

# CHEM - CHEMISTRY

## **CHEM 1105 Introductory Chemistry I Laboratory 1 Credit Hour (3 Lab)**

This laboratory-based course accompanies CHEM 1305, Introductory Chemistry I. Laboratory activities will reinforce topics that may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. (This course is intended for allied health students and for students who are not science majors.)  
Prerequisite: College ready in Reading, English and Mathematics.  
Prerequisite: ((Writing-College Ready with a minimum score of 1300, Reading-College Ready with a minimum score of 1300, and Math-College Ready with a minimum score of 1300), (ENGL 376 with a grade of C\_DV or higher, READ 376 with a grade of C\_DV or higher, and MATH 376 with a grade of C\_DV or higher), (ENGL 376 with a grade of P\_DV or higher, READ 376 with a grade of P\_DV or higher, and MATH 376 with a grade of P\_DV or higher), (MATH 314 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (MATH 324 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (TSIA2 Math CRC with a minimum score of 950, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math CRC with a minimum score of 950, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (MATH 314 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher), or (MATH 324 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher))

## **CHEM 1109 Chemistry for Engineering Lab 1 Credit Hour (3 Lab)**

Basic laboratory experiments supporting theoretical principles presented in CHEM 1309; introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. Corequisite: CHEM 1309. CB Number: CB 40.0501.58.03.  
Corequisite: CHEM 1309

## **CHEM 1111 General Chemistry I Laboratory 1 Credit Hour (3 Lab)**

This laboratory-based course accompanies CHEM 1311, General Chemistry I. Basic laboratory experiments supporting theoretical principles presented in CHEM 1311; introduction of the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. Prerequisite: College Readiness in Reading and Writing and credit for MATH 1314.

## **CHEM 1112 General Chemistry II Laboratory 1 Credit Hour (3 Lab)**

This laboratory-based course accompanies CHEM 1312, General Chemistry II. Basic laboratory experiments supporting theoretical principles presented in CHEM 1312; introduction of the scientific method, experimental design, chemical instrumentation, data collection and analysis, and preparation of laboratory reports. Prerequisite: A grade of "C" or better in CHEM 1311 and CHEM 1111, or CHEM 1411.

## **CHEM 1305 Introductory Chemistry I 3 Credit Hours (3 Lec)**

Introductory Chemistry I is the first part of a two-course sequence. Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Prerequisite: College ready in Reading, English and Mathematics. High school chemistry or any college level science course. Course Type: Life Physical Sci - A CAPP  
Prerequisite: ((Writing-College Ready with a minimum score of 1300, Reading-College Ready with a minimum score of 1300, and Math-College Ready with a minimum score of 1300), (ENGL 376 with a grade of C\_DV or higher, READ 376 with a grade of C\_DV or higher, and MATH 376 with a grade of C\_DV or higher), (ENGL 376 with a grade of P\_DV or higher, READ 376 with a grade of P\_DV or higher, and MATH 376 with a grade of P\_DV or higher), (MATH 314 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (MATH 324 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (TSIA2 Math CRC with a minimum score of 950, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math CRC with a minimum score of 950, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (MATH 314 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher), or (MATH 324 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher))

## **CHEM 1309 General Chemistry for Engineering Majors 3 Credit Hours (3 Lec)**

Fundamental principles of chemistry for engineering majors; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, acid-base concepts, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, phase-diagrams, introduction to chemical equilibrium, chemical thermodynamics, electrochemistry, and an introduction to descriptive inorganic chemistry and organic chemistry. Prerequisite: MATH 1314, High school chemistry or equivalent preparation strongly recommended  
Corequisite: CHEM 1109.  
Corequisite: CHEM 1109

## **CHEM 1311 General Chemistry I 3 Credit Hours (3 Lec)**

General Chemistry I is the first part of a two-course sequence. Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Prerequisite: High school chemistry and concurrent enrollment or credit for ENGL 1301 and MATH 1314 or CHEM 1305 and CHEM 1105, or CHEM 1405.  
Course Type: Life Physical Sci - A CAPP

## **CHEM 1312 General Chemistry II 3 Credit Hours (3 Lec)**

General Chemistry II is the second part of a two-course sequence. Chemical equilibrium; phase diagrams and spectrometry; acid-base concepts; thermodynamics; kinetics; electrochemistry; nuclear chemistry; an introduction to organic chemistry and descriptive inorganic chemistry. Prerequisite: A grade of "C" or better in CHEM 1311 and CHEM 1111, or CHEM 1411.  
Course Type: Life Physical Sci - A CAPP

**CHEM 1405 Introductory Chemistry I 4 Credit Hours (3 Lec, 3 Lab)**

This is a survey course covering the elementary topics in general chemistry: atomic theory, bonding, states of matter, solutions, nuclear reactions, and pollution. It is designed for students who do not plan to take upper division chemistry courses, or who did not take chemistry in high school. Fall. Prerequisites: 12th grade reading level and eligibility for ENGL 1301 and MATH 1314.

Prerequisite: (Writing-College Ready with a minimum score of 1300, ENGL 373 with a grade of C\_DV or higher, TCOMP--Writing Sample (Essay) with a minimum score of 6, THEA--Writing (Objective) with a minimum score of 220, TASP--Writing (Objective) with a minimum score of 220, TCOMP--Reading with a minimum score of 81, (TAKS--ELA (Exit Level) with a minimum score of 2200 and TAKS--Essay (Exit Level) with a minimum score of 3), ENGL 373 with a grade of P\_DV or higher, ENGL 376 with a grade of C\_DV or higher, or ENGL 376 with a grade of P\_DV or higher); ((Writing-College Ready with a minimum score of 1300, Reading-College Ready with a minimum score of 1300, and Math-College Ready with a minimum score of 1300), (ENGL 376 with a grade of C\_DV or higher, READ 376 with a grade of C\_DV or higher, and MATH 376 with a grade of C\_DV or higher), (ENGL 376 with a grade of P\_DV or higher, READ 376 with a grade of P\_DV or higher, and MATH 376 with a grade of P\_DV or higher), (MATH 314 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (MATH 324 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (TSIA2 Math CRC with a minimum score of 950, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math CRC with a minimum score of 950, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (MATH 314 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher), or (MATH 324 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher)); (Math-College Ready with a minimum score of 1300, MATH 376 with a grade of C\_DV or higher, TCOMP--Math (Algebra) with a minimum score of 39, THEA--Math with a minimum score of 230, TASP--Math with a minimum score of 230, TAKS--Math (Exit Level) with a minimum score of 2200, or MATH 376 with a grade of P\_DV or higher); (Reading-College Ready with a minimum score of 1300, READ 375 with a grade of C\_DV or higher, TCOMP--Reading with a minimum score of 81, TASP--Reading with a minimum score of 230, (TAKS--ELA (Exit Level) with a minimum score of 2200 and TAKS--Essay (Exit Level) with a minimum score of 3), READ 375 with a grade of P\_DV or higher, READ 376 with a grade of C\_DV or higher, or READ 376 with a grade of P\_DV or higher)

**CHEM 1406 Introductory Chemistry I for Nursing Allied Health Majors 4 Credit Hours (3 Lec, 3 Lab)**

(Nursing/Allied Health Majors) CB 4005015103 This is a comprehensive lecture and laboratory course intended for non-science majors, particularly those desiring careers in nursing and allied health-care fields. In this course, the fundamentals of general, organic, and biochemistry are covered from a practical viewpoint. The course consists of basic concepts in chemistry and cellular biochemistry associated with carbohydrate, protein, and lipid metabolism; enzyme studies; electrolyte, pH and blood gas analysis; and hormone studies. Diagnosis implications will also be discussed. Prerequisites: High school chemistry or any college level science course and eligibility for MATH 1314 and ENGL 1301.

Prerequisite: (Writing-College Ready with a minimum score of 1300, ENGL 373 with a grade of C\_DV or higher, TCOMP--Writing Sample (Essay) with a minimum score of 6, THEA--Writing (Objective) with a minimum score of 220, TASP--Writing (Objective) with a minimum score of 220, TCOMP--Reading with a minimum score of 81, (TAKS--ELA (Exit Level) with a minimum score of 2200 and TAKS--Essay (Exit Level) with a minimum score of 3), ENGL 373 with a grade of P\_DV or higher, ENGL 376 with a grade of C\_DV or higher, or ENGL 376 with a grade of P\_DV or higher); ((Writing-College Ready with a minimum score of 1300, Reading-College Ready with a minimum score of 1300, and Math-College Ready with a minimum score of 1300), (ENGL 376 with a grade of C\_DV or higher, READ 376 with a grade of C\_DV or higher, and MATH 376 with a grade of C\_DV or higher), (ENGL 376 with a grade of P\_DV or higher, READ 376 with a grade of P\_DV or higher, and MATH 376 with a grade of P\_DV or higher), (MATH 314 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (MATH 324 with a grade of C\_DV or higher and INRW 376 with a grade of C\_DV or higher), (TSIA2 Math CRC with a minimum score of 950, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math CRC with a minimum score of 950, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 ELAR CRC with a minimum score of 945, and TSIA2 Essay with a minimum score of 5), (TSIA2 Math Diagnostic with a minimum score of 6, TSIA2 Essay with a minimum score of 5, and TSIA2 ELAR Diagnostic with a minimum score of 5), (MATH 314 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher), or (MATH 324 with a grade of P\_DV or higher and INRW 376 with a grade of P\_DV or higher)); (Reading-College Ready with a minimum score of 1300, READ 375 with a grade of C\_DV or higher, TCOMP--Reading with a minimum score of 81, TASP--Reading with a minimum score of 230, (TAKS--ELA (Exit Level) with a minimum score of 2200 and TAKS--Essay (Exit Level) with a minimum score of 3), READ 375 with a grade of P\_DV or higher, READ 376 with a grade of C\_DV or higher, or READ 376 with a grade of P\_DV or higher); (Math-College Ready with a minimum score of 1300, MATH 376 with a grade of C\_DV or higher, TCOMP--Math (Algebra) with a minimum score of 39, THEA--Math with a minimum score of 230, TASP--Math with a minimum score of 230, TAKS--Math (Exit Level) with a minimum score of 2200, or MATH 376 with a grade of P\_DV or higher)

**CHEM 1407 Introductory Chemistry II 4 Credit Hours (3 Lec, 3 Lab)**

This course is a continuation of CHEM 1405. It covers the properties of the elements and compounds; an introduction to electrochemistry; organic chemistry; biochemistry; agricultural chemistry; and polymer chemistry. Spring. Prerequisite: CHEM 1405.

Prerequisite: CHEM 1405

**CHEM 1411 General Chemistry I 4 Credit Hours (3 Lec, 4 Lab)**

This course is a study of the fundamental laws of chemistry, electronic structure of matter, periodic classification, chemical bonding, acids, bases, salts, and quantitative relationships of matter and energy. Fall, Spring and Summer I. Prerequisites: High school chemistry and concurrent enrollment or credit for ENGL 1301 and MATH 1314 or CHEM 1405.

Prerequisite: Writing-College Ready with a minimum score of 1300 and Reading-College Ready with a minimum score of 1300; MATH 1314

**CHEM 1412 General Chemistry II 4 Credit Hours (3 Lec, 4 Lab)**

This course is a continuation of general chemistry. It covers solution chemistry; oxidation and reduction; electrochemistry; molecular equilibrium; and a study of ionization and ionic equilibrium. The laboratory is a systematic study of qualitative analysis and the applications of equilibrium principles to chemical systems. Fall, Spring and Summer II. Prerequisite: CHEM 1411.

Prerequisite: (CHEM 1411 with a grade of C or higher or (CHEM 1311 with a grade of C or higher and CHEM 1111 with a grade of C or higher))

**CHEM 2123 Organic Chemistry I Laboratory 1 Credit Hour (4 Lab)**

This laboratory-based course accompanies CHEM 2323, Organic Chemistry I. Laboratory activities will reinforce fundamental principles of organic chemistry, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Methods for the purification and identification of organic compounds will be examined. Prerequisite: A grade of "C" or better in CHEM 1311, CHEM 1111, CHEM 1312, and CHEM 1112; or CHEM 1411 and CHEM 1412.

**CHEM 2125 Organic Chemistry II Laboratory 1 Credit Hour (4 Lab)**

This laboratory-based course accompanies CHEM 2325, Organic Chemistry II. Laboratory activities reinforce advanced principles of organic chemistry, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. Prerequisite: A grade of "C" or better in CHEM 2323 and CHEM 2123, or CHEM 2423.

**CHEM 2323 Organic Chemistry I 3 Credit Hours (3 Lec)**

Organic Chemistry I is the first part of a two-course sequence. Fundamental principles of organic chemistry will be studied, including the structure, bonding, properties, and reactivity of organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. (This course is intended for students in science or pre-professional programs.) Prerequisite: A grade of "C" or better in CHEM 1311, CHEM 1111, CHEM 1312, and CHEM 1112; or CHEM 1411 and CHEM 1412.

**CHEM 2325 Organic Chemistry II 3 Credit Hours (3 Lec)**

Organic Chemistry II is the second part of a two-course sequence. Advanced principles of organic chemistry will be studied, including the structure, properties, and reactivity of aliphatic and aromatic organic molecules; and properties and behavior of organic compounds and their derivatives. Emphasis is placed on organic synthesis and mechanisms. Includes study of covalent and ionic bonding, nomenclature, stereochemistry, structure and reactivity, reaction mechanisms, functional groups, and synthesis of simple molecules. (This course is intended for students in science or pre-professional programs.) Prerequisite: A grade of "C" or better in CHEM 2323 and CHEM 2123, or CHEM 2423.

**CHEM 2389 Academic Cooperative in Chemistry 3 Credit Hours (1 Lec, 6 Lab)**

An instructional program designed to integrate on-campus study with practical hands-on work experience in the physical sciences. In conjunction with class seminars, the individual students will set specific goals and objectives in the scientific study of inanimate objects, processes of matter and energy, and associated phenomena. Prerequisite: CHEM 1312 and CHEM 1112, or CHEM 1412.

Prerequisite: CHEM 1412; CHEM 1412 with a grade of C or higher; CHEM 1311 with a grade of C or higher, CHEM 1111 with a grade of C or higher, CHEM 1312 with a grade of C or higher, and CHEM 1112 with a grade of C or higher

**CHEM 2423 Organic Chemistry I 4 Credit Hours (3 Lec, 4 Lab)**

This course is for students majoring in chemistry, chemical engineering, pre-pharmacy, pre-medicine, pre-dentistry, and pre-veterinary medicine. It is an intensive introduction to organic chemistry, structures, reaction mechanisms, and syntheses. Fall. Prerequisite: CHEM 1412. Prerequisite: CHEM 1412; CHEM 1412 with a grade of C or higher; CHEM 1311 with a grade of C or higher, CHEM 1111 with a grade of C or higher, CHEM 1312 with a grade of C or higher, and CHEM 1112 with a grade of C or higher

**CHEM 2425 Organic Chemistry II 4 Credit Hours (3 Lec, 4 Lab)**

This course is a continuation of CHEM 2423, with an introduction to spectrometry. Spring. Prerequisite: CHEM 2423. Prerequisite: CHEM 1411 with a grade of C or higher, CHEM 1412 with a grade of C or higher, and CHEM 2423 with a grade of C or higher; CHEM 1311 with a grade of C or higher, CHEM 1111 with a grade of C or higher, CHEM 1312 with a grade of C or higher, CHEM 1112 with a grade of C or higher, CHEM 2323 with a grade of C or higher, and CHEM 2123 with a grade of C or higher