CHM 1000 (PS) Chemistry and Your World Cr. 4
Facts and theories from analytical, inorganic, organic, and physical chemistry, and from biochemistry; their consequences in life processes and the environment. Offered Fall, Winter.

CHM 1020 (PS) Survey of General Chemistry Cr. 4
High school chemistry not required. First course in the terminal sequence consisting of CHM 1020 and CHM 1030. Matter and energy in chemistry, chemical symbols and equations, structure and properties of atoms, introduction to chemical bonding; periodicity in chemistry, solids, liquids, gases, solutions, acids and bases, and equilibrium. Offered Fall, Winter.

Prerequisites: (MAT 0993-6XXX with a minimum grade of C)

CHM 1030 Survey of Organic/Biochemistry Cr. 4
Organic and biological chemistry; brief introduction to organic chemistry, emphasizing classes of compounds important in biochemical processes; survey of biochemistry with applications to nutrition, physiology, and clinical chemistry; protein structure; intermediary metabolism; molecular biology; and metabolic regulation. Offered Winter.

Prerequisites: CHM 1020 with a minimum grade of C-

CHM 1040 Chemistry Skills and Reasoning Cr. 4
Reasoning and mathematical skills needed for development of a scientific approach in chemistry. No credit if taken after any other chemistry course. Offered Fall, Winter.

Prerequisites: (MAT 0993 with a minimum grade of C) OR (MAT 1050-6XXX with a minimum grade of C)

CHM 1220 (PS) General Chemistry I Cr. 4
Introduction to the principles of chemistry for students with high school background in chemistry. Chemical structure, bonding, and reactivity. Satisfies General Education laboratory requirement upon completion of both CHM 1220 and 1230. Only two credits if taken after CHM 1020. No credit after if taken after CHM 1220. Offered Every Term.

Prerequisites: (CHM 1040 with a minimum grade of C) OR (MAT 1050 with a minimum grade of C) OR (MAT 1800-6ZZZ with a minimum grade of C) OR (CHM 1020 with a minimum grade of C)

Equivalent: CHM 1220

CHM 1225 (PS) General Chemistry I for Engineers Cr. 3
Introduction to principles of chemistry for students with high school background in chemistry. Chemical structure, bonding, and reactivity. Satisfies General Education laboratory requirement upon completion of both CHM 1225 and 1230. Only one credit if taken after CHM 1220. No credit after if taken after CHM 1220. Offered Every Term.

Prerequisites: (CHM 1040 with a minimum grade of C) OR (MAT 1800-6ZZZ with a minimum grade of C) OR (CHM 1020 with a minimum grade of C)

Equivalent: CHM 1220

CHM 1230 General Chemistry I Laboratory Cr. 1
Laboratory course to introduce the scientific method, properties of materials, the role of energy, structure and spectroscopy. Offered Every Term.

Prerequisites: (CHM 1220 with a minimum grade of C) OR (CHM 1225 with a minimum grade of C-

CHM 1240 Organic Chemistry I Cr. 4
Introductory organic chemistry combined with the general principles of chemistry. Carbon compounds and chemical bonding, acid-based chemistry, stereochemistry and introductory organic reactions. Offered Every Term.

Prerequisites: (CHM 1050 with a minimum grade of C) OR (CHM 1070 with a minimum grade of C) OR (CHM 1220 with a minimum grade of C) and CHM 1230 with a minimum grade of C-

CHM 1250 Organic Chemistry I Laboratory Cr. 1
Integrated general/organic chemistry laboratory focusing on spectroscopy, acid-based chemistry, molecular modeling and organic reactions as well as some attention to chromatography. Offered Every Term.

Prerequisites: CHM 1240 with a minimum grade of C-

CHM 1420 Chemical Principles II: Organic Chemistry Cr. 6
Accelerated approach to organic/bio-organic chemistry. Offered Irregularly.

Prerequisites: CHM 1410 with a minimum grade of C-

CHM 2220 Organic Chemistry II Cr. 4
Organic reactions of functional groups such as aldehydes, ketones and related carbonyl compounds. Extensive discussion of the interface of organic/biochemistry and bioinorganic chemistry. No credit after if taken after CHM 2220. Offered Every Term.

Prerequisites: (CHM 2240 with a minimum grade of C) OR (CHM 1240 with a minimum grade of C) AND CHM 1250 with a minimum grade of C-

CHM 2225 Organic Chemistry II for Engineers Cr. 3
Organic reactions of functional groups such as aldehydes, ketones and related carbonyl compounds. Extensive discussion of the interface of organic/biochemistry and bioinorganic chemistry. No credit after if taken after CHM 2220. Offered Every Term.

Prerequisites: CHM 1240 with a minimum grade of C- AND CHM 1250 with a minimum grade of C-

CHM 2230 Organic Chemistry II Laboratory Cr. 1
Synthesis of organic and bio-organic compounds. Offered Every Term.

Prerequisites: (CHM 2220 with a minimum grade of C) OR (CHM 2225 with a minimum grade of C-

CHM 2280 General Chemistry II: Analytical Chemistry Cr. 3
Concepts and calculations regarding kinetics, equilibrium, thermodynamics for a variety of reaction types. Qualitative and quantitative examples and applications. Offered Every Term.

Prerequisites: (CHM 1410 with a minimum grade of C) OR (CHM 2240 with a minimum grade of C) OR (CHM 1240 with a minimum grade of C) AND CHM 1250 with a minimum grade of C-

CHM 2290 General Chemistry II: Analytical Chemistry Laboratory Cr. 2
Study and use of acid-base redox, solubility precipitation, and complex forming reactions and equilibria in qualitative and quantitative chemistry. Offered Every Term.

Prerequisites: CHM 2280 with a minimum grade of C-

CHM 2999 Honors Research Problems in Chemistry Cr. 2-4
Research projects under the direction of a senior faculty member. Offered Every Term.

Prerequisites: CHM 1240 with a minimum grade of D- and CHM 1250 with a minimum grade of D- OR (CHM 1410 with a minimum grade of D-)

CHM 3000 Metals in Biology Cr. 3
Descriptive approach to metals involved in biological systems. Offered Fall.

Prerequisites: CHM 1240 with a minimum grade of C
CHM 3020 Intermediate Inorganic Chemistry I Cr. 3
Emphasizes chemistry of the main group elements and includes basic coordination chemistry of the transition metals. Offered Winter.
Prerequisites: CHM 1240 with a minimum grade of C

CHM 4850 Frontiers in Chemistry Cr. 1
Fields of fundamental chemistry now under investigation, presented by invited specialists actively engaged in research. Offered Fall, Winter.
Restriction(s): Students with a class of Unranked Undergrad, Freshman or Sophomore may not enroll. Offered limited to students with a major in Chemistry or Chemistry Honors. Enrollment limited to students in a BS in Chemistry or Bachelor of Arts degrees.
Equivalent: CHM 8850
Repeatable for 2 Credits

CHM 5020 Intermediate Inorganic Chemistry II Cr. 3
Transition metal chemistry. Coordination compounds and organometallics. Bonding theories and reactivity. Synthesis, purification, and characterization of inorganic compounds with an emphasis on transition metal compounds. Offered Fall.
Prerequisites: (CHM 6070 with a minimum grade of C) OR (CHM 3020 with a minimum grade of C and CHM 5400-5440 with a minimum grade of C)

CHM 5160 Instrumental Analytical Chemistry Cr. 3
Prerequisites: (CHM 5400 with a minimum grade of C) OR (CHM 5420 with a minimum grade of C) OR (CHM 5440 with a minimum grade of C) OR (PHY 2180 with a minimum grade of C)

CHM 5400 Biological Physical Chemistry Cr. 4
Presentation of physical chemistry topics: thermodynamics, solution equilibria, chemical kinetics, quantum chemistry, spectroscopy, statistical mechanics, transport processes, and structure with biological applications. Offered Winter.
Prerequisites: MAT 2020 with a minimum grade of C, MAT 2030 with a minimum grade of C, PHY 2170 with a minimum grade of C, and CHM 2280 with a minimum grade of C

CHM 5420 Physical Chemistry I Cr. 3
Chemical thermodynamics, phase equilibrium, solutions, surface chemistry, electrochemistry. Only two credits applicable toward degree after CHM 5400. Offered Fall.
Prerequisites: MAT 2020 with a minimum grade of C, MAT 2030 with a minimum grade of C, PHY 2170 with a minimum grade of C, and CHM 2280 with a minimum grade of C

CHM 5440 Physical Chemistry II Cr. 4
Kinetic theory, empirical and theoretical kinetics, quantum theory, atomic and molecular structure, molecular spectroscopy, statistical mechanics. Only three credits applicable to degree after CHM 5400. Offered Winter.
Prerequisites: MAT 2020 with a minimum grade of C, MAT 2030 with a minimum grade of C, PHY 2170 with a minimum grade of C, and CHM 2280 with a minimum grade of C

CHM 5510 Chemical Synthesis Laboratory Cr. 3
Advanced techniques for the synthesis, purification and characterization of organic compounds. Offered Fall.
Prerequisites: (CHM 1420 with a minimum grade of C-) OR (CHM 2220 with a minimum grade of C- and CHM 2230 with a minimum grade of C-)

CHM 5550 (WI) Physical Chemistry Laboratory Cr. 2
Prerequisites: (CHM 5400 with a minimum grade of C) OR (CHM 5420 with a minimum grade of C) OR (CHM 5440 with a minimum grade of C) OR (PHY 2180 with a minimum grade of C)

CHM 5570 Instrumental Analytical Chemistry Laboratory Cr. 3
Lecture and laboratory experiments covering electronics, measurement, and instrumentation. Principles and analytical applications of electrochemistry, chromatography, and spectroscopy including UV-visible, IR, magnetic resonance, and mass spectroscopy. Offered Winter.
Prerequisites: CHM 5160 with a minimum grade of C

CHM 5600 Survey of Biochemistry Cr. 3
Prerequisites: (CHM 1420 with a minimum grade of C) OR (CHM 2220 with a minimum grade of C) OR (CHM 2225 with a minimum grade of C)

CHM 5900 Biomedical Research as Discovery Cr. 2
Solving biomedical research problems using laboratory research tools including computational methods. Offered Yearly.
Prerequisites: (CHM 6610 with a minimum grade of D-) OR (CHM 6620 with a minimum grade of D-)

CHM 5998 Honors Thesis Research in Chemistry Cr. 2-4
Original investigation under direction of senior staff member. Submission of B.S. thesis or manuscript in publication format. Presentation of public lecture on B.S. research. Offered Every Term.
Restriction(s): Students with a class of Freshman or Sophomore may not enroll. Enrollment is limited to students with a major in Biochem & Chem Bio Honors or Chemistry Honors.
Repeatable for 8 Credits

CHM 5999 Research in Chemistry Cr. 2-4
Original investigation under the direction of a senior staff member. Submission of B.S. thesis or manuscript in publication format. Offered Every Term.
Restriction(s): Students with a class of Freshman or Sophomore may not enroll. Enrollment is limited to students with a major in Biochem & Chem Bio Honors, Biochem & Chemical Biology, Chemistry or Chemistry Honors.
Repeatable for 8 Credits

CHM 6060 Materials Chemistry and Engineering Cr. 3
Prerequisites: CHM 3020 with a minimum grade of C

CHM 6070 Advanced Bioinorganic Chemistry Cr. 3
Applications of inorganic chemistry principles to understanding biological systems including metalloenzymes. Offered Winter.
Prerequisite: CHM 3000, with a minimum grade of C
CHM 6170 Advances in Bioanalytical Chemistry Cr. 3
How analytical methods are used to obtain information regarding biological systems. Offered Irregularly.
Prerequisite: CHM 5160, with a minimum grade of C

CHM 6240 Organic Spectroscopy Cr. 3
Application of IR, NMR, UV, and mass spectrometry to the identification of organic compounds. Emphasis on interpretation of spectra, especially NMR. Recommended for students intending to do graduate or industrial work in organic chemistry. Offered Winter.
Prerequisite: CHM 1420, with a minimum grade of C ; CHM 2220, with a minimum grade of C

CHM 6270 Advanced Bioorganic Chemistry and Drug Design Cr. 3
Studies of biological problems using organic synthetic methods and applications to drug design. Offered Fall.
Prerequisite: CHM 6620, with a minimum grade of C

CHM 6440 Computational Chemistry Laboratory Cr. 3
Aspects of computational chemistry pertinent to effective use of molecular modeling techniques. Molecular mechanics, semi-empirical and ab initio calculations, molecular dynamics. Offered Irregularly.
Prerequisite: CHM 5440, with a minimum grade of C

Course Material Fees: $95

CHM 6570 Computational Biochemistry and Bioinformatics Cr. 3
Application of computational and molecular modeling software tools to biochemical problems. Offered Irregularly.
Prerequisite: CHM 5400, with a minimum grade of C

CHM 6610 (WI) Biological Chemistry Laboratory Cr. 3
Basic experiments in isolation, purification, and analysis of biomolecules. Techniques currently used in molecular biology and recombinant DNA procedures stressed. Offered Fall, Winter.
Prerequisite: CHM 6620, with a minimum grade of C

Restriction(s): Students with a class of Freshman or Sophomore may not enroll; enrollment is limited to students with a major in Biochem & Chem Bio Honors, Biochem & Chemical Biology, Chemistry or Chemistry Honors.

CHM 6620 Metabolism: Pathways and Regulation Cr. 3
Major metabolic pathways of carbohydrate, fatty acid, amino acid, and nucleotide synthesis and degradation. Pathways and mechanisms of energy generation. Hormonal and allosteric regulation of enzyme activity. Offered Fall.
Prerequisites: CHM 2220 with a minimum grade of C; CHM 5160, with a minimum grade of D-

CHM 6635 Tools of Molecular Biology Cr. 3
Principles underlying genetic and biochemical methods; complements work in lab CHM 6610. Offered Winter.
Prerequisite: CHM 6620, with a minimum grade of C

CHM 6640 Molecular Biology Cr. 3
Prerequisite: CHM 6620, with a minimum grade of C

CHM 6740 Laboratory Safety Cr. 1-2
Discussion and demonstration of safe laboratory practice. Use, storage and disposal of ordinary and hazardous substances; personal protection devices; regulations and codes. Required for all graduate degrees in chemistry. Not for chemistry major credit Offered Fall, Winter.

CHM 6990 Directed Study Cr. 1-4
Offered Every Term.
Repeatable for 8 Credits

CHM 6991 Internship in Chemistry Cr. 1
Practical research experience through visiting a university, industry, or national laboratory. Offered Every Term.
Restriction(s): Students with a class of Freshman or Sophomore may not enroll; enrollment is limited to students with a major in Chemistry, enrollment is limited to Graduate level students.
Repeatable for 2 Credits

CHM 7010 Descriptive Inorganic Chemistry Cr. 3
Reactions and reactivity of inorganic compounds. Emphasizes mechanistic and synthetic approaches to transition metal, organometallic, main group chemistry. Offered Winter.

CHM 7060 Materials Chemistry and Engineering Cr. 3

CHM 7070 Advanced Bioinorganic Chemistry Cr. 3
Applications of inorganic chemistry principles to understanding biological systems including metalloenzymes. Offered Irregularly.
Prerequisite: CHM 3000, with a minimum grade of D-

CHM 7080 Electron Microscopy Cr. 3
Basics of electron microscopy and its applications. The theory and practice of transmission and scanning electron microscopes, along with associated spectroscopies, will be presented. Offered Irregularly.

CHM 7100 Theory of Analytical Chemistry Cr. 3
Physicochemical principles applied to reaction equilibria and kinetics of analytical importance. Approaches to problem solving in complex systems, principally in the solution phase. Offered Fall.

CHM 7120 Electroanalytical Chemistry Cr. 3
The theory and practice of modern voltammetric methods as applied to analytical, kinetic, and mechanistic studies. Offered Biannually.

CHM 7142 Data Analysis Cr. 3
Application of statistics, chemometrics, and experimental design to the interpretation of chemical measurements; validation of analytical methods; practice and theory of sampling for chemical measurements. Offered Biannually (Fall).

CHM 7160 Separation Science Cr. 3
Theory and practice of gas-liquid, supercritical fluid, and thin-layer chromatography and capillary electromigration methods. Offered Biannually.

CHM 7170 Advances in Bioanalytical Chemistry Cr. 3
How analytical methods are used to obtain information regarding biological systems. Offered Irregularly.
Prerequisite: CHM 5160, with a minimum grade of D-

CHM 7180 Mass Spectrometry Cr. 3
Topics will include ICP, ICP-MS, AA, LIBX, MIPS, etc. Instrumentation concepts. Review of contemporary literature. Offered Winter.

CHM 7200 Organic Structures and Mechanisms Cr. 3
Structure and stereochemistry of organic molecules. Correlations between structure and chemical and physical properties. Reaction mechanisms. Offered Fall.
CHM 7220 Organic Reactions and Synthesis Cr. 3
Alkylation, condensation, and Grignard reactions; synthesis of acid derivatives; cycloadditions and unimolecular rearrangements. Scope and limitations of important synthetic methods of organic chemistry. Offered Winter.
Prerequisite: CHM 7200, with a minimum grade of C

CHM 7240 Organic Spectroscopy Cr. 3
Application of IR, NMR, UV, and mass spectrometry to the identification of organic compounds. Emphasis on interpretation of spectra, especially NMR. Recommended for students intending to do graduate or industrial work in organic chemistry. Offered Winter.

CHM 7270 Advanced Bioorganic Chemistry and Drug Design Cr. 3
Studies of biological problems using organic synthetic methods and applications to drug design. Offered Irregularly.
Prerequisite: CHM 6620, with a minimum grade of D-

CHM 7410 Statistical Thermodynamics Cr. 3
Statistical methods of determining thermodynamic properties of bulk materials from molecular properties. Real gases at high density, crystals, liquids; phase transitions, transport properties. Offered Biannually.

CHM 7430 Chemical Kinetics Cr. 3
Empirical analysis of reaction rates, theories of chemical kinetics, gas phase reactions, molecular collisions and non-thermal reactions, and kinetics in liquids. Offered Biannually.

CHM 7440 Computational Chemistry Cr. 3
Aspects of computational chemistry pertinent to effective use of molecular modeling techniques. Molecular mechanics, semi-empirical and ab initio calculations, molecular dynamics. Offered Winter.
Course Material Fees: $15

CHM 7470 Quantum Chemistry Cr. 3
Theorems of quantum mechanics, approximation methods, solutions to simple atomic and molecular systems, electronic structure of many-electron atoms and molecules, chemical bonding. Offered Biannually.

CHM 7480 Molecular Spectroscopy Cr. 3
Basic theory of interaction of molecules with the electromagnetic field. Rotational, vibrational, and electronic spectra of molecules; elements of lasers, multiphoton spectroscopy. Offered Biannually.
Prerequisite: CHM 7470, with a minimum grade of C

CHM 7500 Modern Methods in Experimental Chemistry Cr. 3
Survey of modern methods for performing experiments in chemistry, including: laser techniques, high vacuum methods, time-resolved techniques, surface characterization, electronics and optics, and computer interfacing. Offered Biannually.

CHM 7570 Computational Biochemistry and Bioinformatics Cr. 3
Application of computational and molecular modeling software tools to biochemical problems. Offered Irregularly.
Prerequisite: CHM 5400, with a minimum grade of D-

CHM 7600 Structure and Function of Biomolecules Cr. 3
Introduction to the structure and function of macromolecules of biological importance. Emphasis on bioenergetics, nucleic acid and protein structure and chemical reactivities, enzyme catalysis, enzyme kinetics, carbohydrate and lipid structure and function, and membrane structure. Offered Fall.

CHM 7620 Metabolism: Pathways and Regulation Cr. 3
Major metabolic pathways of carbohydrate, fatty acid, amino acid, and nucleotide synthesis and degradation. Pathways and mechanisms of energy generation. Hormonal and allosteric regulation of enzyme activity. Offered Fall.
Prerequisite: CHM 7600, with a minimum grade of C

CHM 7635 Tools of Molecular Biology Cr. 3
Principles underlying genetic and biochemical methods; complements work in lab CHM 6610. Offered Yearly.
Prerequisite: CHM 7620, with a minimum grade of C

CHM 7640 Molecular Biology Cr. 3
Prerequisite: CHM 7600, with a minimum grade of C

CHM 7740 Responsible Conduct of Research Cr. 1
Recognition of and approach to ethical issues that chemistry students may confront during their careers; the tools for dealing with these quandaries; procedures for reporting and resolving such conflicts. Offered Fall.

CHM 7990 Directed Study Cr. 1-4
Offered Irregularly.
Repeatable for 12 Credits

CHM 8090 Advanced Topics in Inorganic Chemistry Cr. 1-3
Topics offered in different semesters: inorganic synthesis and reactions; organometallic chemistry; bioinorganic chemistry; spectroscopy and stereochemistry of inorganic compounds; inorganic reaction mechanisms; photochemistry. Offered Irregularly.
Repeatable for 12 Credits

CHM 8190 Advanced Topics in Analytical Chemistry Cr. 1-3
The following topics offered in different semesters: sample preparation, surface analysis, analytical mechanisms, advanced instrumentation, computer interfacing. Offered Irregularly.
Prerequisite: CHM 7100, with a minimum grade of C
Repeatable for 12 Credits

CHM 8290 Advanced Topics in Organic Chemistry Cr. 1-3
The following topics offered in different semesters: physical-organic chemistry; kinetics of organic reactions; structure-reactivity correlations; reaction mechanisms; molecular orbital theory in organic chemistry; photochemistry; free radical chemistry; polymer chemistry; recent developments in organic chemistry; synthetic strategy; chemistry of natural products including steroids, terpenes, alkaloids, carbohydrates, and proteins. Offered Irregularly.
Prerequisite: CHM 7200, with a minimum grade of C
Repeatable for 12 Credits

CHM 8420 X-Ray Crystallography Cr. 3
Theoretical and practical aspects of modern x-ray crystallography. Training and practice in determination of crystal structure. Offered Irregularly.
Prerequisite: CHM 7010, with a minimum grade of C; CHM 7240, with a minimum grade of C
CHM 8490 Advanced Topics in Physical Chemistry Cr. 1-3
The following topics offered in different semesters: chemistry of the solid state; electron spin resonance; lasers and nonlinear spectroscopy; molecular dynamics; molecular quantum mechanics; particle and photon scattering; photophysics and photochemistry; radiation and nuclear chemistry; theory of gas phase kinetics. Offered Irregularly.
Prerequisite: CHM 7410, with a minimum grade of C
Repeatable for 12 Credits

CHM 8690 Advanced Topics in Biochemistry Cr. 1-3
Topics offered in different semesters: applications of spectroscopy to biochemical systems; chemical carcinogenesis; DNA repair; enzyme chemistry; experimental methods in molecular biology; hormone biochemistry; mechanisms of oxygen metabolism; membrane chemistry. Offered Irregularly.
Prerequisite: CHM 7410, with a minimum grade of C
Repeatable for 12 Credits

CHM 8700 Research in Chemistry Cr. 1-16
Offered Every Term.
Repeatable for 40 Credits

CHM 8800 Seminar in Analytical Chemistry Cr. 1
Required of all graduate students in analytical chemistry. Weekly meetings of staff, invited guests, and qualified students to study recent developments. Each seminar member presents papers and enters into the discussion that follows. Offered Fall, Winter.
Repeatable for 4 Credits

CHM 8810 Seminar in Organic Chemistry Cr. 1
Required of all graduate students in organic chemistry. Weekly meetings of staff, invited guests, and qualified students to study recent developments. Each seminar member presents papers and enters into the discussion that follows. Offered Fall, Winter.
Repeatable for 4 Credits

CHM 8820 Seminar in Inorganic Chemistry Cr. 1
Required of all graduate students in inorganic chemistry. Weekly meeting of staff, invited guests, and qualified students to study recent developments. Each seminar member presents papers and enters into the discussion that follows. Offered Fall, Winter.
Repeatable for 4 Credits

CHM 8830 Seminar in Physical Chemistry Cr. 1
Required of all graduate students in physical chemistry. Weekly meetings of staff, invited guests, and qualified students to study recent developments. Each seminar member presents papers and enters into the discussion that follows. Offered Fall, Winter.
Repeatable for 4 Credits

CHM 8840 Seminar in Biochemistry Cr. 1
Required of all graduate students in biochemistry. Weekly meetings of staff, invited guests, and qualified students to study recent developments. Each seminar member presents papers and participates in discussions. Offered Fall, Winter.
Restriction(s): Enrollment is limited to students with a major in Chemistry, enrollment is limited to Graduate level students, enrollment limited to students in a Doctor of Philosophy or Master of Science degrees.
Repeatable for 4 Credits

CHM 8850 Frontiers in Chemistry Cr. 1
Fields of fundamental chemistry now under investigation, presented by invited specialists actively engaged in research. Offered Fall, Winter.
Equivalent: CHM 4850
Repeatable for 3 Credits

CHM 8999 Master's Thesis Research and Direction Cr. 1-8
Offered Every Term.

CHM 9990 Pre-Doctoral Candidacy Research Cr. 1-8
Research in preparation for doctoral dissertation. Offered Every Term.
Repeatable for 12 Credits

CHM 9991 Doctoral Candidate Status I: Dissertation Research and Direction Cr. 7.5
Offered Every Term.
Repeatable for 998.99 Credits

CHM 9992 Doctoral Candidate Status II: Dissertation Research and Direction Cr. 7.5
Offered Every Term.
Prerequisite: CHM 9991, with a minimum grade of S
Repeatable for 998.99 Credits

CHM 9993 Doctoral Candidate Status III: Dissertation Research and Direction Cr. 7.5
Offered Every Term.
Prerequisite: CHM 9992, with a minimum grade of S
Repeatable for 998.99 Credits

CHM 9994 Doctoral Candidate Status IV: Dissertation Research and Direction Cr. 7.5
Offered Every Term.
Prerequisite: CHM 9993, with a minimum grade of S
Repeatable for 998.99 Credits

CHM 9995 Candidate Maintenance Status: Doctoral Dissertation Research and Direction Cr. 0
Offered Every Term.
Repeatable for 998.99 Credits

CHM 9999 Doct Diss Rsch&Dir Cr. 1-16
Offered Every Term.