CHEMISTRY (CH)

CH 100 Science Success Strategies (2)
Interdisciplinary class may be taken as MA 105. Develops math and science skills fundamental to science majors. Prerequisite: MA 104, or MA 110, or MA 112, or MA 116 with a grade of D or better.

CH 101 Chemistry in Everyday Life (3)
The student will be provided with a relevant background in chemistry to foster understanding and appreciation of the various aspects of chemistry that affect their everyday life. This course allows flexibility to include topics that are applicable to the student in society such as the environment, food, beverage, medicine, polymers, or energy.
(General Ed Natural Science. Quan and Sci Reason Lit.)

CH 103 Introduction to Forensic Chemistry (3)
This course emphasizes the history, philosophy and major theories of chemistry as they apply to current forensic analytical techniques. Prerequisite: None.
(General Ed Natural Science. Critical and Creative Thinking.)

CH 121 General, Organic, and Biological Chemistry (5)
Designed for those students who need only a one-semester survey of the principles of chemistry or for nursing students. Includes vocabulary, laws, and applications of the basic concepts of chemistry. Laboratory work includes preparations, illustrations of laws and typical quantitative experiments. Chemistry 121 will not count towards a major or minor in chemistry. High school or on-line courses will not be considered equivalent to this course. Three one-hour lectures, one hour of recitation, and one three-hour laboratory period a week. Prerequisite: Equivalent or higher of MA 116 or MA 112 with a grade of C or better.
(General Ed Natural Science. Quan and Sci Reason Lit.)

CH 126 RN-BSN General, Organic, Bio Chemistry (3)
Designed to fulfill the degree requirement in chemistry for the Registered Nurse to Bachelor of Science in Nursing program, this course introduces measurements, atomic theory, compounds, solutions, and reactions. Prerequisite: The student must be a registered nurse and enrolled in or received a C or better in MA 116, its equivalent or higher.

CH 151 Fundamentals of Chemistry I (5)
Designed for those students who need one year of general chemistry. This course discusses vocabulary and basic laws that are necessary as a foundation for future studies in chemistry. Topics covered will include such subjects as atomic structure, states of matter, chemical bonding and solutions. The emphasis in the laboratory is on quantitative work. Credit for CH 151 precludes subsequent earning of credit in CH 121. High school or on-line courses will not be considered equivalent to this course. Three class periods, one hour of recitation, and one three-hour laboratory period per week. Prerequisite: MA 116 or concurrent enrollment.
(General Ed Natural Science. Quan and Sci Reason Lit.)

CH 152 Fundamentals of Chemistry II (5)
A continuation of Chemistry 151. Includes a study of equilibrium, electrochemistry, thermodynamics, thermochemistry, and kinetics. Laboratory work deals with experimental studies on the theories of chemistry, qualitative analysis and independent laboratory projects. High school or on-line courses will not be considered equivalent to this course. Three one-hour lectures, one hour of recitation, and one three-hour laboratory period a week. Prerequisite: CH 151 with a grade of C or better.
(General Ed Natural Science. Quan and Sci Reason Lit.)

CH 202 Professional Forensic Science Seminar (2)
Students will be introduced areas of forensic science not covered in traditional science coursework through seminars as presented by professionals in the field. These areas will include topics that pertain to every field in forensics such as courtroom testimony, ethics and professionalism and government reporting on forensics. Additional topics may include arson investigation, digital evidence, gunshot residue analysis, firearms and toolmarks analysis and fraud investigation. Prerequisite: None

CH 212 Chemistry of Food and Cooking (3)
This course will introduce students to advanced chemistry topics through examples of food and cooking. One two-hour lecture and one threee-hour laboratory period per week. Prerequisite: CH 101 or higher.
(General Ed Natural Science. Quan and Sci Reason Lit.)

CH 300 Special Topics/Chemistry (1-3)
Topics will vary from semester to semester and will be announced in advance. May be taken for more than one semester. Prerequisite: Consent of instructor.

CH 317 Chemistry for STEM Educators I (3)
Designed to introduce concepts and applications of chemistry to STEM educators. This includes chemical safety, vocabulary, atomic structure, states of matter, gases, chemical interactions, bonding, solutions, kinetics, thermodynamics, and thermochemistry. Composed of three hours of lectures/demonstrations/laboratory exercises each week. This course does not satisfy any chemistry prerequisite/requirement outside of the STEM program. Prerequisites: MA 112 or MA 116 and PS 108 with a letter grade of a "C" or higher; concurrent enrollment in ED 317 Chemistry for STEM Educators II

CH 320 Analytical Chemistry (3)
The theoretical and practical fundamentals of classical and physiochemical methods of analysis, with special emphasis on the relationship between physical and analytical chemistry. Prerequisites: CH 152 with a grade of C or better.

CH 321 Analytical Chemistry Lab (1)
Principles and techniques of analytical and physical measurements with computer assisted analysis. One three hour laboratory per week. Prerequisites: CH 152 with a grade of C or better and concurrent enrollment in CH 320 or consent of instructor.

CH 323 Advanced Forensic Chemistry (0-4)
Advanced Forensic Chemistry will familiarize students with the most common laboratory equipment and techniques found in a forensic chemistry lab, allowing them to apply the principles learned in the lecture portion to analyze mock evidence, correctly interpret data and effectively communicate results. At the end of the course, there will be a mock case that students will work from start to finish, ending with a testimony in a mock courtroom. Prerequisites – CH 340 Organic Chemistry I with a C or better

CH 340 Organic Chemistry I (3)
The principles of organic chemistry and their application to the preparation, properties, and reaction of aliphatic, aromatic, and a few heterocyclic compounds. Prerequisites: CH 152 with a grade of C or better.

CH 341 Organic Chemistry II (3)
A continuation of Chemistry 340. Three class periods per week. Prerequisite: CH 340 with a grade of C or better.

CH 342 Organic Chemistry Lab I (2)
Principles and techniques of organic chemistry, including preparation, separation, identification, and use of microscale equipment. One hour of lecture and one three-hour laboratory period per week. Prerequisites: CH 152 and CH 340 with a grade of C or better or concurrent enrollment.

CH 343 Organic Chemistry Lab II (2)
A continuation of CH 342 with emphasis on spectroscopy and other instrumental techniques. One hour of lecture and one three-hour laboratory period per week. Prerequisites: CH 341 or concurrent enrollment, and a grade of C or better in CH 342.

CH 345 Inorganic Chemistry Lab (2)
Emphasis on inorganic preparations and analytical and physical measurements on inorganic and organometallic compounds with computer assisted analysis of data. One hour lecture and one three-hour laboratory period per week. Prerequisites: CH 152 and CH 342 with a grade of C or better.

CH 346 Instrumental Analysis (2)
Advanced techniques, instrumentation, computational analysis, and computer analysis are used to investigate biological, inorganic, and organic compounds. One hour lecture and one three-hour laboratory period per week. Prerequisites: CH 321 and CH 343 with a grade of C or better.

CH 347 Physical Chemistry Concepts Lab (1)
Techniques and interpretation of physical systems measurements. One three-hour laboratory per week. Prerequisite: CH 343 with a grade of C or better.

CH 350 Biochemistry I (3)
Basic principles of the structure and chemistry of biochemical molecules, such as proteins, nucleic acids, carbohydrates, lipids, enzymes, and vitamins. Prerequisites: CH 340 with a grade of C or better.

CH 351 Biochemistry Laboratory I (2)
Biochemistry from the laboratory aspect, with special emphasis on modern techniques and instruments. One four-hour laboratory period a week, one hour lecture and one three-hour laboratory period per week. Prerequisites: CH 342 and CH 350 with a grade of C or better or concurrent enrollment and consent of instructor.

CH 352 Biochemistry II (3)
A continuation of CH 350 emphasizing metabolism, regulatory mechanisms, and DNA replication and expression. Prerequisite: CH 350 with a grade of C or better.

CH 353 Biochemistry Laboratory II (2)
Emphasis on individual projects using the tools of biochemistry from CH 351 and the biochemical literature. One four-hour laboratory period a week. Prerequisites: CH 350 and CH 351 with a grade of C or better.

CH 355 Medicinal Chemistry (2)
A brief history of the development of medicinal chemistry and its social and political implications. Major emphasis will be placed on the methods of discovery and development of drugs. Examples will be drawn from natural products, including plants, animal, and microbiological sources, from organic synthesis, and from modern physicochemical approaches. The mechanism of action, metabolism, and proof of structure of representative drugs will be presented. Prerequisite: CH 341 with a grade of C or better.

CH 360 Descriptive Inorganic Chemistry (3)
Descriptive chemistry of the inorganic elements based on the principles learned in freshman chemistry. Prerequisite: CH 152 with a grade of C or better.

CH 362 Spectroscopy (2)
An introduction to the interpretation of the spectra of organic compounds. Prerequisite: CH 343 with a grade of C or better.

CH 371 Advanced Topics in Chemistry (1)
The specific course content will depend on the instructor. At least two of the following four topics will be introduced: synthetic polymers, biological macromolecules, supramolecular aggregates, meso or nanoscale materials. Introduction to these topics will include preparation, characterization, and physical properties. Thirty hours of chemistry or consent of instructor(s)is required.

CH 380 Fundamentals of Physical Chemistry (3)
A non-calculus based physical chemistry class. Prerequisites: a score of at least the 40th percentile on the American Chemical Society full-year General Chemistry Exam, CH 152, PS 261 or PS 281 with a grade of C or better.

CH 381 Physical Chemistry I (3)
Covers the properties of gases, kinetic principles, thermodynamics, state changes, equilibrium, and properties of solution. Prerequisites: CH 152 with a grade of C or better, MA 151 with a grade of C or better, PS 262 or PS 282 (recommended or concurrent enrollment), and MA 152 (recommended).

CH 382 Physical Chemistry II (3)
Covers quantum principles with applications to atomic and molecular structure and spectroscopy, statistical thermodynamics, and kinetic theory of gases. Prerequisites: CH 381 with a grade of C or better and MA 152 or concurrent enrollment.

CH 383 Physical Chemistry III (3)
Application of quantum theory in spectroscopy, gas and solution phase molecular reaction dynamics, surface chemistry, and electrochemistry are investigated. Prerequisite: CH 382 with a grade of C or better.

CH 385 Physical Chemistry Lab (1)
Experimental measurements and data analysis emphasize the physics of chemical systems. One three hour laboratory per week. Prerequisite: CH 381 with a grade of C or better or concurrent enrollment.

CH 386 Inorganic Chemistry (3)
Modern theories in inorganic chemistry, including atomic structure, molecular structure and bonding, symmetry and point groups, acid/base definitions, and oxidation/reduction concepts. These topics are applied to main groups, coordination compounds, and organometalic compounds and their respective reactions. Prerequisite: CH 340 with a grade of C or better.

CH 390 Undergraduate Chemical Research (1-5)
Laboratory or theoretical computational research in any of the fields of chemistry, a typed formal report is required. Students may enroll for more than one semester of research. No more than five credit hours may be applied toward meeting departmental or graduation requirements. Prerequisite: departmental permission.

CH 391 Chemistry Seminar (1)
Students must enroll for one credit of seminar and give oral and written presentations on subjects chosen from a list of supplied topics to meet the requirement of the major in chemistry. Prerequisite: departmental permission.

CH 393 Internship (3)
Experience training in a professional forensic laboratory. Prerequisites: Chemistry, 25 credits; Biology, 12 credits; chair approval.