

CH-Chemistry Courses

Courses

CH 100. Chemical Problem Solving. 3 Hours.

Development of quantitative skills and introduction to basic chemical concepts to prepare students for CH 115. Successful completion of MA 098 or more advanced math, or placement in a more advanced math, is strongly recommended prior to taking this course.

Prerequisites: MAAD 15 or MA 098 [Min Grade: P] or MA 098 [Min Grade: C] or MA 102 [Min Grade: D](Can be taken Concurrently) or MA 105 [Min Grade: D](Can be taken Concurrently) or MA 106 [Min Grade: D](Can be taken Concurrently) or MA 107 [Min Grade: D] (Can be taken Concurrently) or MA 110 [Min Grade: D](Can be taken Concurrently) or MA 125 [Min Grade: D](Can be taken Concurrently) or MA 225 [Min Grade: D](Can be taken Concurrently) or MTH1 75 or MTH2 75 or MTH3 75 or MTH4 75 or MTH5 75 or MA1 75 or MA2 75 or MA3 75 or MA4 75 or MA5 75 or MPL 30

CH 105. Introductory Chemistry I. 3 Hours.

CH 105 introduces students to the fundamental facts, principles, and theories of general chemistry, and is geared towards allied health professions and non-majors. Topics covered include the following: matter, measurements in chemistry, atomic structure and the periodic table, chemical bonding, chemical reactions and calculations, solutions, and acid/base chemistry. This course meets Blazer Core Curriculum Scientific Inquiry. Concurrent enrollment in CH 105R Introductory Chemistry I Recitation required.

Prerequisites: MA 098 [Min Grade: P] or MA 098 [Min Grade: C] or MA 102 [Min Grade: D](Can be taken Concurrently) or MA 105 [Min Grade: D](Can be taken Concurrently) or MA 106 [Min Grade: D] (Can be taken Concurrently) or MA 107 [Min Grade: D](Can be taken Concurrently) or MA 110 [Min Grade: D](Can be taken Concurrently) or MA 125 [Min Grade: D](Can be taken Concurrently) or MA 168 [Min Grade: D](Can be taken Concurrently) or (A02 20 and HSCG 2.00) or A02 21 or (S02 480 and HSCG 2.00) or S02 500 or MAAD 15

CH 105R. Introductory Chemistry I Recitation. 0 Hours.

Introductory Chemistry I recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 105 Introductory Chemistry I required.

CH 106. Introductory Chemistry I Laboratory. 1 Hour.

Emphasizes development of lab skills and demonstration of chemical principles covered in CH 105. Writing assignments structured to build on scientific reasoning. Not applicable to a major or minor in chemistry. Quantitative Literacy is a significant component of this course. Concurrent enrollment in or prior completion of CH 105 strongly recommended. This course meets Blazer Core Curriculum Scientific Inquiry.

CH 107. Introductory Chemistry II. 3 Hours.

CH 107 will introduce students to the fundamental facts, principles, and theories of organic chemistry and biochemistry, and is geared towards allied health professions and non-majors. Topics covered include the following: hydrocarbons, alcohols, esters, aldehydes and ketones, carboxylic acids, amines and amides, carbohydrates, lipids, proteins, enzymes, and nucleic acids. This course meets Blazer Core Curriculum Scientific Inquiry. Concurrent enrollment in CH 107R Introductory Chemistry II Recitation is required.

Prerequisites: CH 105 [Min Grade: C] or CH 115 [Min Grade: C] or CH 115 [Min Grade: P]

CH 107R. Introductory Chemistry II Recitation. 0 Hours.

Introductory Chemistry II recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 107 Introductory Chemistry II required.

CH 108. Introductory Chemistry II Laboratory. 1 Hour.

Emphasizes development of lab skills and demonstration of phenomena covered in CH 107. Not applicable to a major or minor in chemistry. Writing assignments structured to build on scientific reasoning. Quantitative Literacy is a significant component of this course. Concurrent enrollment in or prior completion of CH 107 strongly recommended. This course meets Blazer Core Curriculum Scientific Inquiry.

CH 115. General Chemistry I. 3 Hours.

Introduces the principles of chemical thought through atomic theory, quantum theory, chemical bonding, reaction types, solution concentration, stoichiometry, chemical structures, intermolecular forces, kinetic molecular theory, and gas laws. The structure of the course emphasizes problem solving and the relationship of these ideas to each other. Quantitative literacy is a significant component of this course. This course meets Blazer Core Curriculum Scientific Inquiry. Concurrent enrollment in CH 115R General Chemistry I Recitation required.

Prerequisites: MA 102 [Min Grade: B] or (MA 105 [Min Grade: C] or MA 105 [Min Grade: P]) or MA 106 [Min Grade: C](Can be taken Concurrently) or MA 107 [Min Grade: C](Can be taken Concurrently) or MA 109 [Min Grade: C](Can be taken Concurrently) or MA 225 [Min Grade: C](Can be taken Concurrently) or MA 125 [Min Grade: P] or MA 168 [Min Grade: C] or MAC1 17 or MAAD 21 or MTH2 75 or MTH3 75 or MTH4 75 or MTH5 75 or (A02 23 and HSCG 3.50) or (A02 24 and HSCG 3.00) or (A02 25 and HSCG 2.50) or A02 26 or (S02 540 and HSCG 3.50) or (S02 560 and HSCG 3.00) or (S02 580 and HSCG 2.50) or (SAT2 580 and HSCG 3.50) or (SAT2 600 and HSCG 3.00) or (SAT2 620 and HSCG 2.50) or SAT2 640 or S02 600 or MPL 61

CH 115R. General Chemistry I Recitation. 0 Hours.

General Chemistry I recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 115 General Chemistry I required.

CH 116. General Chemistry I Laboratory. 1 Hour.

Emphasizes development of laboratory skills and quantitative analyses related to CH 115. Writing assignments structured to build on scientific reasoning. Concurrent enrollment or prior completion of CH 115 General Chemistry I recommended. Quantitative Literacy is a significant component of this course. This course meets Blazer Core Curriculum Scientific Inquiry.

CH 117. General Chemistry II. 3 Hours.

Solutions, chemical kinetics, chemical thermodynamics, chemical equilibria, and special topics, e.g. organic, biochemistry, descriptive chemistry. Writing assignments are structured to build on scientific reasoning. Quantitative literacy is a significant component of this course. This course meets Blazer Core Curriculum Scientific Inquiry. Concurrent enrollment in CH 117R General Chemistry II Recitation required.

Prerequisites: CH 115 [Min Grade: C] or CH 125 [Min Grade: C]

CH 117R. General Chemistry II Recitation. 0 Hours.

General Chemistry II Recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 117 General Chemistry II required.

CH 118. General Chemistry II Laboratory. 1 Hour.

Emphasizes development of laboratory skills and quantitative analyses related to CH 117. Writing assignments structured to build on scientific reasoning. Concurrent enrollment or prior completion of CH 117 General Chemistry II recommended. Quantitative Literacy is a significant component of this course. This course meets Blazer Core Curriculum Scientific Inquiry.

CH 125. General Chemistry I HONORS. 3 Hours.

Stoichiometry, quantum theory, atomic structure, chemical bonding, acids-bases, colligative properties, periodicity, and gas laws. Writing assignments are structured to build on scientific reasoning. This course emphasizes oral and writing communication skills. This Honors course provides less classroom discussion of basic concepts to allow time to cover additional concepts not discussed in CH 115. Thus, prior experience with basic chemical concepts is highly recommended. The class size is limited to 60 students. Quantitative literacy is a significant component of this course. This course, when taken with its corresponding laboratory, meets the Blazer Core Curriculum requirements for Scientific Inquiry. Concurrent enrollment in CH 125R General Chemistry I Recitation required.

Prerequisites: MA 102 [Min Grade: B] or MA 105 [Min Grade: C] or MA 105 [Min Grade: P] or MA 106 [Min Grade: C](Can be taken Concurrently) or MA 107 [Min Grade: C](Can be taken Concurrently) or MA 109 [Min Grade: C](Can be taken Concurrently) or MA 125 [Min Grade: C](Can be taken Concurrently) or MA 225 [Min Grade: C](Can be taken Concurrently) or MA 125 [Min Grade: P] or MAC1 17 or MAAD 21 or MTH2 75 or MTH3 75 or MTH4 75 or MTH5 75 or MPL 61 or (A02 23 and HSCG 3.5) or (A02 24 and HSCG 3.0) or (A02 25 and HSCG 2.5) or (S02 540 and HSCG 3.5) or (S02 560 and HSCG 3.0) or (S02 580 and HSCG 2.5) or (SAT2 580 and HSCG 3.5) or (SAT2 600 and HSCG 3.0) or (SAT2 620 and HSCG 2.5) or SAT2 640 or S02 600

CH 125R. General Chemistry I HONORS Recitation. 0 Hours.

General Chemistry I recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 125 General Chemistry I required.

CH 126. General Chemistry I HONORS Laboratory. 1 Hour.

Emphasizes development of laboratory skills and quantitative analyses related to CH 125. Writing assignments structured to build on scientific reasoning. (Core Area III) Quantitative Literacy is a significant Component of this course. Permission of instructor or enrollment in Honors College or Chemistry Scholars program required. Concurrent enrollment or prior completion of CH 125 strongly recommended. This course meets the Blazer Core Curriculum Scientific Inquiry with its lecture.

CH 127. General Chemistry II HONORS. 3 Hours.

Solutions, kinetics, thermodynamics, equilibria, electrochemistry, nuclear, and special topics, e.g. organic, biochemistry, and descriptive chemistry. Writing assignments are structured to build on scientific reasoning. This course emphasizes oral and written communication skills. This Honors course provides less classroom discussion of basic material to allow time to cover additional concepts not discussed in CH 117. The class size is limited to 60 students. Quantitative literacy is a significant component of this course. This course, when taken with its corresponding laboratory, meets the Blazer Core Curriculum requirements for Scientific inquiry. Concurrent enrollment in CH 127R General Chemistry II Recitation is required.

Prerequisites: (CH 115 [Min Grade: A] or CH 115 [Min Grade: P]) or CH 125 [Min Grade: B]

CH 127R. General Chemistry II HONORS Recitation. 0 Hours.

General Chemistry II Recitation is used to build problem-solving skills in a study-group environment. Included in these sections are homework, quizzes, lecture related problems, and exams. Concurrent enrollment in CH 127 General Chemistry II required.

CH 128. General Chemistry II HONORS Laboratory. 1 Hour.

Emphasizes development of laboratory skills and quantitative analyses related to CH 127. Writing assignments structured to build on scientific reasoning. (Core Area III) Quantitative Literacy is a significant component of this course. Permission of instructor or enrollment in Honors College or Chemistry Scholars program required. Concurrent enrollment or prior completion of CH 127 strongly recommended. This course meets the Blazer Core Curriculum Scientific Inquiry with its lecture.

Prerequisites: CH 115 [Min Grade: A] or CH 125 [Min Grade: B] and CH 116 [Min Grade: A] or CH 126 [Min Grade: B]

CH 199. Bridge Between General and Organic Chemistry. 1 Hour.

This is a one credit hour, pass-fail, 6-week, on-line class designed to prepare general chemistry students for success in the organic chemistry sequence. The course will reinforce topics from general chemistry and introduce basic concepts that will be encountered in organic chemistry. Recommended for transfer students or for students who earned a grade of C in General Chemistry II.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C]

CH 201. Research Methods in Chemistry. 3 Hours.

Comprehensive approach for developing research skills used in chemistry and biochemistry research laboratories. Permission of instructor required.

Prerequisites: CH 115 [Min Grade: C](Can be taken Concurrently) or CH 125 [Min Grade: C](Can be taken Concurrently)

CH 235. Organic Chemistry I. 3 Hours.

Structure, nomenclature, properties, and reactivity of compounds with various organic functional groups: alkanes, alkenes, alkynes, alkyl halides and alcohols. Emphasis on the mechanisms of organic reactions and problem solving. Concurrent enrollment in CH 235R Organic I Recitation required.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C]

CH 235R. Organic Chemistry I Recitation. 0 Hours.

Organic Chemistry I recitation is used to build problem-solving skills in study-group environments. Concurrent enrollment in CH 235 Organic I required.

CH 236. Organic Chemistry I Laboratory. 1 Hour.

Techniques of organic chemistry. Synthesis, purification, and characterization of organic compounds. Concurrent enrollment or prior completion of CH 235 strongly recommended.

Prerequisites: (CH 117 [Min Grade: C] or CH 127 [Min Grade: C]) and (CH 118 [Min Grade: C] or CH 119 [Min Grade: C] or CH 128 [Min Grade: C])

CH 237. Organic Chemistry II. 3 Hours.

Reactions of aromatic compounds and carbonyl containing functional groups: aldehydes, ketones, acids, esters and amides. Molecules of biological interest, such as proteins and carbohydrates. Concurrent enrollment in CH 237R Organic II Recitation required.

Prerequisites: CH 235 [Min Grade: C] or CH 245 [Min Grade: C]

CH 237R. Organic Chemistry II Recitation. 0 Hours.

Organic Chemistry II recitation is used to build problem-solving skills in study-group environments. Concurrent enrollment in CH 237 Organic Chemistry II required.

CH 238. Organic Chemistry II Laboratory. 1 Hour.

Synthesis, purification, and characterization of organic compounds using instrumental analysis and identification of unknowns. Concurrent enrollment or prior completion of CH 237 strongly recommended.

Prerequisites: (CH 235 [Min Grade: C] or CH 245 [Min Grade: C]) and (CH 234 [Min Grade: C] or CH 236 [Min Grade: C] or CH 246 [Min Grade: C])

CH 245. Organic Chemistry I Honors. 3 Hours.

Structure, nomenclature, properties, and reactivity of compounds with various organic functional groups: alkanes, alkenes, alkynes, alkyl halides and alcohols. Emphasis on the mechanisms of organic reactions and problem solving. This honors course moves at a slightly faster pace than CH 235, and is taught in a slightly nontraditional way. There is less lecture, more class discussion, and more problem-solving. Concurrent enrollment in CH 245R Organic I HONORS Recitation required. Open to Honors College students, Chemistry Scholars, or Permission of Instructor.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C]

CH 245R. Organic Chemistry I Honors Recitation. 0 Hours.

Organic Chemistry I recitation is used to build problem-solving skills in study-group environments. Concurrent enrollment in CH 245 Organic Chemistry I HONORS required.

CH 246. Organic Chemistry I Laboratory (Honors). 1 Hour.

Emphasis placed on development of techniques used in organic research laboratories and scientific writing. Permission of instructor or enrollment in Honors College or Chemistry Scholars program required.

Prerequisites: CH 245 [Min Grade: C](Can be taken Concurrently)

CH 247. Organic Chemistry II Honors. 3 Hours.

Reactions of aromatic compounds and carbonyl containing functional groups: aldehydes, ketones, acids, esters and amides. Molecules of biological interest, such as proteins and carbohydrates. This Honors course moves at a slightly faster pace than CH 237, and is taught in a slightly nontraditional way with a greater focus on organic synthesis. There is less lecture, more class discussion, and more problem-solving. Concurrent enrollment in CH 247R Organic II HONORS Recitation required.

Prerequisites: CH 235 [Min Grade: A] or CH 245 [Min Grade: C]

CH 247R. Organic Chemistry II Honors Recitation. 0 Hours.

Organic Chemistry II recitation is used to build problem-solving skills in study-group environments. Concurrent enrollment in CH 247 Organic Chemistry II HONORS required.

CH 248. Organic Chemistry II Laboratory (Honors). 1 Hour.

Synthesis, purification, and characterization of organic compounds using instrumental analysis, molecular modeling, scientific writing, and oral presentation. Permission of instructor, or enrollment in Honors College or Chemistry Scholars program required.

Prerequisites: CH 247 [Min Grade: C](Can be taken Concurrently)

CH 325. Physical Chemistry I with Calculus: Thermodynamics and Chemical Kinetics. 3 Hours.

Thermodynamics, chemical equilibria, and chemical kinetics. Lecture and laboratory. Prior completion of PH 221 and CH 355 strongly recommended. Prior completion of, or concurrent enrollment in, MA 227 strongly recommended.

Prerequisites: (CH 117 [Min Grade: C] or CH 117 [Min Grade: P] or CH 127 [Min Grade: C]) and (MA 126 [Min Grade: C] or MA 226 [Min Grade: C] or MA 126 [Min Grade: P]) and (PH 201 [Min Grade: C] or PH 201 [Min Grade: P] or PH 221 [Min Grade: C] or PH 221 [Min Grade: P])

CH 333. Synthetic and Physical Laboratory Methods. 2 Hours.

Fundamental concepts including chemical equilibrium, kinetics, and electronic interactions are explored through synthetic design, advanced spectroscopic methods, and data analysis. Techniques from organic chemistry are further developed and scientific writing is emphasized.

Prerequisites: (CH 237 [Min Grade: C] or CH 247 [Min Grade: C]) and (CH 238 [Min Grade: C] or CH 239 [Min Grade: C]) and CH 355 [Min Grade: C](Can be taken Concurrently) and CH 355L [Min Grade: C](Can be taken Concurrently)

CH 345. Inorganic Chemistry: Principles and Applications of Chemical Periodicity. 3 Hours.

Systematic coverage of descriptive chemistry. Chemical reactivity using structural and electronic parameters. Development of chemical understanding and intuition of elements and their compounds, as well as industrial and environmental applications.

Prerequisites: (CH 237 [Min Grade: C] or CH 247 [Min Grade: C])

CH 355. Quantitative Analysis. 3 Hours.

Principles of analytical measurements, statistical and volumetric techniques, spectrophotometric analysis, and chromatography, with emphasis on equilibrium and applications.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C]

CH 355L. Quantitative Analysis Laboratory. 1 Hour.

Quantitative analysis laboratory. Concurrent enrollment or prior completion of CH 355 Quantitative Analysis required.

Prerequisites: CH 355 [Min Grade: C](Can be taken Concurrently)

CH 391. Cooperative Education in Chemistry. 2-3 Hours.

Analysis of the concepts and models of chemistry with emphasis on computational skills for chemistry and science teachers. Appropriate for students seeking certification as chemistry or science teachers. Junior or senior standing and minimum GPA of 2.5 or above required. Requires permission of and evaluation by appropriate faculty advisor.

CH 416. Chemical Demonstrations I. 3 Hours.

Demonstration and analysis of safe, practical and effective experiments suitable for middle/high school students. At least 50 demonstrations will be performed. Not applicable to a major or minor in chemistry. Requires permission of instructor.

CH 417. Chemical Demonstrations II. 3 Hours.

Demonstration and analysis of safe, practical and effective experiments suitable for middle/high school students. At least 50 demonstrations will be performed. Not applicable to a major or minor in chemistry. Requires permission of instructor.

CH 426. Physical Chemistry II: Structure/Bonding and Molecular Spectroscopy. 3 Hours.

Quantum mechanics, chemical bonding, and molecular spectroscopy. Prior completion of CH 325 and MA 227 strongly recommended.

Prerequisites: (CH 117 [Min Grade: C] or CH 127 [Min Grade: C] or CH 117 [Min Grade: P]) and (MA 126 [Min Grade: C] or MA 126 [Min Grade: P] or MA 226 [Min Grade: C]) and (PH 202 [Min Grade: C] or PH 202 [Min Grade: P] or PH 222 [Min Grade: C] or PH 222 [Min Grade: P])

CH 429. Special Topics in Physical Chemistry. 1-3 Hour.

Special Topics in selected areas of physical chemistry under the supervision of faculty sponsor. Requires permission of instructor.

CH 430. Physical Organic Chemistry. 3 Hours.

The course will focus on basic concepts, molecular orbital theory, and organic reaction mechanisms, built on the foundation of organic chemistry I and II. The goal is to provide students a deeper understanding of the general principles, especially structure, mechanism, and their relationships.

Prerequisites: CH 237 [Min Grade: C] or CH 247 [Min Grade: C]

CH 439. Special Topics in Organic Chemistry. 1-3 Hour.

Special Topics in selected areas of organic chemistry under the supervision of faculty sponsor. Requires permission of instructor.

CH 440. Transition Metal Chemistry. 3 Hours.

Relationship between bonding, structure, and properties of compounds including reactions, mechanisms, and catalysis of organometallic and bioinorganic chemistry.

Prerequisites: CH 345 [Min Grade: C]

CH 444. Spectroscopic and Separations Laboratory Methods. 2 Hours.

Fundamental concepts including electronic and vibrational transitions, nuclear magnetic resonance, and molecular orbital theory are explored through the use of commonly-accessible laboratory instruments. Chromatographic theory and quantitative analysis are applied to the identification and quantitation of analytical standards and unknowns using industry-standard instrumentation. The second half of the course reinforces quantitative methods with hands-on practical training. Concurrent enrollment in, or prior completion of, CH 355 Quantitative Analysis and CH 355L Quantitative Analysis Lab required. CH 355/355L are strongly recommended prior to CH 444.

Prerequisites: (CH 237 [Min Grade: C] or CH 247 [Min Grade: C]) and (CH 238 [Min Grade: C] or CH 239 [Min Grade: C]) and CH 355 [Min Grade: C](Can be taken Concurrently) and CH 355L [Min Grade: C](Can be taken Concurrently)

CH 449. Special Topics in Inorganic Chemistry. 1-3 Hour.

Special Topics in selected areas of inorganic chemistry under the supervision of faculty sponsor. Requires permission of instructor.

CH 450. Instrumental Analysis. 3 Hours.

Focus on modern analytical chemistry instrumentation including chemical separations, spectroscopies (atomic absorption, infrared, UV-visible, fluorescence), mass spectroscopy, and thermal analysis.

Prerequisites: (CH 117 [Min Grade: C] or CH 127 [Min Grade: C])

CH 451. Chemometrics. 3 Hours.

Introduction to basic data analysis techniques that include testing hypotheses, establishing tendencies and correlations, experimental design, etc. The course is designed to provide a support to a research chemist in effectively solving everyday problems associated with production and interpretation of experimental data.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C]

CH 459. Special Topics in Analytical Chemistry. 1-3 Hour.

Special Topics in selected areas of analytical chemistry under the supervision of faculty sponsor. Requires permission of instructor.

Prerequisites: (CH 235 [Min Grade: C] and CH 236 [Min Grade: C]) and (CH 237 [Min Grade: C] and CH 238 [Min Grade: C]) and CH 355 [Min Grade: C]

CH 460. Fundamentals of Biochemistry. 3 Hours.

Overview of biochemical principles; chemistry of aqueous solutions, biochemical building blocks including amino acids, carbohydrates, lipids, and nucleotides; examination of metabolic pathways and enzymes that mediate catabolic and anabolic metabolism of carbohydrates, lipids, amino acids, and nucleic acids. Application of clinical correlations of metabolism to human nutrition and disease. This course is designed for Chemistry majors as well as students interested in medicine, dentistry, optometry, or pharmacy.

Prerequisites: CH 237 [Min Grade: C] or CH 247 [Min Grade: C]

CH 461. Advanced Biochemistry. 3 Hours.

Protein structure and function, enzymology, DNA structure, prokaryotic replication, transcription, and protein synthesis. Membrane structure and function, carbohydrate structure and function. Methods for isolating and characterizing macromolecule structure and function including chromatography, gel electrophoresis, CD, UV, and fluorescence spectroscopy, mass spectroscopy, X-ray crystallography and nuclear magnetic resonance spectroscopy.

Prerequisites: CH 460 [Min Grade: C]

CH 463. Biochemistry Laboratory. 3 Hours.

Introduction to modern bioanalytical techniques used for the expression, isolation, and characterization of proteins and other biological macromolecules. Space is limited. Students with a Chemistry Major with either the Biochemistry or Forensic Tracks have priority.

Prerequisites: CH 355 [Min Grade: C] and CH 460 [Min Grade: C]

CH 464. Physical Biochemistry Laboratory. 3 Hours.

Physical/analytical approaches (including mass spectroscopy and NMR) toward determination of macromolecular structures, ligand binding, and enzymology. Space is limited. Students with the Chemistry Major with the Biochemistry Track have priority. Concurrent or prior enrollment in CH 461 is recommended.

Prerequisites: CH 450 [Min Grade: C] or CH 460 [Min Grade: C] or CH 461 [Min Grade: C]

CH 469. Special Topics in Biochemistry. 1-3 Hour.

Special topics in selected areas of biochemistry, biophysical chemistry, or structural biochemistry under supervision of faculty sponsor. Requires permission of instructor.

Prerequisites: CH 462 [Min Grade: C]

CH 471. Medicinal Chemistry and Drug Discovery. 3 Hours.

Emphasis on structure-based design strategies for small organic molecule drugs using common macromolecular drug targets. Examples of successful design for experimental and clinically used drugs will be presented.

Prerequisites: CH 237 [Min Grade: C] and CH 460 [Min Grade: C]

CH 472. Chemistry of Natural Products. 3 Hours.

The principal focus of this course will be the introduction of synthesis and medicinal chemistry of natural products. Drug discovery using natural products, with specific examples in the areas of antibacterial, anticancer, and analgesic drugs will be introduced. An overview of structural classes, biosynthetic pathways and application of asymmetric synthesis in the synthesis of specific examples from each class will be discussed. This course is intended for undergraduate students at the senior level. Prior completion of prerequisite courses with a grade of B or better strongly recommended.

Prerequisites: (CH 235 [Min Grade: C] or CH 245 [Min Grade: C]) and CH 236 [Min Grade: C] and (CH 237 [Min Grade: C] or CH 247 [Min Grade: C]) and CH 238 [Min Grade: C]

CH 477. Radiochemistry for the Life Sciences. 3 Hours.

This course is intended to act as an introduction to radiochemistry. It will cover production, instrumentation, and radiochemistry techniques to make use of radiotracers in the life sciences from basic biological and environmental applications to medical imaging and therapy. Prior completion of CH 355 Quantitative Analysis and CH 355L Quantitative Analysis Lab strongly recommended.

Prerequisites: CH 237 [Min Grade: C] or CH 247 [Min Grade: C]

CH 480. Polymer Chemistry I. Basic Principles. 3 Hours.

Basic chemical principles of polymers with the focus on synthesis, characterization, and applications of synthetic and biological macromolecules. Prior completion of CH 237, CH 325, CH 355, and CH 426 (and MSE 350 for MSE students) recommended. Concurrent enrollment in, or prior completion of, CH 480L Polymer Chemistry I Lab is recommended.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C] and CH 235 [Min Grade: C] or CH 245 [Min Grade: C]

CH 480L. Polymer Chemistry I Laboratory. 1 Hour.

Polymer Chemistry I Laboratory. Concurrent enrollment in CH 480 Polymer Chemistry I required.

Prerequisites: CH 480 [Min Grade: C](Can be taken Concurrently)

CH 481. Polymer Chemistry II. Fundamental Properties. 3 Hours.

Fundamentals of chemical, physical and molecular properties of polymers in bulk and solution. Concurrent enrollment in CH 481L Polymer Chemistry II Laboratory required. Prior completion of CH 237, CH 325, CH 355, and CH 426 (and MSE 350 for MSE students) recommended. Concurrent enrollment in, or prior completion of, CH 481L Polymer Chemistry II Laboratory is recommended.

Prerequisites: CH 117 [Min Grade: C] or CH 127 [Min Grade: C] and CH 235 [Min Grade: C] or CH 245 [Min Grade: C]

CH 481L. Polymer Chemistry II Laboratory. 1 Hour.

Polymer Chemistry II Laboratory. Concurrent enrollment in CH 481 Polymer Chemistry II required.

Prerequisites: CH 481 [Min Grade: C](Can be taken Concurrently)

CH 489. Special Topics in Polymer Chemistry. 1-3 Hour.

Special topics in selected areas of polymer chemistry under supervision of faculty sponsor. Requires permission of instructor.

CH 492. Research Methods. 1-3 Hour.

This course is required in the UABTEACH program and is specially designed to meet the needs of future teachers. Students meet two hours per week for non-traditional, interactive lectures and two hours per week for lab. The course is cross-listed (Physics, Chemistry, and Biology). It provides students with the tools that scientists use to solve scientific problems; gives students the opportunity to use these tools in a laboratory setting; makes students aware of how scientists communicate with each other through peer-reviewed scientific literature; and enables students to understand how scientists develop new knowledge and insights. The course requires a substantial amount of writing.

CH 493. Chemistry in Culture & Ethics. 3 Hours.

Designed to explore the impact of chemical innovations on society; challenges students to consider ethical use of chemical innovations and broader impacts of chemistry in society. Writing assignments are structured to build on scientific reasoning. Capstone course intended for graduating senior Chemistry majors.

Prerequisites: (CH 237 [Min Grade: C] or CH 247 [Min Grade: C]) and CH 325 [Min Grade: D]

CH 495. Ethics in Chemical Research. 1 Hour.

Designed to explore the impact of chemical innovations on society; challenges students to consider ethical use of chemical innovations and broader impacts of chemistry in society. Writing assignments are structured to build on scientific reasoning. Capstone course intended for graduating senior Chemistry majors.

Prerequisites: (CH 237 [Min Grade: C] or CH 247 [Min Grade: C]) and CH 497 [Min Grade: C](Can be taken Concurrently) and CH 325 [Min Grade: C]

CH 497. Undergraduate Research. 2-3 Hours.

Research project conducted under the supervision of a faculty mentor. Two semesters are highly recommended for minimum accumulation of 6 semester hours. A progress report is required each semester and a comprehensive written report in ACS format is required at the completion of the project. Permission of faculty mentor and instructor required; GPA 2.5 or greater overall; GPA 3.0 or greater in required chemistry courses.

CH 498. Chemistry Teaching Methods. 3 Hours.

This course provides chemistry majors who will be future chemistry teachers with insights into the fundamental principles of chemistry in a way that can be transported to the classroom. The course will cover all aspects of teaching, measurements of effectiveness, and outcomes. Permission of instructor required.

Prerequisites: CH 235 [Min Grade: C] or CH 245 [Min Grade: C]

CH 499. Honors Research and Thesis. 0-3 Hours.

Research project conducted under the supervision of faculty mentor. Admission to the Chemistry Honors Program is required; a research proposal must be on file with and approved by Chemistry Honors Director. The course concludes with a written honors thesis and oral presentation and defense. Chemistry GPA 3.25 or greater; overall GPA 3.0 or greater required.

Prerequisites: CH 497 [Min Grade: C]