Open to qualified students by permission of the department. Supervised development of outreach experiences involving chemistry/scinece with community and/or university groups.

CHEM 499 - Internship (1-12 Credits)
Supervised off-campus experience developed in consultation with the department. The first six (6) credits of internship may not count toward the major program requirements. Subject to departmental approval, credits beyond six may be substituted for some major requirement.