individual, group, and organizational levels. Several theoretical change models will be examined as will the types of change that occur within organizations. This course will use lecture, discussion, case studies, and a major organizational change project. Prerequisites: BUAD 121 and junior level standing.

**BUAD 399 Independent Study in Business (2)**  
*Fall, Spring*  
This is an opportunity for students to do guided independent research on selected topics particularly related to current business practice. It will be the student's responsibility to define and outline the research project and to arrange for a faculty supervisor. Departmental approval of the research proposal is required. Prerequisites: junior standing and 3.0+ GPA.

**BUAD 423 Organizational Consulting (3)**  
*Fall*  
A senior capstone course required of all business majors. The primary focus is on preparing the student for assimilation into the professional work force. Students, working in teams, will participate in an organizational consulting assignment in cooperation with their client and the Service Corps of Retired Executives. Meets field education graduation requirement. Prerequisites: accounting, business, finance, marketing, or entrepreneurial management major; senior standing.

**BUAD 425 Internship in Business (1-12)**  
*Fall, Spring, Summer*  
The student will spend a semester serving in an entry-level professional position in a business firm, under the direction of the firm and the business department. Responsibilities include periodic on campus seminars. A student may complete more than one internship but can earn no more than 12 hours of internship credit. Prerequisites: junior standing and business department faculty approval.

**CHEM CHEMISTRY**

**CHEM 100 Chemistry in Society (3)**  
*Fall, Spring*  
This course introduces students to the methods of science, basic chemistry, and the role of chemistry in our modern world. The course includes a one-and-one-half hour laboratory period each week. Designed to meet the physical science Foundations requirement for non-science majors, this course does not count toward the completion of a chemistry major or minor. $30 Lab Fee.

**CHEM 101 General Chemistry (4)**  
*Fall*  
This introductory course presents the fundamental principles of inorganic chemistry, emphasizing applications relevant to health sciences. Basic treatment of stoichiometry, atomic structure, bonding, states of matter, solutions, and chemical reactions is given. One three-hour laboratory period per week is included. CHEM 101 does not count toward a chemistry major or minor. Due to content overlap students cannot receive credit for CHEM 101 if they take CHEM 103. $30 Lab Fee.

**CHEM 102 Principles of Organic and Biochemistry (4)**  
*Spring*  
An elementary treatment of organic and biochemistry studying the fundamental classes of organic compounds and their syntheses and reactions, followed by a survey of the chemistry involved in living systems. One three-hour laboratory per week is included. The course emphasizes applications relevant to health sciences. CHEM 102 does not count toward a chemistry major or minor. Prerequisite: CHEM 101 with a C- or better. $30 Lab Fee.

**CHEM 103 Fundamentals of Chemistry I (4)**  
*Fall*  
An introduction to the basic laws and theories of modern chemistry (including atomic and molecular structure, bonding, solids, liquids, gases, and solutions); stoichiometry, and thermodynamics. The laboratory work stresses quantitative experiments designed to illustrate basic laws. The course includes three lectures and one three-hour laboratory period per week. Prerequisite: minimum ACT composite score of 21 or a grade of C or better in MATH 101 or instructor permission for students with ACT scores 18-20. $30 Lab Fee.

**CHEM 104 Fundamentals of Chemistry II (4)**  
*Spring*  
A continuation of CHEM 103, this course includes equilibrium, electrochemistry, kinetics, and the descriptive chemistry of the elements. The laboratory work stresses equilibrium and the solution chemistry of the elements as illustrated by the techniques of qualitative inorganic analysis. Prerequisite: CHEM 103 with a C- or better. $30 Lab Fee.

**CHEM 202 Quantitative Analysis (4)**  
*Fall, Odd*  
This course consists of three hours of lecture and three hours of laboratory per week. Approximately equal emphasis is placed on (1) a study of the theory underlying various analytical methods including equilibrium manipulation, electrochemistry, and optical methods of analysis, and (2) the mastery of the laboratory techniques needed for the routine analyses of unknown, using classical methods as well as instrumental methods. Prerequisite: CHEM 104 with a C or better. $30 Lab Fee.

**CHEM 205 Organic Chemistry I (4)**  
*Fall*  
This concentrated introduction to the chemistry of carbon compounds emphasizes the integration of descriptive chemistry with basic principles: bonding theory, reaction mechanisms, stereochemistry, acid-base relationships, and others. For the most part, aliphatic compounds are treated. The laboratory work, consisting of one four-hour laboratory period per week, introduces the student to various techniques and stresses preparative procedures of typical organic compounds. Prerequisite: CHEM 104. $30 Lab Fee.
CHEM 206 Organic Chemistry II (4)
*Spring*
This continuation of CHEM 205 increases emphasis on the chemistry of aromatics, heterocycles, and “natural” products. The laboratory work is more quantitative and introduces the use and theory of various spectral methods. Prerequisite: CHEM 205. $30 Lab Fee.

CHEM 303 Biochemistry I (4)
*Fall, Even*
This study combines the intermediary metabolic pathways and corresponding chemical structure with an overview of enzyme mechanism and kinetics, bioenergetics, and macromolecular biosynthetic pathways. Students participate in a four-hour lab period each week. Prerequisites: CHEM 206, BIOL 306, or approval of instructor. $30 Lab Fee.

CHEM 304 Biochemistry II (3)
*Spring, Odd*
The course consists of a study of selected topics in advanced organic chemistry which will focus on organic syntheses and the study of electron-pushing mechanisms of organic reactions. It will include the use of chemical literature and SciFinder to aid in the presentation of a topic from the organic chemical literature. Prerequisite: CHEM 206.

CHEM 305 Advanced Organic Chemistry (4)
*Varies*
These lectures consist of a study of selected topics in advanced organic chemistry with considerable time spent on the use of spectral methods of analysis (infrared, ultraviolet, mass spectroscopy, nuclear magnetic resonance spectroscopy) in the qualitative identification of organic compounds. Laboratory work consists of classical separations, qualitative organic analysis, and use of spectral techniques to identify organic unknowns. Use of the chemical literature, including complete literature searches to aid in syntheses and subsequent reports, is emphasized. Prerequisite: CHEM 206.

CHEM 324 Individual Research (2)
*Fall, Spring*
Must be arranged with a member of the chemistry department prior to registration.

CHEM 331 Physical Chemistry I (4)
*Spring, Even*
A study of gas laws, chemical and physical equilibria, thermodynamics, and kinetic molecular theory. Students participate in a four-hour lab period each week. Prerequisites: CHEM 104, CHEM 202, and PHYS 212 or concurrent registration; MATH 112 or permission of instructor. $30 Lab Fee.

CHEM 332 Physical Chemistry II (4)
*Fall*
This course will cover special relativity, Foundations of quantum mechanics, Schrödinger’s equation, atoms and ordering of the Periodic Table, some applications of quantum mechanics, an introduction to spectroscopy, and statistical thermodynamics. The course will provide important concepts that help students build fundamental knowledge of subatomic particle behavior that informs other chemistry coursework. This course is cross listed with PHYS 221. Prerequisite: PHYS 212 and MATH 112. $30 Lab Fee.

CHEM 333 Environmental Chemistry (4)
*Fall, Odd; Summer*
Principles and analysis of chemical movement and distribution in natural environments. Sampling and analytical methods are included for water, soil, and air. Students work in natural habitats and in the laboratory. Prerequisites: one year of General Chemistry and one semester of Organic Chemistry. This course is offered during the academic year at Trinity and summers through AuSable Institute of Environmental Studies at Mancelona, Michigan. $30 Lab Fee.

CHEM 340 Instrumental Methods of Analysis (4)
*Varies*
This course introduces the principles of spectroscopic, electrometric, and chromatographic methods of analysis and the types of instruments currently available. Using hand on experiences, the fundamental principles of instrumentation, features and functions of specific instruments, and appropriate instrumental approaches for answering technical questions will be investigated. Strengths and weaknesses for each method will be addressed. Prerequisites: CHEM 202 and 205. $30 Lab Fee.

CHEM 391 Science Majors Junior Seminar (1)
*Spring*
A seminar for all junior majors in biology and chemistry. Meets one hour per week to discuss the nature of scientific research, the relationship between faith and science, and ethical issues. Students begin developing a major paper on the ethics of a scientific topic. Prerequisite: junior standing and minimum of 12 hours in the chemistry major.

CHEM 392 Science Majors Senior Seminar (1)
*Spring*
A seminar for all senior majors in biology and chemistry. Similar to Chemistry 391 but includes the completion and oral presentation of the major paper begun in CHEM 391. Prerequisite: senior standing and CHEM 391.

CHEM 395 Special Topics in Chemistry (2)
*Fall*
Each fall, the chemistry division of the Associated Colleges of the Chicago Area (ACCA) offers a special course given in a seminar format by experts in that field. The class meets one evening per week off site.

CHEM 399 Independent Study (2)
*Fall, Spring*
Topics selected from student’s major interests. Prerequisite: Permission of the department. Lab fees may apply.
CHEM 400 Field Education (2)  
*Fall, Spring*  
Must be approved by a member of the department prior to registration.

**CHML CHRISTIAN MINISTRY AND LEADERSHIP**

**CHML 101 Introduction Church and Ministry (3)  
*Fall*  
This course is designed to introduce students to the theological foundation for and the historical development of ministry and calling within the context of the local church. The course will seek to provide students with an understanding of the tools that lead to their own philosophy of ministry (mission, vision, and core values) within the various church ministry settings. Contextual models of ministry will be examined in this course.**

**CHML 201 Administration and Leadership for Church and Ministry (3)  
*Fall*  
This course serves as a basic introduction to the principles and issues related to administration and leadership within any ministry setting. Issues to be studied include the definition of leadership, the vision of a leader, and the heart of a leader and many of the practical challenges of daily ministry leadership. Prerequisite: CHML 101.**

**CHML 202 Introduction to Youth Ministry Leadership (3)  
*Spring, Even*  
This course will examine the nature and needs of adolescents, their moral and faith development, and models for youth ministry in the local church and/or Christian organization. Prerequisites: CHML 101 and sophomore standing.**

**CHML 203 Spiritual Formation (3)  
*Spring*  
This course will introduce students to foundational concepts and practices in the area of the spiritual disciplines, which provide a needed pathway for their own spiritual formation and ability to teach spiritual formation to others. Stages of spiritual formation and its barriers also are discussed. Prerequisite: CHML 101 or permission of the instructor.**

**CHML 302 Evangelism for Church and Ministry (3)  
*Spring, Odd*  
A study of the theology, history, culture, and practice of mission in the context of the local church and/or Christian organization, including a brief overview of evangelism and mission in the urban and cross-cultural mission settings. Prerequisites: CHML 101 and junior standing.**

**CHML 305 Urban Ministry Leadership (3)  
*Spring, Odd*  
This course will introduce and expose students to issues related to ministry in urban areas. Students will gain an understanding of both the challenges and rewards of ministry in urban settings. Students also will be exposed to an understanding of holistic ministry in the urban setting. Prerequisites: CHML 101 and junior standing.**

**CHML 307 Worship Leadership (3)  
*Fall, Odd*  
This course will introduce students to worship in the Old and New Testaments, with an overview of its development over the centuries. The primary focus is on the theological development of worship in a postmodern world. Included in this focus is the development of skills and strategies for planning and leading public worship in a variety of ministry settings, the development of a worship team, and the necessary formation of a worship leader. Prerequisites: CHML 101 and junior standing.**

**CHML 399 Independent Study (1)  
*Varies* **

**CHML 400 Field Education/Internship (6)  
*Fall, Spring* **

**CHML 401 Senior Seminar (3)  
*Spring*  
Students will meet to discuss how a Christian worldview specifically influences the development and implementation of ministry leadership, and plans and strategies that have been developed throughout both the Foundations program and the entire church and ministry leadership major. Students will revisit the philosophy of ministry they began to develop in Church and Ministry Leadership 101, seeking to refine it toward the specific ministry setting they anticipate working in. Students will be guided to integrate biblical knowledge, exegetical skills, critical reading skills, philosophy of ministry and leadership skills in various ministerial settings.**

**CJ CRIMINAL JUSTICE**

**CJ 121 Principles of Criminal Justice (3)  
*Fall*  
This course sets crime in the context of a basic Christian sociological analysis of society and people’s needs, opportunities, norms, structures, and conceptions of justice. It examines society and the roles of society and government in providing a context for socialization, employment, education, freedom, equality, and justice. It provides exposure to such crucial concepts as crime, criminal justice, punishment, and legal system. The need for a fair and effective justice system, including alternatives, pervades this introduction to the field.**

**CJ 201 Comparative and Alternative Criminal Justice Systems—CCS (3)  
*Spring*  
This course gives a broad basis on which to analyze the nature of justice and from which to compare and critique the