CHEMISTRY

Bachelor of Science

Area A: Essential Skills
ENGL 1101       English Composition I       3
ENGL 1102       English Composition II      3
MATH 1113       Precalculus Mathematics       3

Area B: Institutional Options
COMM 1110       Fundamentals of Speech       3
One of the following electives: 1
COMM 1120       Argumentation and Advocacy
ENGL 1105       Intro to Greek Mythology
ENGL 1110       Creative Writing
GEOL 1000       Natural Hazards
HIST 1050       Appalachian Hist-Special Topic
HIST 1051       Sports Hist & Amer Character
HLTH 1030       Health and Wellness Concepts
HUMN 1000       Mystery Fiction in Pop Culture
HUMN 1100       Political and Social Rhetoric
HUMN 1300       Christian Fiction/Pop Culture
SOCI 1000       Race and Ethnicity in America
PRSP Elective (See advisor)

Area C: Humanities/Fine Arts
Choose one to two ENGL course(s): 3-6
ENGL 2000       Topics in Literature & Culture
ENGL 2111       World Literature I
ENGL 2112       World Literature II
ENGL 2120       British Literature I
ENGL 2121       British Literature II
ENGL 2130       American Literature I
ENGL 2131       American Literature II
ENGL 2201       Intro to Film as Literature
If only one ENGL course chosen, add one of the following: 0-3
ARTS 1100       Art Appreciation
HUMN 1201       Expressions of Culture I
HUMN 1202       Expressions of Culture II
MUSC 1100       Music Appreciation
MUSC 1110       World Music
MUSC 1120       American Music
THEA 1100       Theatre Appreciation

Area D: Science/Mathematics/Technology
One of the following Laboratory Science Sequences: 8
PHYS 1111K & PHYS 1112K
& PHYS 2211K & PHYS 2212K
MATH 2253
CHEM 3211K & CHEM 3212K

Area E: Social Sciences
HIST 2111       United States History to 1877
or HIST 2112     United States Hist since 1877
POLS 1101       American Government
Two of the following electives: 6

CHEM 1211K & CHEM 1212K

Required Chemistry Courses
CHEM 3211K       Organic Chemistry I       4
CHEM 3212K       Organic Chemistry II      4
CHEM 3311K       Quantitative Analysis     4
CHEM 3312K       Instrumental Methods of Analys 4
CHEM 3411K       Physical Chemistry I      4
CHEM 3412K       Physical Chemistry II     4
CHEM 4000        Senior Seminar             2
CHEM 4110K       Advanced Inorganic Chemistry 4
MATH 2255       Calculus and Analytic Geom III 4

Choose one Concentration: **/***/****
NOTE: Concentration must be declared through the Registrar's Office.

General Chemistry Concentration:
Upper Level Chemistry Electives 9
CHEM 3500        Biochemistry
CHEM 3700K       Environmental Chemistry
CHEM 4103        Textile Chemistry
CHEM 4420        Adv Organic Spectroscopy
CHEM 4430        Advanced Organic Chemistry
CHEM 4860        Internship in Chemistry **
CHEM 4900        Special Topics in Chemistry ***
CHEM 4960        Research in Chemistry **
STM Electives 13-14
BIOL 1105K       Environmental Studies
Biol 1108K Principles of Biology II
Biol 1203K Principles of Botany 
Biol 1224K Entomology
Biol 2212K Anatomy and Physiology I
Biol 2213K Anatomy and Physiology II
Biol 2215K Microbiology
Cmps 1301 Principles of Programming I
Cmps 1371 Computing for Scien & Engineer
Math 1401 Elementary Statistics
Math 2256 Introduction to Linear Algebra
Math 2403 Differential Equations
Math 2770 Statistics and Applications
Sust 2000 Intro Envir Sustainability
Any 3000 or 4000 level Biol course EXCEPT Biol 4000. **/***/****
Any 3000 or 4000 level Chem course including Chem 3900 and Chem 4800. **/****
Any 3000 or 4000 level Math course EXCEPT Math 3703, Math 3803, and Math 4713.
Any 3000 or 4000 level SUST course EXCEPT SUST 4000.
Free Electives
Select 3 hours from any transfer credit courses in the College curriculum other than PHED courses.

Environmental Chemistry Concentration:
Upper Level Chemistry Electives
Chem 3700K Environmental Chemistry
Chem 4103 Textile Chemistry
Chem 4420 Adv Organic Spectroscopy
Chem 4430 Advanced Organic Chemistry
Chem 4900 Special Topics in Chemistry 
Environmental Chemistry STM Electives 13-14
Biol 1108K Principles of Biology II
Chem 3500 Biochemistry
Chem 4420 Adv Organic Spectroscopy
Chem 4430 Advanced Organic Chemistry
Chem 4900 Special Topics in Chemistry 
Pre-Health Sciences Concentration:
Upper Level Pre-Health Chemistry Electives
Chem 3500 Biochemistry
Chem 4420 Adv Organic Spectroscopy
Chem 4430 Advanced Organic Chemistry
Chem 4900 Special Topics in Chemistry 
Pre-Health Chemistry Professional Track 13-14
Biol 1108K Principles of Biology II
Biol 2212K Anatomy and Physiology I
Biol 2213K Anatomy and Physiology II
Biol 2215K Microbiology
Biol 3000 Research Methods in Biology
Biol 3200K Cellular Biology
Biol 3300K Developmental Biology
Biol 3340K General Microbiology 
Biol 3400K Genetics
Biol 3850 Neuroscience
Biol 3900 Readings in Biology
Biol 4100 Immunology
Biol 4250 Evolution
Biol 4360K Comparative Vertebrate A & P
Biol 4410K Molecular Biology
Biol 4500K Biotechnology
Biol 4800 Service Learning in Biology **
CHEM 1211K. Principles of Chemistry I. 3-3-4 Units.
Introduces the chemistry of organic compounds including aliphatic and aromatic hydrocarbons, stereochemistry, monofunctional compounds and some polyfunctional compounds. Requires the illustration of techniques for synthesis, separation, purification and identification of organic compounds in the laboratory. (F,S,M) Prerequisites: CHEM 1212K.

CHEM 1212K. Principles of Chemistry II. 3-3-4 Units.
Continues the exploration of the chemistry of organic compounds with an emphasis on the characteristics and reactions of a variety of functional groups. Requires the illustration of techniques for synthesis, separation, purification and identification of organic compounds in the laboratory. (F,S,M) Prerequisites: CHEM 1212K.

CHEM 3103. Textile Chemistry. 3-0-3 Units.
Assures a basic understanding of the properties and reactions of aliphatic and aromatic organic compounds. Emphasis will be placed on mechanistic interpretations and the development of synthetic schemes leading to polyfunctional compounds of the types encountered in the textile industry. Prerequisites: CHEM 1211K.

CHEM 3211K. Organic Chemistry I. 3-3-4 Units.
Introduces the chemistry of organic compounds including aliphatic and aromatic hydrocarbons, stereochemistry, monofunctional compounds and some polyfunctional compounds. Requires the illustration of techniques for synthesis, separation, purification and identification of organic compounds in the laboratory. (F,S,M) Prerequisites: CHEM 1212K.

CHEM 3212K. Organic Chemistry II. 3-3-4 Units.
Continues the exploration of the chemistry of organic compounds with an emphasis on the characteristics and reactions of a variety of functional groups. Requires the illustration of techniques for synthesis, separation, purification and identification of organic compounds in the laboratory. (F,S,M) Prerequisites: CHEM 3211K.

CHEM 3311K. Quantitative Analysis. 3-4-4 Units.
Introduction to statistics. The use of spreadsheets. Principles and techniques of volumetric analysis. Concepts of chemical equilibria as applied to acid-base, precipitation, and complex ion reactions. Electrochemistry and potentiometry. Introduction to spectroscopy and chromatography. (F) Prerequisites: CHEM 1212K and MATH 1113.

CHEM 3312K. Instrumental Methods of Analysis. 3-3-4 Units.
Theoretical principles and uses of modern instrumental methods covering: measurement theory, atomic spectroscopy, molecular spectroscopy, mass spectrometry, electrometry, electroanalysis and chromatographic separations. (S) Prerequisites: CHEM 3311K.

CHEM 3411K. Physical Chemistry I. 3-3-4 Units.
A study of macromolecular phenomena in terms of micro molecular concepts including the gas state and thermodynamic. (F) Prerequisites: CHEM 1212K, MATH 2254, PHYS 1112K or PHYS 2212K.

CHEM 3412K. Physical Chemistry II. 3-3-4 Units.
A continuation of CHEM 3411K including liquid and solid state, kinetics, and equilibria. (S) Prerequisites: CHEM 1212K, MATH 2254, and PHYS 1112K or PHYS 2212K.

CHEM 3500. Biochemistry. 3-0-3 Units.
The chemical aspects of protein, carbohydrate, lipid, and nucleic acid, and enzyme function, bioenergetics, metabolism, photosynthesis, nuclei acid function, and protein biosynthesis. (S,M) Prerequisites: BIOL 1107K and CHEM 3211K.
CHEM 3700K. Environmental Chemistry. 3-3-4 Units.
This course will cover the environmental chemistry involving the transport, distribution, reactions, and speciation of inorganic, organometallic and organic chemicals occurring in the air, soil and water environments at the local, national and global scale. Environmental transformations and degradation processes, toxicology, pollution and hazardous substances will be discussed(S).
Prerequisites: CHEM 3212K.

CHEM 3900. Readings in Chemistry. 0-0-2 Units.
Independent in-depth study of the literature within a topic of current research in Chemistry. Approval of a faculty supervisor required before registration. (F,S)
Prerequisites: 12 hours of Chemistry and permission of the instructor.

CHEM 4000. Senior Seminar. 2-0-2 Units.
Survey of various topics, especially highlighting the interdisciplinary nature of chemistry. (S)
Prerequisites: 12 hours of upper level chemistry.

CHEM 4103. Textile Chemistry. 3-0-3 Units.
Assures a basic understanding of the properties and reactions of aliphatic and aromatic organic compounds. Emphasis will be placed on mechanistic interpretations and the development of synthetic schemes leading to polyfunctional compounds of the types encountered in the textile industry.
Prerequisites: CHEM 3212K.

CHEM 4110K. Advanced Inorganic Chemistry. 3-3-4 Units.
Advanced theories of bonding and structure in inorganic chemistry with emphasis on ligand field theory, bioinorganic chemistry, and organometallic chemistry (F).
Prerequisites: CHEM 3212K, CHEM 3311K.

CHEM 4420. Adv Organic Spectroscopy. 3-0-3 Units.
This course is intended to introduce the spectroscopic methods used in the modern determination of organic structures. This will primarily consist of the study of mass spectrometry (MS), infrared (IR) spectroscopy, and nuclear magnetic resonance (NMR) spectrometry. Some discussion will be devoted to instrumental methods, but the primary focus of the course will be acquiring skill in the interpretation of this spectral data. This course will include hands-on experience using instrumentation. (F)
Prerequisites: CHEM 3212K

CHEM 4430. Advanced Organic Chemistry. 3-0-3 Units.
Advanced topics in organic chemistry. Such topics include biomolecules, stereochemistry, physical organic chemistry, and heterocycles (F).
Prerequisites: CHEM 3212K.

CHEM 4800. Service Learning in Chemistry. 0-0-1-4 Unit.
A lecture assistantship or laboratory assistantship within a chemistry course here at Dalton State. Repeatable for a maximum of 4 credit hours. (F,S,M)
Prerequisites: Approval of both a faculty supervisor and department chair.

CHEM 4860. Internship in Chemistry. 0-0-1-4 Unit.
A supervised, credit-earning work experience of one academic semester with a previously approved business firm, private agency or government agency. Repeatable for a maximum of 4 credit hours. (F,S,M).
Prerequisites: Permission of department chair.

CHEM 4900. Special Topics in Chemistry. 0-0-1-4 Unit.
Advanced concepts in chemistry will be presented, the detailed content varying from year to year. Course may be repeated for credit when topic differs. (Offered as Needed)
Prerequisites: CHEM 3212K and additional 3 upper level Chemistry courses.

CHEM 4960. Research in Chemistry. 0-0-1-4 Unit.
Research project conducted by a student under guidance of a faculty member. Approval of a faculty supervisor required before registration. Variable 1-4 hours. Repeatable for a maximum of 4 hours. (F,S)
Prerequisites: 16 hours of Chemistry and permission of the instructor.