



EDUCATION MAJORS

Middle School Education (Grades 5-9)

English Language Arts, Mathematics, Science, Social Sciences

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The Westminster College Teacher Education Program is administered by the Department of Elementary and Secondary Education (DESE). The program is designed to promote the life-long learning dispositions the teaching profession demands, as well to provide the depth and breadth of academic and practical knowledge needed for successful beginning teaching. The conceptual framework emphasizes the idea of "the teacher as a reflective practitioner." The faculty draws on research and extensive experience to make course work meaningful and strives to demonstrate attitudes and practice, which serve as examples for students' future classrooms. Students receive personal attention within a learning community that encourages them to develop critical thinking, creative sensibility, and communication arts to share ideas and to understand others as they teach and learn in a global, technological society.

Those who wish to teach will earn a Bachelor of Arts with majors offered in Early Childhood (birth-Grade 3), Elementary (grades 1-6), Middle School (grades 5-9) and Secondary Education (grades 9-12). Secondary content emphasis areas are: Business, Mathematics, Social Studies, Biology, Chemistry, General Science, and English. Two majors cover K-12: Spanish and Physical Education. Middle school majors are encouraged to complete two areas of content concentration selected from English, Science, Social Studies, and Mathematics. Each concentration area consists of at least 24 hours chosen from Mathematics, Social Studies, Science, or English.

The Teacher Education Program is designed so that majors complete a course of study approved by the Department of Elementary and Secondary Education (DESE), which will lead to recommendation for certification in the chosen major and concentration areas. Teacher education preparation experience includes research, observation, demonstration, and participation in local school settings. Students who prepare for a teaching career must meet professional education requirements specified by DESE, as well as the program requirements of Westminster College. Teacher education majors must demonstrate competencies in reading, writing, mathematics, science, and social science.

Students must be accepted into the Teacher Education Program before taking upper level (300+) professional education courses.

Admission criteria are:

1. Passing scores in all subsets of the Missouri General Education Assessment (MOGEA), if required; required to take while in EDU 290 if ACT score is below 21, if ACT score is below 18, students must get permission to test and enter TEP; send results to Barri Bumgarner.
2. Resume, to be done in EDU 290; send to Barri Bumgarner.
3. Written Teaching Philosophy Document, to be done in EDU 290; send to Barri Bumgarner.
4. Maintain an annual student membership with the Missouri State Teacher Association (MSTA) OR National Education Association (NEA); joined during Practicum 1 (EDU 291); send results to Barri Bumgarner.
5. Register with the Family Care Safety Registry at: www.health.mo.gov/safety/fcsr during Practicum 1 (EDU 291); must keep this current throughout college career; send results to Barri Bumgarner.
6. Satisfactory Dispositions Checklist from Cooperating Teacher and Professor of Practicum I (EDU 291). (Continues on following page)
7. Letter of Recommendation from an Education Faculty Member.
8. Letter of Recommendation from an Outside Faculty Member.
9. 4-year Plan signed by advisor and sent to Barri Bumgarner.
10. Grade Point Average: 2.75 Overall; 3.00 Education Coursework; 3.0 Content Coursework at the end of sophomore year; for transfer students, GPA will be calculated after one semester of Westminster coursework.
11. Have declared a major in Education.

After entry into the program and before graduation, it is required that students pass a nationally criterion referenced entrance exam to the profession, established by DESE. Completing the national test is part of the certification application process. Students must also obtain a Missouri substitute certificate prior to the student teaching experience.

Note: Students must obtain a final grade of C+ or higher in each professional education course and maintain a GPA of 3.0 in all professional education courses. Students are not allowed to have grades below C in their content area concentrations and they must have a 3.0 in their chosen concentration to be recommended for certification. No more than two (2) grades of D in the general education courses required for graduation are acceptable and students are encouraged to retake courses in which they receive grades of D.

Prior to student teaching, the pre-service teacher must:

1. Previously been admitted into the Teacher Education Program (TEP).
2. Pass the content exam within the first three attempts relative to the pre-service teacher's certification area.
3. Hold a valid Missouri substitute-teaching certificate (renewable).
4. Maintain a 3.0 education GPA, 3.0 Content GPA, and an overall 2.75 GPA.
5. Maintain a student membership in the Missouri State Teacher's Association or National Education Association.
6. Provide a formal request to student teach at least one semester prior to the intended student teaching experience sent to Barri Bumgarner. The request must be received one full semester prior to the intended student teaching experience. The request should indicate a school or a teacher if applicable. NOTE: Student teaching is required for certification.

It is important to contact faculty in the Teacher Education Program for guidance in scheduling courses. Course advising is also available in MyWC.

Policy regarding student teaching: Students enrolling in EDU 492 Student Teaching: Elementary; EDU 495 Student Teaching: Middle School; and EDU 497 Student Teaching: Secondary who are members of collegiate sports teams should a) plan to student teach during a semester in which their sport is not played, b) after their eligibility has expired, or c) during a semester in which they choose not to play.

You can find the course descriptions for all courses required for this major by clicking on the following links:

- [Biology Course Descriptions](#)
- [Chemistry Course Descriptions](#)
- [Computer Science Course Descriptions](#)
- [Education Course Descriptions](#)
- [English Course Descriptions](#)
- [Environmental Science Course Descriptions](#)
- [Geology Course Descriptions](#)
- [History Course Descriptions](#)
- [Natural Science Course Descriptions](#)
- [Physics Course Descriptions](#)
- [Political Course Descriptions](#)
- [Psychology Course Descriptions](#)
- [Math Course Descriptions](#)
- [Sociology Course Descriptions](#)

Major: MIDDLE SCHOOL EDUCATION

Student's Last Name

First Name

Middle Initial

Advisor

Date Major Declared

Course #	Title of Course	Hours Required	Semester Completed	Grade
Required Core Middle School Education Courses				
EDU 101	Introduction to Teaching	1		
EDU 221	Education Psychology	3		
EDU 230	Child and Adolescent Growth & Development	3		
EDU 231	Education of Exceptional Individuals	3		
EDU 290	Foundations of Education	3		
EDU 291	Education Practicum I	2		
EDU 306	Teaching Reading	3		
EDU 309	Teaching Writing	3		
EDU 320	Teaching Middle School: Curriculum & Philosophy of Teaching the Middle Years	4		
EDU 350	Digital Literacy	3		
EDU 385	Diversity in Education	3		
EDU 392	Reading & Writing in Content Area	3		
EDU 393	Education Practicum II	2		
EDU 417	Advanced Practicum	1-6		
EDU 425	Secondary School Teaching	3		
EDU 453	Classroom Organization and Management	3		
EDU 490	Educational Seminar	3		
EDU 495	Student Teaching: Middle School	12		
Total Core Middle School Education Courses		58-63 hrs		
Additional Content Coursework				
English Language Arts (37 hrs)				
EDU 210	Literature for Children and Youth	3		
EDU 295	Place-Based and Service Learning: Education in the Community & the Classroom	4		
EDU 431	Teaching English in Middle/Secondary Schools	3		
EDU 441	Reading Assessment and Advancement	3		
ENG 103	Academic Writing	3		
ENG 204	Introduction to Literature	3		
ENG 238	American Literature to the Civil War	3		
<u>or</u> ENG 239	American Literature since the Civil War	3		
ENG 248	World Literature to 1800	3		
<u>or</u> ENG 249	World Literature since 1800	3		
ENG 270	Expository Writing	3		

ENG 275	Introduction to Creative Writing	3		
Science (36 hrs)				
EDU 295	Place-Based and Service Learning: Education in the Community & the Classroom	4		
EDU 307	Teaching STEAM in 21 st Century Classroom	4		
EDU 436	Teaching Science in Middle/Secondary	3		
ENV 105	Introduction to Environmental Science	3		
NSC 305	History of Science	3		
CHM 114/115	General Chemistry I/Lab	4		
GEO 108	Introduction to Physical Geology	4		
or GEO 110	Earth Systems	4		
PHY 105	Introduction to Physics	3		
BIO 124/125	Biodiversity/Lab	4		
NSC 210	Anatomy and Physiology I	4		
Mathematics (30 hrs)				
<i>Additional Required Courses for Mathematics Concentration</i>				
MAT 231	Mathematics for Elementary & Middle School Teachers	3		
MAT 351	Methods of Teaching ELE and MS Mathematics	3		
<i>Total of 24 hours from the following options</i>				
MAT 114	Elementary Statistics	3		
MAT 121	Pre-Calculus	3		
MAT 124	Calculus I	5		
MAT 214	Calculus II	4		
MAT 224	Calculus III	4		
MAT 305	Heart of Mathematics	3		
MAT 310	History of Mathematics	3		
MAT 313	Probability and Statistics	3		
MAT 314	Higher Geometry	3		
MAT 215	Linear Algebra	3		
CSA 104	Programming Logic and Design	3		
Social Science (31 hrs)				
<i>Additional Required Courses</i>				
EDU 295	Place-Based and Service Learning: Education in the Community & the Classroom	4		
EDU 435	Methods of Teaching SS in Middle/Secondary	3		
HIS 103	History of the United States to 1877	3		
HIS 104	History of the U.S. Since 1877	3		
HIS 109	World History I	3		
HIS 110	World History II	3		
<i>Combination of Courses to equal at least 12 hours</i>				
ECN 110	Introduction to Economics	3		
HIS 390	Historiography	3		
POL 112	Introduction to Political Science	3		
POL 211	American Government & Politics	3		
POL 212	Introduction to International Relations	3		
PSY 112	Psychology as a Natural Science	3		
PSY 113	Psychology as a Social Science	3		
SOC 111	Introduction to Sociology	3		
TOTAL HOURS FOR MAJOR		88-100 hrs		

BIO – Biology

BIO 114 Biological Processes (3 hrs.). An introduction for the beginning student to fundamental organism and cellular processes such as molecular and Mendelian genetics and photosynthesis. Students must take this course in conjunction with BIO 115. This course is typically offered once per academic year in the fall semester. BIO 114/115 will satisfy the Scientific Inquiry (lab) Context in Tier II of New Foundations and the Natural Science Inquiry Theme of Breakthrough general education programs.

BIO 115 Biological Processes Laboratory (1 hr.). Students conduct laboratory exercises selected to reinforce and augment lecture topics in BIO 114. Students are involved in setting up and management of experiments and in analysis of collected data. Students must take this course in conjunction with BIO 114. This course is typically offered once per academic year in the fall semester. BIO 114/115 will satisfy the Scientific Inquiry (lab) Context in Tier II of New Foundations and the Natural Science Inquiry Theme of Breakthrough general education programs.

BIO 124 Biodiversity (3 hrs.). This course acquaints students with the major subdivisions of the living world. Anatomical, morphological and life cycle characteristics of representatives of the various phyla and classes are introduced and phyletic and functional interrelationships are stressed wherever feasible. Students must take this course in conjunction with BIO 125. This course is typically offered once per academic year in the spring semester. BIO 124/125 will satisfy the Scientific Inquiry (lab) Context in Tier II of New Foundations and the Natural Science Inquiry Theme of Breakthrough general education programs.

BIO 125 Biodiversity Laboratory (1 hr.) This is a survey laboratory and is intended to demonstrate the changes in complexity of form and structure in both plants and animals as evolutionary processes have shaped organisms through geological time. Students must take this course in conjunction with BIO 124. This course is typically offered once per academic year in the spring semester. BIO 124/125 will satisfy the Scientific Inquiry (lab) Context in Tier II of New Foundations and the Natural Science Inquiry Theme of Breakthrough general education programs.

BIO 204 Animal Behavior (4 hrs.) This course will introduce students to the field of animal behavior focusing on an evolutionary approach. We will examine both proximate and ultimate causes for why animals behave as they do. Topics range from how neural mechanisms control behavior to why

different types of mating systems have developed. This course focuses on how scientists study these areas. Students design and conduct experiments in animal behavior as part of the learning process. This course is typically offered every other academic year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 205 Ecology and Field Biology (4 hrs.) This course is designed to familiarize the student with the concepts and principles of ecology as a science. A wide variety of organisms and groups of organisms are studied in relation to various environmental conditions. Short local field trips are used to acquaint students with collecting, census, and ecological measurement techniques and devices. This course is typically offered every academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 206 Laboratory Instruction Techniques (1 hr.) This course is open to students who are qualified to serve as laboratory assistants in various biology courses. Students assist instructor in the laboratory and serve as mentors for students in course. This course is typically offered every semester during the academic year. Prerequisites: open by invitation to students who have earned an A or B average in NSC 108, BIO 124/125 (or BIO 100 General Biology I), or BIO 114/115.

BIO 208 Functional Plant Morphology (4 hrs.) This course is designed as an integrated study of the gross morphology, internal anatomy and physiology of vascular plants. Laboratory studies emphasize the interrelationships between plant form and function. This course is typically offered every other academic year in the spring semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 210 Biogeography (3 hrs.) Biogeography is the study of the distribution of biodiversity over space and time. It aims to reveal where organisms live and at what abundance. It addresses the questions of which species, where and why (or why not). Biodiversity is viewed in light of historical factors, such as speciation and extinction, plate tectonics and glaciations, as well as in the light of current and future threats, including but not limited to climate change. This course is typically offered every other academic year. Prerequisites: BIO 124/125 and 114/115 for Biology and Environmental Science majors; NSC 108 and ENV 105 for non-majors.

BIO 212 Research Methods in Biology and Environmental Sciences (3 hrs.) Research methods will introduce you to tools and techniques used in the scientific research laboratory by offering a hands-on research experience allowing data collection, storage, and analysis. Topics include an examination of research types, design, and methodology, scientific communication, and data analysis. Prerequisites: BIO 114/115 and BIO 124/125 or CHM 114/115 and CHM 124/125. MAT 114 is recommended.

BIO 301 Genetics (4 hrs.) This course will be an introduction to and a survey of the science of genetics. Topics covered will include classical “Mendelian” genetics, population genetics, and modern molecular genetics. The laboratory will augment these approaches with traditional studies in fly genetics and current practices in molecular genetics. This course is typically offered once per academic year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 302 Human Anatomy (4 hrs.) This class is designed for students who are preparing for careers in health-related clinical or research professions or have a deep interest in understanding how the human body works. You will learn about the human form at the gross anatomical level delivered as a regional approach typical of professional schools. In the laboratory, we will be using anatomical models, skeletons, radiographs, and dissection to enhance your understanding of anatomy. This course will challenge you to apply this information to real world clinical and pathological problems. This course is typically offered every academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 303 Microbiology (4 hrs.) This course serves as an introduction to the structure, physiology, pathogenicity and ecology of microorganisms, particularly the bacteria and viruses. Laboratory work involves effective use of the microscope, staining procedures, handling of pure cultures, analysis of bacterial physiology and identification of unknown bacteria. This course is typically offered once each academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I), BIO 114/115.

BIO 310 Environmental Toxicology (3 hrs.) In this course, you will be introduced to the field of environmental toxicology from a biological perspective. We will discuss uptake of chemicals from the environment, biotransformation, and toxicity. We will examine a wide array of endpoints from cellular biomarkers to population-level effects in invertebrates and vertebrates, including humans.

Prerequisites: BIO 124/125 and BIO 114/115

BIO 314 Vertebrate Histology (2-4 hrs.) The aim of this course is to introduce students to the microscopic anatomy and histophysiology of vertebrates. Particular emphasis will be placed on the interrelation between structure and function. In addition, this course will teach students to become proficient in using the microscope to interpret fine structure. This course is typically offered as independent study. Prerequisite: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 315 Entomology (4 hrs.) This course focuses on the biology of insects with the following three objectives: (1) An introduction to common methods used in the field of entomology. (2) The ability to identify many common insect orders and families, since it is impossible to understand something if you do not know what it is. Finally, (3) an introduction to the evolution, behavior, and ecology of this fascinating group. This course is typically offered every other academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 318 Ornithology (4 hrs.) Ornithology is the study of avian biology (birds). The broad goals of this course will be to (1) introduce you to the evolution, behavior, and ecology of birds; and (2) provide you with the ability to identify many common bird species in the wild by sight, sound, behavior, and habitat. This course meets twice a week in a lecture/laboratory class setting. Several trips will be taken into the field to identify birds. Please note that on rare occasions, the class period may run 10-20 minutes longer to accommodate longer trips afield. This course typically is offered every other academic year in the spring semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 320 & 321: Biology in Belize (4 hrs.) This course serves as an introduction to the natural history, geography, pre- and post-Columbian history, land-use patterns, and current political climate of Belize, Central America. Following a preparatory spring semester seminar (BIO 320), a three-week Summer Session course (BIO 321) will be taught in Belize where students will study the biota of the offshore caves, coral reefs, grassland savannas and neo-tropical jungles. Special attention will be paid to local land use and conservation issues and the effects of ecotourism on the local economy and relevant ecosystems. Prerequisites: Completion of at least two courses in biology or permission of the instructor.

BIO 322 Vertebrate Biology (4 hrs.) Vertebrate Biology takes a comparative approach to the study of the diversity of vertebrate life both extinct and extant. Anatomy, ecology, behavior, and evolutionary history will all be discussed as part of a broad introduction to the vertebrates. The dissection of representative species of the major vertebrate groups is the focus of the weekly laboratory. This course is typically offered every other academic year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 325 Molecular Cell Biology (4 hrs.) This course is a study of eukaryotic cells at the molecular level. Topics include protein biosynthesis and trafficking, membrane structure and function, cellular, subcellular, and extracellular structure, and the cell cycle. The course correlates the cellular structures to their function within the cell. The laboratory is designed to complement these topics, with an emphasis on student self-design. This course is typically offered once every one-two academic years. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115. BIO 301 Recommended.

BIO 328 Insects and Human Affairs (3 hrs.) This course provides an introduction to insects and their interactions with humans. Human beings and insects will be compared with respect to both form and function, and students will learn to distinguish the major groups of insects. The course will examine the effects of insects on agriculture (both harmful and helpful), the impact of insects on the course of human history, and their representation in art, music, and literature. This course is typically offered every other academic year in the spring semester. BIO 328 will satisfy the Scientific Inquiry (non-lab) Context in Tier II of the General Education Program and the STEM and Society Explorative Cluster of Breakthrough general education program.

BIO 330 Virology (3 hrs.) This course will introduce students to the basic biology of viruses and then look at some contemporary issues that involve viruses. Topics covered will include the cellular and molecular mechanisms of virus reproduction including virus structure, virus-cell interactions, virus infection, oncogenes, and viral transformation of cells to cancer. We will also consider the evolution and ecology of viruses and the epidemiology of viral infections. Examples will be taken from bacterial, plant, and animal viruses, including newly emerging viruses. Contemporary topics will include the AIDS epidemic, emerging pathogens such as West Nile virus, bird flu, or Ebola virus, the renewed threat of smallpox, etc. Portions of the course will include student-led discussions of specialized topics of their choice. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115. BIO 301 recommended.

BIO 335 Medical Terminology (1 hr.) The course is designed to help students develop a vocabulary for accurately describing the human body and associated components, conditions, processes. This systematic approach to word building and term comprehension is based on the concept of: (1) word roots, (2) prefixes, and (3) suffixes primarily derived from Latin and Greek origins. This course is typically offered every academic year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I), BIO 114/115, and permission of instructor required.

BIO 372 Developmental Biology (4 hrs.) How does the fertilized egg transform into an organism? What changes over time lead to the specialized tissues and organs of animals? Developmental Biology is a survey of animal development, from sperm and unfertilized egg through embryonic development. Molecular, cellular, genetic, and organismal topics will be included. This course will complement your studies of genetics, cellular, animal, and human biology as we discuss how genotype becomes phenotype. The laboratory will include descriptive and experimental approaches. Typically offered every other year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I), BIO 114/115 and BIO 301 (Or with permission).

BIO 398 Independent Research Projects (1-4 hrs.) Students interested in independent reading or developing individual research projects may enroll in BIO 398 for variable credit. The faculty in the department strongly encourages students majoring in biology to develop and pursue at least one research project. This course is typically offered every semester during the academic year. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115, as well as permission of the department chair.

BIO 404 Biochemistry (4 hrs.) This course is an advanced survey course for students who expect to continue graduate study in biology or continue on to a professional career in a health-related field. Topics include a detailed study of the structure of biological molecules and the function of enzymes, followed by a survey of basic intermediary metabolism. The laboratory is a project-based laboratory incorporating many of the principles covered in lecture. This course is typically offered once each academic year in the spring semester. Prerequisites: CHM 314, 315, 324, and 325 (CHM 324 & 325 can be taken concurrently with BIO 404), BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115.

BIO 415 Human Gross Anatomy (4 hrs.) Students will complete a human dissection, as a team, with a minimum of 6 hours of contact per week. The dissection will be completed as it would in a medical school gross anatomy course, to include a complete regional dissection. Additionally, an assessment of the health of the donor will be completed. The students will be required to share their findings with the community and in other courses as appropriate. This course is typically offered once each academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I), BIO 114/115, and BIO 302 (Must have been taken at Westminster). The course is by application and consideration of faculty in the department, and requires instructor permission.

BIO 420 Physiology (4 hrs.) This class is designed for students who have a deep interest in understanding how the human body works. Physiological principles and examples will be geared towards humans, but in many instances are also applicable to other vertebrates. You will learn about how the human body functions at molecular, cellular and systems levels. This course will challenge you to apply this information to real world clinical and pathological problems. You will be expected to critically evaluate current scientific literature and discuss recent scientific findings with your fellow classmates. You will learn how to use physiological lab equipment and then conduct an independent research project. This course is typically offered once each academic year in the spring semester. Prerequisites: BIO 114/115, BIO 124/125 (or BIO 100 General Biology I) and BIO 302 or BIO 322 with a grade of C- or better.

BIO 450 Evolution (3 hrs.) Evolution is the unifying theory of biology. This course will examine Charles Darwin's theory of evolution by means of natural selection looking at the development of this theory and its modern applications. Topics will include the fundamental mechanisms for evolution, including those that are both adaptive and neutral with respect to the process of adaptation; human evolution; the origin and definition of a species; molecular evolution; the relationship between evolution and religion; and modern challenges, modifications, and support for this far-reaching theory. This course is typically offered every academic year in the fall semester. Prerequisites: BIO 124/125 (or BIO 100 General Biology I) and BIO 114/115, junior or senior status.

CHM – Chemistry

CHM 105 Introduction to Chemistry (3 hrs.) A survey course intended for non-science majors. Chemical phenomena, methodology, and theory are presented in the context of public policy issues such as air and water quality, the ozone layer, global warming, acid rain, and energy sources.

CHM 106 Introduction to Chemistry Laboratory (1 hr.) Laboratory experiences are provided that are relevant to the science and technology issues discussed in CHM 105. Meets three hours per week. Experimentation and data collection lead to an understanding of the scientific method and of the role that chemistry plays in addressing societal issues.

CHM 114 General Chemistry I (3 hrs.) A study of the fundamental principles and theories of chemistry with emphasis on stoichiometry, atomic theory, and bonding. This course is offered in every fall semester.

CHM 115 General Chemistry I Laboratory (1 hr.) Laboratory to accompany CHM 114. Meets three hours per week.

CHM 124 General Chemistry II (3 hrs.) A continuation of CHM 114 with emphasis on equilibrium, electrochemistry, kinetics, and thermodynamics. This course is offered every spring semester.

CHM 125 General Chemistry II Laboratory (1 hr.) Laboratory to accompany CHM 124. Meets three hours per week.

CHM 304 Inorganic Chemistry (3 hrs.) A survey of inorganic chemistry at the intermediate level. Emphasis is on descriptive chemistry with discussion also of atomic and molecular structure, bonding theory, coordination chemistry, and energy changes in inorganic reactions. Prerequisites: CHM 124/125.

CHM 314 Organic Chemistry I (3 hrs.) A systematic study of the compounds of carbon with emphasis on the principles of synthesis, analysis, and reaction mechanisms of organic functional groups. This course is offered every fall semester. Prerequisites: CHM 124/125.

CHM 315 Organic Chemistry I Laboratory (1 hr.) Laboratory to accompany CHM 314. A study of the techniques of synthesis and analysis of organic compounds. Meets three hours per week. Prerequisites: CHM 124/125.

CHM 324 Organic Chemistry II (3 hrs.) A continuation of CHM 314. This course is offered every spring semester.

CHM 325 Organic Chemistry II Laboratory (1 hr.) Laboratory to accompany CHM 324. Meets three hours per week.

CHM 334 Analytical Chemistry I (3 hrs.) A study of the principles and methods of quantitative analysis. Prerequisites: CHM 124/125.

CHM 335 Analytical Chemistry I Laboratory (1 hr.) Laboratory to accompany CHM 334. Gravimetric, volumetric and simple instrumental methods are studied. Meets three hours per week. Prerequisites: CHM 124/125.

CHM 344 Analytical Chemistry II (2 hrs.) Introduction to instrumental methods of analysis with emphasis on the principles of measurement and instrumentation. Prerequisites: CHM 334/335.

CHM 345 Analytical Chemistry II Laboratory (2 hrs.) Laboratory to accompany CHM 344. Methods may include polarography, spectrophotometry, chromatography, potentiometric titrations, and amperometric and conductometric determinations. Meets six hours per week.

CHM 404 Biophysical Chemistry (3 hrs.) Introduction to physical chemistry with special emphasis on biological applications. Topics to be discussed include thermodynamics, chemical and physical equilibria, and kinetics (especially enzyme kinetics). Designed for those students who would otherwise not be exposed to physical chemistry. Prerequisites: CHM 124/125, MAT 124.

CHM 410 Advanced Topics in Chemistry (3 hrs.) Special courses on various topics are offered under this listing. Past offerings include Medicinal Chemistry and Chemical Kinetics. May be repeated for credit with change of topic.

CHM 422 Advanced Inorganic Chemistry (3 hrs.) A study of the principles and theories of inorganic chemistry, emphasizing modern approaches to the field. Prerequisites: CHM 304, 324/325, MAT 224, and PHY 212, or permission of the instructor.

CHM 424 Physical Chemistry I (3 hrs.) Chemical thermodynamics and kinetics. Topics include properties of gases, laws of thermodynamics, free energy, chemical equilibrium, chemical kinetics, and rate laws. Additional topics may include chemical dynamic models, phase equilibrium, and electrochemistry. Prerequisites: CHM 124/125, MAT 214, and PHY 212 or PHY 213 or with permission of instructor.

CHM 425 Physical Chemistry I Laboratory (1 hr.) Laboratory to accompany CHM 424. Meets three hours per week. Prerequisites: CHM 324/325, CHM 344/345, MAT 224, PHY 212.

CHM 434 Physical Chemistry II (3 hrs.) Quantum and statistical mechanics. Topics include quantum mechanical theory, quantum mechanical models for motion, the structure of atoms and molecules, molecular spectroscopy, and statistical thermodynamics. Prerequisites: CHM 424.

CHM 435 Physical Chemistry II Laboratory (1 hr.) Laboratory to accompany CHM 434. Meets three hours per week.

CSC – Computer Science

CSC 398 Independent Study (1-4 hrs.) Independent study under the supervision of faculty members on a particular topic agreed upon by both the student and instructor. Department consent required.

CSC 399 Internship (1-4 hrs.) Computer related experience in business or industry jointly supervised by faculty and computer professionals and consent of department.

EDU – Education

EDU 101 Introduction to Teaching (1 hr.) Open to all students. This course serves as an introduction to those considering a major in any area of education. Basic terminology and theories of teaching and learning are team taught by Education Department faculty. A series of field trips to local schools provides information about K-12 school organization and characteristics of each level. This course serves as a prerequisite to EDU 290.

EDU/HES 206 Growth and Development through Elementary Physical Education (3 hrs.) This course is meant to prepare students to teach physical education and movement activities to elementary school children. By identifying patterns of growth and development, students will be able to develop methods to successfully teach fundamental movement skill and physical education concepts through quality instruction, games, dance, health-related fitness and perceptual-motor activities. This course is for K-9, K-12 physical education majors. Offered in even numbered fall semesters.

EDU/HES 207 School Health, PE, & Safety in Elementary (3 hrs.) This course examines the principles of teaching health, physical fitness, and safety for wellness and optimal development with an emphasis on the needs of children. Offered in fall semesters.

EDU 210 Literature for Children and Youth (3 hrs.) Students explore a variety of genre and multicultural literature for children and adolescents. Extensive reading is required to develop experience in selecting appropriate texts for classroom use. Classroom strategies are presented for using literature in curriculum design. A literature portfolio is an integral part of the course. Offered every spring semester. Prerequisites: ENG 103.

EDU/PSY 221 Educational Psychology (3 hrs.) The application of psychological principles of learning, cognition, and child and adolescent development to the educational process in elementary and secondary schools. Topics include the impact of psychological knowledge on student learning, teaching, motivation, management of the classroom, and assessment of student learning.

EDU 225 Human Experiences Across the Years (3 hrs.) The course explores scientific theory and practice in the field of human growth and development with an emphasis on experiences of the individual through the course of the lifespan. From pre-birth through end of life, humans are defined by momentous occasions and changes, and they grow accordingly. The emphasis of the course is on socio-emotional life events, but will also address both cognitive and physical development. The course is targeted to non-Education majors as a course intended to meet the Human Behavior Theme. Some topics include: infertility issues, childhood obesity, adolescent issues in the 21st century, concerns of young adults and career, the family, middle-age adjustment, and senior living arrangements.

EDU 230 Child and Adolescent Growth and Development (3 hrs.) This course explores current theory and knowledge in the field of childhood growth, cognitive and psychosocial development from ages pre-birth through adolescence. Major learning theories will be interrelated with information on physical, psychosocial, cognitive and language development. The goals and methods of childhood education will be studied and important contributions from social and behavioral scientists will be analyzed and evaluated for those planning to work with children and/or adolescents. Offered each semester.

EDU 231 Education of Exceptional Individuals (3 hrs.) This course is a study of the special needs and characteristics of individuals who are classified as exceptional. Students focus on the unique characteristics associated with giftedness, sensory impairments, learning disabilities, attention disorders, mental impairments, behavioral and emotional problems, physical disabilities and chronic health problems, and other at-risk factors. Legal aspects of schooling and curricular adaptations are explored. Offered in fall semester. Prerequisites: EDU 101 For Education Majors.

EDU 260 Emergent Literacy (3 hrs.) Students will develop knowledge and skills necessary to promote early literacy development, including the components of emergent literacy, oral language acquisition, phonological and phonemic awareness, alphabetic principle, high frequency vocabulary development, decoding and spelling strategies, and reading fluency. A variety of teaching techniques will be examined including creative dramatics, storytelling and a wide range of children's literature. Commercial reading programs and series used in many school districts will also be compared and evaluated. Offered in alternating spring semesters.

EDU 280 Programs in Early Childhood (3 hrs.) This course applies relationship of theory and practice in early childhood education programs, explores issues of family structures, systems and dynamics within the context of culture and examines firsthand a variety of state and federal programs available for young children. The course includes a practicum component in an approved childcare setting. Students will also examine current issues in child advocacy at the state or federal level, and develop a plan to support chosen legislation designed to help young children through an action plan. Offered every third spring semester as needed.

EDU 288 Assessment in Early Childhood (2 hrs.) This course will introduce students to a variety of assessment procedures and instruments that can be used to evaluate learning and the developmental achievements of young children. Students will have a chance to observe young children and various assessment testing first hand. The official position papers of ACEI (Association of Childhood Educators International) and NAEYC (National Association of Educators of Young Children) will be examined also. Offered in even-year fall semesters.

EDU 290 Foundations of Education (3 hrs.) This course provides a framework for understanding educational issues from historical, philosophical and societal perspectives. On-site observations are an integral part of the course so that students may gain understanding of the purpose of education, forces shaping it, and the individual responsibility required in becoming a teacher. Required for all education majors. Prerequisites: EDU 101 For Education Majors.

EDU 291 Education Practicum I (2 hrs.) This initial practicum experience is designed to acquaint students with the life of one classroom as students spend thirty clock hours observing and assisting in an assigned school classroom. Students should plan to take this course concurrently with EDU 290, Foundations of Education. A reflective learning log is required to record observations, comments, questions, and insights. Prerequisites: EDU 101 For Education Majors.

EDU 295 Place-Based and Service Learning: Education in the Community & the Classroom (4 hrs.) Today's future teachers must embrace current trends in education. One of those is understanding the importance of place-based and service learning. This community outreach work connects the college with area businesses and schools. Through place-based experiences, pre-service teachers develop the skills to work with community businesses and classrooms that will hopefully carry over into their own future classrooms. Prerequisites: EDU 101 recommended.

EDU 306 Teaching Reading (3 hrs.) Students will learn about the nature of reading and language development in the context of the whole school curriculum for elementary and middle grades. Topics include the examination of reading as a meaning construction process, the development of appropriate instructional strategies, and the assessment and evaluation issues related to social and cultural diversity. Instructional content and strategies are aligned with state and national guidelines and standards. Offered every fall. Prerequisites: EDU 290, 291 and admission to teacher education program.

EDU 307 Teaching STEAM in 21st Century Classrooms (4 hrs.) Today's future teachers must embrace current trends in education. One of those is understanding the importance of cross-collaboration between Science, Technology, Engineering, Arts, and Mathematics (STEAM). In this class, students will learn not only how to integrate these subjects in their early childhood or elementary classroom, but they will also experience it as students. Prerequisites: EDU101, EDU231, EDU290, EDU291, and declaration of major in education. Must be admitted into TEP (Previously offered as EDU310/EDU203).

EDU 308 Methods of Teaching Social Studies in Elementary and Middle Schools (3 hrs.) Social studies is content focused as students explore concepts, teaching methods, materials, related literature and integrated curriculum design for elementary and middle school grades. Inquiry projects emphasize theme cycles and demonstration lessons. Curricular and instructional objectives using the standards and guidelines of state and national professional organizations such as the National Council for Social Studies are included. Offered every fall semester. Prerequisites: EDU 290, 291, and admission to teacher education program.

EDU 309 Teaching of Writing in Middle and Secondary Schools (3 hrs.) Students will experience the essentials of process writing for transactional, expressive, and poetic writing. Writing in content areas and evaluating and assessing writing are stressed. This course is required for middle school majors and secondary majors with an English language arts concentration. Offered in even year fall semesters. Prerequisites: ENG 103, at least one writing intensive course, and admission to the teacher education program.

EDU 320 Teaching Middle School: Curriculum & Philosophy of Teaching the Middle Years (4 hrs.) This course examines the philosophy and curriculum development in the middle school, including school and classroom design, teaching methodology, curriculum strategies, and organizational structures. Teaching and learning theory and strategies for middle school students are explored along with curriculum design based on the developmental characteristics of children in grades 5-9. Students will spend 3 hours in class and 1 hour in field. Prerequisites: EDU 101, EDU 230, EDU 231, EDU, 290, 291, Education Major/Minor declared, and admission to teacher education program (TEP); or by permission. Offered odd year spring semesters or as needed. (Previously offered as EDU311/314)

EDU/PED 345 Methods of Teaching Middle School Physical Education (3 hrs.) This course is designed for students planning to teach middle school age physical education programs. Topics include program development, selecting and implementing instructional units, integrating physical education with other disciplines, professional development, and teaching assessment.

EDU 350 Digital Literacy (3 hrs.) This course is geared towards today's digital citizens who plan to teach in the current technology-infused classrooms. Future educators are entering schools that are 1:1, so students must be prepared to work in a technology-rich environment. The class will integrate digital literacy across the curriculum, motivate students to embrace technology as both a consumer and a producer, and require that they participate in the course as both student and an educator. This will be a hands-on, interactive, seminar-type course. Acceptance to the Teacher Education Program and EDU 231.

EDU 351 Methods of Teaching Elementary/Middle School Mathematics (3 hrs.) This course is the second part of an integrated methods and content course for elementary and middle school teachers. Topics include fractions, decimals, geometry, probability and statistics, measurement and other appropriate topics. Offered every spring semester. Prerequisites: C or better in MAT 231.

EDU 370 Business Programs Implementation (3 hrs.) This course seeks to prepare future Secondary Business Teachers with information about various programs, comparisons and evaluations of ideal instruction as well as familiarizing the student with professional career and vocational organizations related to Business Education. Students will directly observe in secondary business classes Grades 7-12, and interview teachers, administrators, sponsors of organizations and community partnership leaders from the business community. After several written assignments, students will present a Power Point presentation to other business education students. Prerequisites: EDU 290, 291 and 425, and admission to the teacher education program.

EDU 380 Integrated Curriculum in Early Childhood (3 hrs.) This course seeks to integrate the disciplines of language arts, math, social studies, music, art and science in preparation of curriculum content for early childhood and kindergarten classrooms. Students prepare detailed long-term lesson plans and collect resources to implement the plans. Plans developed will meet the MO Pre K and Show-Me Standards as well as the ACEI and NAEYC Standards for Early Childhood Classrooms. Offered every third spring semester or as needed. Prerequisites: EDU 290 or permission of the instructor.

EDU 385 Diversity in Education (3 hrs.) This course will introduce both education and non-education majors to the role of the 21st century school in a diverse society. Students in this course will study important issues, approaches, and strategies in working with and forming connections with a population that is ethnically and culturally diverse. In addition, an emphasis of this course is to promote teaching tolerance and anti-bias in a land where discrimination and sexism still exist. To live as an informed and tolerant adult in an increasingly pluralistic America is a major focus of this course. Specific topics to be explored include: understanding ourselves and others' values and belief systems, learning the language of prejudice, and creating unity in a diverse America. Offered every fall semester. Prerequisites: One of the following: EDU 290, PSY 113, SOC 111, POL 211 or PHL/REL 102, or permission of the instructor.

EDU 392 Reading & Writing in the Content Area (3 hrs.) This course helps pre-service teachers explore methods to facilitate students' reading comprehension of content area materials (texts, non-fiction trade books, and other supplements). It is based on the recognition that reading in the content areas (non-fiction/informational) requires explicit strategies that are best taught in the context of the content area. It is also recognized that the most effective teacher of content area reading strategies is the teacher of the content area. Prerequisites: EDU 290, 291 and admission to teacher education program.

EDU 393 Education Practicum II (2 hrs.) This practicum is an intensely supervised pre-student teaching experience, which includes forty-five actual clock hours in a K-12 classroom. Action research is conducted in the assigned classroom and presented to an audience such as the Undergraduate Research Forum. Offered each semester. Prerequisites: EDU 291 and admission to the teacher education program.

EDU 398 Independent Study (1-3 hrs.) An individual study or research topic not covered in regular course offerings is done with the supervision of faculty. Students need permission of the instructor and the program director. It is the responsibility of the student to provide a rationale and an outline of the proposed study. Open only to education majors.

EDU 417 Advanced Practicum (1-6 hrs.) The principal objective of this course is to provide a student the opportunity to spend time in different age group classrooms (preK-12). Students can take this course multiple times for varied credit hours based on their own schedule. For example, an elementary major may take 1 credit hour to spend 15 hours in a 5th grade classroom one semester and then for 2 credit hours another semester in a 2nd grade classroom. These practicums give them a broader range of experience and helps inform them for what age they want to student teach. Secondary folks also need to gain experience in all grade levels to be best prepared not only for student teaching but for their career in general. Prerequisites: EDU 231, EDU 291, and EDU 393 (can be concurrent with EDU 393).

EDU 425 Secondary School Teaching (3 hrs.) Students explore the general principles, activities, schedules, and interactions of teachers and students in secondary schools. Course content includes teaching-learning process emphasizing methods of instruction and evaluation. Offered in fall semester. Prerequisites: Admission to teacher education program.

EDU 431 Teaching English in Middle and Secondary Schools (3 hrs.) This course is designed for those students who plan to teach English in high school settings. Along with an examination of issues, attitudes, and trends in teaching English/language arts, students develop materials and strategies for teaching and evaluating writing, speaking, listening, reading and viewing competencies. State and national standards and guidelines are used for content orientation. Offered every other fall semester. Prerequisites: EDU 425, completion of appropriate English courses, and admission to the teacher education program.

EDU 433 Teaching Mathematics in Middle and Secondary Schools (3 hrs.) This course is offered for those who plan to teach mathematics in high schools. Students explore curriculum development and instructional methods and gain experience with multimedia materials and resources that are appropriate for classroom use. State and national standards are used as guidelines for content orientation. Offered every other fall semester or as needed. Prerequisites: EDU 425, completion of appropriate math courses, and admission to the teacher education program.

EDU 434 Methods of Teaching Middle School and Secondary Physical Education (3 hrs.) This course is designed for students planning to teach middle school and secondary physical education programs. Topics include program development, selecting and implementing instructional units, class organization and management, assessment, integrating physical education with other disciplines, and professional development. Prerequisite: EDU 290.

EDU 435 Teaching Social Studies in Middle and Secondary Schools (3 hrs.) The content of this course includes recommendations of state and national groups, which have approved standards for teaching social studies. Students explore issues, trends and methods in social studies instruction for secondary school students. Students plan lessons and themes and engage in the kinds of projects, e.g., writing, research, and audio-visual, which they will present in their own classrooms in secondary schools. Offered every other fall semester. Prerequisites: EDU 425, completion of appropriate social science courses, and admission to the teacher education program.

EDU 436 Teaching Science in Middle and Secondary Schools (3 hrs.) Students study issues, trends, and methods in teaching science for secondary school students. Curriculum projects are based on objectives and concepts that are included in state and national standards for science teaching. Offered in even year fall semesters. Prerequisites: EDU 425, completion of appropriate science courses, and admission to teacher education program.

EDU/FLG 437 Methods of Teaching a Foreign Language (3 hrs.) Students study issues, trends and methods in teaching a foreign language to students in elementary, middle and secondary students. Projects involve lesson planning development and unit planning. Offered as needed.

EDU 441 Reading Assessment and Advancement (3 hrs.) This is a study of multiple formal and informal assessments that includes miscue analysis. Students prepare a reader profile that includes assessment procedures, identification of reading strengths and needs, and recommendations for strategies to promote advancement toward reading proficiency. Students work with at least one reader. Offered in spring semesters. Prerequisites: EDU 306 and admission to the teacher education program.

EDU 453 Classroom Management and Organization (3 hrs.) This course focuses on multiple factors that affect student learning and behavior. Students study effective classroom and behavioral management techniques, dealing with specific issues and practices and developing their own plans for their own classrooms. A series of management plans are designed and brought together in a comprehensive management plan, which becomes part of the state mandated portfolio. Students deal with everything from room arrangement, rules of general conduct and classroom procedures, to teaching tolerance, dealing with bullying and violence, and grading and assessment. Offered every semester. Prerequisites: EDU/PSY 221, EDU 291, admission to the teacher education program.

EDU 490 Educational Seminar (3 hrs.) This course is taken concurrently with student teaching. It serves as an orientation to student teaching and functions as a formative structure for the experience. This seminar meets regularly throughout the student teaching semester allowing students to share experiences, strengthen competencies and address topics of concern. Completion of the state mandated portfolio and completion of the application for certification process are integral to the course. Preparation for employment interviews and how to fill out teaching applications to districts are covered as well. Offered each semester.

EDU 492 Student Teaching: Early Childhood Education or Elementary School (6-12 hrs.) This course is for students seeking certification in early childhood, Pre-K-Grade 3 or elementary education, grades 1-6. Concurrent enrollment in EDU 490 is required. Students gradually assume full responsibility for classroom instruction during the experience. Students are required to engage in all professional activities, which their cooperating school provides. Intense supervision and feedback are provided by a cooperating classroom teacher and a college supervisor. Special fee required. Prerequisites: Admission to student teaching, passing score for the national certification exam, and substitute certificate. Offered each semester.

EDU 495 Student Teaching: Middle School (6-12 hrs.) This course is for students seeking certification in middle school education, grades 5-9. Concurrent enrollment in EDU 490 is required. Students gradually assume full responsibility for classroom instruction during the experience. Students are required to engage in all professional activities, which their cooperating school provides. Intense supervision and feedback are provided by a cooperating classroom teacher and a college supervisor. Special fee required. Prerequisites: Admission to student teaching, passing score for the national certification exam, and substitute certificate. Offered each semester.

EDU 497 Student Teaching: Secondary School (6-12 hrs.) This course is for students seeking certification in secondary education, grades 9-12. Concurrent enrollment in EDU 490 is required. Students gradually assume full responsibility for classroom instruction during the experience. Students are required to engage in all professional activities, which their cooperating school provides. Intense supervision and feedback are provided by a cooperating classroom teacher and a college supervisor. Special fee required. Prerequisites: Admission to student teaching, passing score for the national certification exam, and substitute certificate. Offered each semester.

ENG – English

ENG 103 Academic Writing (3 hrs.) A composition course designed to prepare students for writing in all academic disciplines. Based on the process approach to writing, the course treats reading, thinking, and writing as integrated skills. Writing Skills covered include summary, synthesis, analysis, argumentation, and research.

ENG 190 Literary Magazine: Janus (1 hr.) A course involving the production of a literary magazine. This course provides students with practical experience in evaluating prose and poetry for publication, and in the technical processes of producing a magazine, including graphic design and layout, typography, and printing methods.

ENG 204 Introduction to Literature (3 hrs.) An introduction to the study of literature, including poetry, fiction, creative nonfiction and drama. Emphasis will be placed on basic terminology used in discussing literature, on the study of a variety of critical theories, and on techniques for writing about literature. Offered consistently as writing intensive or writing intensive option course.

ENG 205 Topics in British Literature to 1800 (3 hrs.) A survey of English literature from approximately 750 A.D. through the end of the eighteenth century: the medieval period, the Renaissance, and the neo-classical age. This course looks at the intersection of literature and culture, tracing the development of each in order to understand how British literary culture changed over the years. Among the authors studied are Chaucer, Shakespeare, Donne, Milton, Swift, and Johnson.

ENG 206 British Literature since 1800 (3 hrs.) A survey of English literature from 1799 to the present including the Romantic period, the Victorian period, Modernism, and the twentieth-century. This course looks at the intersection of literature and culture, tracing the development of each in order to understand how British literary culture changed over the years. Among the authors studied are Wordsworth, Keats, the Brownings, the Brontes, Joyce, Woolf, Yeats, Eliot, Lessing, and Larkin.

ENG 220 Janus and the World of Publishing (3 hrs.) This course will introduce students to the world of publishing through a variety of means. Students will take part in all aspects of editing, designing and producing Westminster College's literary magazine, *Janus*, using In-Design and a variety of collaborative and individual exercises. Moreover, students will explore other publishing topics and avenues including but not limited to: learning the fundamentals of copy-editing, writing book and article proposals, creating and maintaining blogs and other social media sites, writing query letters, investigating and managing submissions, writing and submitting book reviews, evaluating publication options, promoting published material, and establishing and maintaining a writerly presence. Prerequisites: ENG 103 and ENG 275, or permission of the instructor.

ENG 230 Play in Performance (3 hrs.) This course consists of a semester long study of the academic and artistic foundations of dramatic performance culminating in a fully staged production of a play. The course will include in depth play-analysis, acting, and technical theatre training as well as more traditional coursework and academic papers exploring the playwright, their other works, the performance history of those works, and the theatrical movements associated with that playwright. Prerequisites: Instructor Permission.

ENG 231 Play in Performance II (1 hr.) This course allows students who have already completed ENG/THE 230 - 'Play in Performance I' to receive credit for participating in the fully staged production associated with that class. Students will continue to develop an appreciation for the academic and artistic foundations of dramatic performance through the production process. This will include in depth play-analysis, acting, and technical theatre training as well as an academic exploration of the playwright and his work, the performance history of those works, as well as the theatrical movements associated with that playwright. Prerequisites: Instructor Permission and ENG/THE 230.

ENG 238 American Literature to the Civil War (3 hrs.) A survey of American literature from its beginnings among Native Americans through the middle of the nineteenth century. This course examines the emergence of literary culture over time, tracing changes in both literature and culture to determine what characteristics make American literature unique. Among the authors studied are Bradstreet, Whitman, Emerson, Thoreau, Poe, Hawthorne, Melville, Douglass, and Dickinson.

ENG 239 American Literature since the Civil War (3 hrs.) A survey of American literature from the middle of the nineteenth century to the present. This course examines changes in literary culture over time, tracing currents in the literature and the culture it reflects from the emergence of an industrialized society to the segmentation of twentieth-century society. Among the authors studied are Twain, James, Chopin, Frost, Eliot, Moore, Hemingway, Faulkner, Miller, Baldwin, and Plath.

ENG 248 Topics in World Literature to 1800 (3 hrs.) A survey of masterpieces of world literature from ancient times to 1800. Readings are done in English, but only non-English authors are included. Works studied may range from pre-Biblical Mesopotamian literature, through Greek, Roman, Hindu classics, to the influential texts from the Middle Ages and Renaissance. Offered at least every two years.

ENG 249 World Literature since 1800 (3 hrs.) A survey of world literature since 1800. Readings are done in English, but the authors studied come from all over the world including Africa, South America, and Asia, as well as Europe. Among the authors studied are Goethe, Tolstoy, Borges, Garcia Marquez, Kafka, and Soyinka. Offered at least every two years.

ENG 260 Introduction to Journalism (3 hrs.) A survey of the field of journalism, with particular attention to its history, ethics, and the responsibilities of the journalist. Much of the class work is the writing of typical examples of journalism. Students enrolled in this course will participate in a practicum as writers or editors for The Columns. Prerequisites: ENG 103.

ENG/JMP 265 Technical and Web Writing (3 hrs.) Technical Writing refers to any writing done by a professional in a field who is communicating specialized information to a specific audience. The field could be computer software or engineering, but it could just as easily be business, government, non-profits, finance, or education. This course focuses on writing, editing, and design skills that you can apply to any professional job. Because so much of today's workplace writing appears on the internet, this course will pay particular attention to how to write, arrange, and deliver information effectively on the Web.

ENG/JMP 270 Expository Writing (3 hrs.) A course in advanced composition, with emphasis on reasoning and organization, and with special attention to principles of style. Part of the course will consist of discussion of student work, as well as the study of trends of thought and the literary techniques of published essayists. Prerequisites: ENG 103.

ENG 275 Introduction to Creative Writing (3 hrs.) An introduction to the writing of poetry, fiction, creative nonfiction, and drama, with approximately equal time spent on each genre. Students will study the forms and techniques used by successful writers as models for their own work and will read and critique the writing of other students in a workshop format. Prerequisites: ENG 103.

ENG 290 Introduction to Literary Studies: Critical Approaches and Research Methods (3 hrs.) A seminar in the theory and practice of literary study. The course objectives are to examine key issues in literary theory, to develop an understanding of theoretical models in relation to critical practice, and to acquire research skills necessary for advanced literary study (e.g., the honors project). Prerequisites: A 200-level literature course or instructor permission. Offered in spring semester.

ENG 315 Literary Modes and Genres (3 hrs.) The study of literature focusing upon the distinct categories into which literary works are grouped according to formal elements – the novel, poetry, drama, autobiography, tragedy, comedy, the epic – conventions which both endure over time and are modified with every new work in the genre. Possible courses include Autobiography, Science Fiction, or The Country and City in Nineteenth Century British Poetry. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 325 Literary Movements (3 hrs.) The study of a coherent period or movement in literature, based on the premise that literature written within certain time spans, and occasionally in a particular place, is often related by a series of literary norms, standards, and conventions, the introduction, spread, diversification, and disappearance of which can be traced. The course will usually be taught with particular attention to the relation between literature and the associated intellectual and cultural milieu. Renaissance Literature, Romanticism, British Modernism, the Jazz Age, and the Beat Movement are examples of possible courses that may be offered under this topic. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 330 Visions and Revisions (3 hrs.) A reading of literature based on two premises: First, that literature is a product of culture arising from a web of historical conditions, relationships, and influences that in some measure determine literary form and content; second, that literature is at the same time an agent of culture that shapes social practices. Courses may include studies of the exchange between colonial and post-colonial fiction, the evolution of particular story lines (such as the Arthurian myth) through a variety of literary texts, and the relationship between classicism and romanticism. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 335 A Sense of Place (3 hrs.) A study of the way various writers have detailed the complex and profound relationships between place – whether it be a physical or intellectual construct – the literary ethos, and construction of identity. Students will explore literary texts that invoke or evoke place as a significant literary or cultural trope. Course offerings may include Literature of the Environment, American Writers in Paris, or Rural/Urban Literature. Offered at least every two years. Prerequisites: a 200-level course in literature or permissions of the instructor.

ENG/WGS 340 Gender and Literary Expression (3 hrs.) A study of gender as a personal, social, and literary construction, this course examines literature in the context of contemporary social and cultural attitudes towards gender. Though poetry, fiction, or drama are usually included, this course often involves essays, journals, and letters as well. Course offerings may include Southern Women Writers, Women and Madness, or Theories of Gender in Literature. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 345 Ethnic Literature (3 hrs.) The examination of literature by individuals belonging to various ethnic groups, including those in the United States (African-American, Native American, Chicano/Chicana, Asian-American or Jewish) as well as groups from other cultures. This course considers the aesthetic, cultural, social, and/or political aspects of literature and particularly how works by ethnic writers negotiate the boundaries of literary expression, how language use and assimilation affect one another, and/or how other aspects of culture mesh with and shape the literature. Specific courses may include African-American Literature, The Harlem Renaissance, or Langston Hughes. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 350 Studies in the Author (3 hrs.) A study of a single author (e.g. Shakespeare, Melville, Joyce, Hughes, or Morrison) or two or more related authors who do not in themselves constitute a movement (Chaucer/Shakespeare, Faulkner/Hurston, Joyce/Woolf). Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 355 Literature and the Other Arts (3 hrs.) The study of the historical, cultural, and aesthetic relationships between literature and other modes of artistic production (visual arts, music, theater, film, dance), focusing particularly on the ways in which artists in various modes influence one another. Topics include Shakespeare on Film, Literature Goes to the Movies, the Photograph as a Literary Text and Jazz, Blues, and Poetry. Offered at least every two years. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 372 Creative Writing Prose (3 hrs.) A workshop course in which students study the work of successful fiction writers, identify and practice the forms and techniques they employ, and use those techniques to craft their own stories. Group discussion of students' writing plays a primary role. Offered every third semester in rotation. Prerequisites: ENG 103 and 275.

ENG 374 Creative Writing Poetry (3 hrs.) A workshop course in which students study the works of successful poets, identify and practice the forms and techniques they employ, and use those techniques to craft their own poems. Group discussion of students' writing plays a primary role. Offered every third semester in rotation. Offered every third semester in rotation. Prerequisites: ENG 103 and 275.

ENG 376 Creative Nonfiction (3 hrs.) A workshop course in which students study the works of successful creative nonfiction writers, identify and practice the forms and techniques they employ, and use those techniques to craft their own poems. Group discussion of students' writing plays a primary role. Prerequisites: ENG 103 and 275.

ENG/THE 378 Playwriting (3 hrs.) In this course, we will collectively work to develop and hone your ability to construct performance texts. We will use a selection of one-act plays written by some of the most accomplished playwrights of the 20th century, seminal works of performance art, and a few foundational texts on dramatic analysis to isolate the features of effective performance compositions. From there the course will increasingly focus on your original compositions, which will be workshopped by the class as a whole. This process will culminate in your completion of a polished one-act play. Prerequisites: THE 201, ENG/THE 230, or ENG 275.

ENG/JMP 380 Introduction to Digital Humanities (3 hrs.) Digital tools such as archives, data mining, data visualizations, and games are changing how students and scholars approach the study of the humanities. In this course, we will use digital tools to facilitate our own interpretation and research, with a particular focus on Mary Shelley's *Frankenstein* and its enduring influence on popular culture. No technical proficiency is assumed—you only need to be willing to learn. Our projects will include many hands-on (and, I hope, fun) opportunities to make things in addition to the analytical writing assignments you are familiar with from other English courses. Prerequisite: A 200-level course in literature (ENG 204, 205, 238, 239, 248, 249).

ENG 398 Independent Study (1-4 hrs.) Systematic readings, guided by a member of the department, on a particular author, a particular period, or a special problem. Enrollment by permission of the instructor. Prerequisites: a 200-level course in literature or permission of the instructor.

ENG 420 Honors Project I (3 hrs.) The first course in the two-semester honors sequence. Students read extensively in the area selected by the student and approved by a thesis committee consisting of two faculty members. Students meet weekly with the thesis director, complete written assignments, and make presentations to the English Department and possibly to other members of the honors seminar. Prerequisites: Successful completion of ENG 290 and departmental approval.

ENG 430 Honors Project II (3 hrs.) The second course in the two-semester honors sequence. Students meet weekly with the thesis director as they write their thesis. Students present an oral defense of the thesis to their committee at the end of the semester. Prerequisites: A grade of "B" or better in ENG 420.

ENV – Environmental Science

ENV 105 Introduction to Environmental Sciences (4 hrs.) This course investigates global, national, regional, and local environmental issues by critically analyzing available data and examining alternative to current situations. Emphasis is placed on the use of scientific methods to investigate and solve environmental problems. Off-campus field trips are required. Class projects seek to extend the implications of the course material to the campus and local communities. Offered most semesters.

ENV 210 Biogeography (3 hrs.) Biogeography is the study of the distribution of biodiversity over space and time. It aims to reveal where organisms live and at what abundance. It addresses the questions of which species, where and why (or why not). Biodiversity is viewed in light of historical factors, such as speciation and extinction, plate tectonics and glaciations, as well as in the light of current and future threats, including but not limited to climate change. This course is typically offered every other academic year in the spring semester. Prerequisites: BIO 124/125 and 114/115 for Biology and Environmental Science majors; NSC 108 and ENV 105 for non-majors.

ENV 350 Conservation Biology (3 hrs.) Conservation biology is the scientific study of the nature and status of Earth's biodiversity with the aim of protecting species, their habitats, and ecosystems from excessive rates of extinction. It is an interdisciplinary subject drawing on sciences, economics, and

the practice of natural resource management. A variety of topics and issues will be explored, including but not limited to: factors contributing to the decline of populations, the problems of habitat loss, isolation and fragmentation, ecosystem management, restoration ecology and sustainable development. This course is typically offered every other academic year in the spring semester. Prerequisites: BIO 124/125 and 114/115 or ENV 105.

ENV/ECN 377 Environmental and Resource Economics (3 hrs.) This course will introduce students to the theories and methods used to understand and evaluate environmental problems and policies. The class will provide students the much-needed exposure to the non-competitive markets, the methods to analyze such markets, and the effects of these markets on economic institutions. The objective of this course is to introduce students to theories and methods used to understand and evaluate the environmental problems and policies. We will start with concepts of externalities, public goods, property rights and why markets could fail in these cases. Policies to correct market failure in domestic and international situations will be examined. Students will explore the common property problem in case of renewable resources and the public policies used to correct the problem. This course is offered every other spring semester. Prerequisites: MAT 122 or MAT 124, and ECN 212.

ENV 405 Environmental Assessment (3 hrs.) Tools, methods, and techniques employed in the study of environmental impact assessment and resource management. Research fundamentals and related environmental legislation will be studied and applied to environmental problems and resource evaluation. The major product is the development of a project requiring an EIS, researching the alternatives, gathering information, writing, and presenting the report. Offered every other fall semester. Prerequisites: ENV 105, GEO 108 or GEO 110 and Junior or Senior standing.

GEO - Geology

GEO 108 Introduction to Physical Geology (4 hrs.) Introduces the major concepts in the field of geology. Topics to be covered include rock and mineral identification, map reading, theory of plate tectonics, surface and subsurface hydrology, landform, geologic hazards, and environmental issues. Satisfies natural science lab requirement. The lab portion of the course provides "hands-on" experiences laboratory work, as well as off-campus field trips. GEO 108 will satisfy the Scientific Inquiry (lab).

GEO 110 Earth Systems (4 hrs.) This course evaluates basic geographical and earth science principles and processes in the lithosphere (soils and landforms), hydrosphere (hydrologic cycle), atmosphere (weather and climate), and biosphere (biogeography). Study of the relationships between the natural environment and human habitation on the Earth. Lab and field exercises and data evaluation will give students an appreciation of the tools of study and more detailed look at the entire system of the Planet Earth in which there is human interaction. Offered every other spring semester.

GEO 116 Environmental Geology (4 hrs.) Geology of natural hazards in the environment, such as volcanoes, landslides, earthquakes, mass wasting and landslides, subsidence, weather, and tsunamis. The course provides "hands on" experiences. In addition to laboratory work, off-campus field trips will be required. Offered every other year in the spring semester.

GEO 203 Historical Geology (4 hrs.) A physical history of Earth that examines the processes responsible for creating a dynamic planet. This course evaluates the origins of Earth, changes in continents/ocean basins as it relates to plate tectonics and how these changes influenced climates, environments, and ultimately life. Students will apply concepts from GEO 108 and focus on specific examples of prehistoric organisms and their interaction within the surrounding environment in which they lived. Based on information recorded from the rock and fossil record, a better comprehension of the delicate relationship between organisms and their surrounding environment will be gained. Course content will be complemented with field and laboratory components. Prerequisite: GEO 108

GEO 302 Geoscience: Perspectives & Creative Design (3 hrs.) This interdisciplinary course will challenge students to expand on geological content and concepts presented in GEO 108, as well as new material, by engaging in projects that promote and explore new perspectives and creativity. Students will utilize a variety of artistic mediums to express the comprehension and appreciation of various subjects related to the geosciences in more meaningful ways. Prerequisite: ART 230, ART 231, or GEO 108

GEO 305 Hydrogeology (3 hrs.) Natural water systems both on and beneath the surface will be investigated. Issues receiving particular attention will include behavior and characteristics of natural systems, human impacts on the systems (including contamination and flooding), and water quality and public health. Offered every other fall semester. Prerequisites: GEO 108 or 110 and MAT 111, 121 or 124 and CHM 105/106 or CHM 114/115.

GEO 310 Introductory Soil Science (4 hrs.) Nature, properties and distribution of soils and their relationship to the influence of vegetation, climate, landforms, and human activity. Understanding how soils form and how and why they vary horizontally across the landscape and vertically with depth. Emphasis upon North American patterns. Required field trips and labs. Offered every other fall semester. Prerequisites: CHM 114/115 and GEO 108 or 110.

GEO 315 Anthropocene Geology (3 hrs.) This course will expand on important environmental issues during the most recent portion of geologic time, known as the Anthropocene. Primary focus will be on the hydrosphere and atmosphere, and how human activity affects various parts of these systems. Therefore, content will include topics associated with the relationship between human activity and climate change, as well as environmental contamination. In addition, students will also become familiar with a variety of natural hazards and disasters and learn how to prepare and respond to such events. Prerequisite: ENV 105 & GEO 108

GEO 317 Surficial Geology (4 hrs.) This course focuses on the physical, chemical, hydrological, and biological processes responsible for shaping and creating various geological surface features and environments. Content includes an in-depth look at weathering, erosion, transporting agents, sedimentation and deposition, soil formation, classification and distribution of soils, soil processes, and landscape evolution. Course content is designed to illustrate the dynamics of Earth's past and future surface environmental changes. A primary focus of the course discusses the relationship between process and surface form, as well as consequences of landscape alteration due to human activities. Lecture material will be complemented with field and laboratory components. Prerequisite: GEO 108

GEO 320 & 321 Geology and Environment of the National Parks Seminar & Trip (4 hrs.) Hands-on opportunity to learn geology field techniques, do a cooperative planning effort, and to study on-site the geology and environment of the national parks of the United States and/or Canada. Following a preparatory spring seminar (GEO 320), the one to three-week Summer Session course (GEO 321) will be taught on an off-campus field trip in the United States and/or Canada. Some of the study will be led by federal and state personnel. The geology and environment will be studied at individual national parks, as well as regionally. May be taken more than once for credit.

GEO 325 Geomorphology (3 hrs.) Landforms of the continents and marine basins and the physical processes that create and fashion them. In addition to external agents, such as running water, glacial ice, gravity, and waves, the internal forces that create landforms are evaluated. Emphasis upon North American geomorphic patterns. Offered every other spring semester.

GEO 327 Weather and Climate (3 hrs.) This course examines the processes and patterns found in the Earth's atmospheric system on a daily basis (weather) as well as a statistical average (climate). The course also examines the effect weather and climate have on the environment in which we live. The course will have a focus on short-term energy input, atmospheric motion and moisture considerations, weather forecasting, climate change, microclimates, and energy balance. Offered every other fall semester.

GEO 330 Application of Geographic Information Systems (4 hrs.) Basic study of Geographic Information Systems, particularly ARCGIS software and applications to a variety of disciplines. Course will involve extensive hands-on use of ARCGIS and the development of maps and projects in several disciplines. Offered every other spring semester. Prerequisites: Junior standing and a Tier I math course.

GEO 335 Paleontology (4 hrs.) This course will cover invertebrate and vertebrate fossils throughout geologic time and discuss phylogenetic relationships and evolutionary history of important taxonomic groups. Unique morphological characteristics and adaptations will be highlighted and discussed. Furthermore, there will be a focus on the relationship between form and function. Students will learn how to make environmental interpretations based on morphological characteristics. Course content will be complemented with field and laboratory components. Prerequisite: GEO 108 & GEO 203

GEO 340 Earth Materials (4 hrs.) This course focuses on mineral and rock resources in both hand sample and thin section. It addresses the natural processes responsible for formation, distribution, and abundances of these resources. Students will be introduced to the basics of crystallization and physical properties based on elemental chemistry, as well as petrographic techniques. This course will also concentrate on common mineral and rock resources that are important to human society and future progress by clarifying how these resources are mined, extracted, utilized, and become cause for environmental concern. Lecture material will be complemented with field and laboratory components. Prerequisite: GEO 108

HIS – History

HIS 101 British History to 1800 (3 hrs.) An introductory course covering British/British Isles social, intellectual, cultural and political history.

HIS 102 Survey of British History from 1800 to the Present (3 hrs.) An introductory course covering British social, intellectual, cultural, and political history.

HIS 103 History of the United States to 1877 (3 hrs.) A survey course covering American social, intellectual, economic and political development from pre-colonial times to 1890.

HIS 104 History of the United States since 1877 (3 hrs.) A survey course covering American social, intellectual, economic and political development from 1890 to the present. A student may take this course without having had HIS 103.

HIS 109 World History I (3 hrs.) This course will emphasize the economic, cultural, and political interrelationships between different parts of the world as well as the global issues that define the modern era.

HIS 110 World History II (3 hrs.) This course will cover global history from the Enlightenment to the present. It will lay a foundation for understanding the breadth of human experience and how that experience has shaped the world we live in. Rather than focus solely on the separate development of civilizations, this course will emphasize the connections between cultures. In other words, we will look at cross-cultural interactions and compare global reactions to common problems. Additionally, this course will expose students to historical methods, thereby enabling students to discover the complexity of past and present events, to examine the interrelationship of such factors as politics, economics, race, gender, culture, and religion, and to reflect more thoughtfully on the national and international issues that face them today.

HIS 279 African Civilization (3 hrs.) A general survey of economic, political, and cultural world of sub-Saharan Africa from ancient times to the present. Offered in alternate years.

HIS 310 Topics in Public History (3 hrs.) Public History encompasses all the ways in which the study of the past is presented to the public in a non-academic way. In other words, it is the fun way of learning history. This course offers multiple ways for students to examine the theory behind different aspects of Public History and then allows them to gain practical experience of the discipline through either high-impact, project-based, or service-learning assignments or through dedicated travel courses.

HIS 335 Topics in U.S. Social, Cultural, or Political History (3 hrs.) This course explores an aspect of domestic U.S. History which sheds light on broader issues surrounding the nation's identity. Topics are selected based on the most pressing issues facing society today. Students will gain vital research, writing, and presentation skills while engaging with thought-provoking and often challenging subjects.

HIS 340 Topics in Diplomatic and Military History (3 hrs.) Beginning as a relatively small nation of thirteen states tied to the East Coast of North America, the United States rapidly ascended to a position of global preeminence through aggressive territorial expansion and through a series of military engagements. The policies and processes involved left a profound impact on the lives of those affected and on the course of world history. This class offers a deep examination of one aspect of U.S. Diplomatic or Military History to illuminate the causes and consequences of the United States' rise to superpower status.

HIS 350 Topics in Early World History (3 hrs.) This course uses a variety of different topics to explore traditions, change, and growing connections in the pre-modern world. Components of the course include seminar style discussions of primary sources and scholarly articles, research projects, and project presentations. Examples of topics include Medieval Pilgrimages (world religious and travel history) and the Vikings (Medieval Scandinavian, Islamic, Eastern European, and North American history with an emphasis on archaeology as history and modern political and cultural influences).

HIS 360 Topics in Modern World History (3 hrs.) This course uses a variety of different topics to explore the connections and themes of the post-1500 world. Components of the course include seminar style discussions of primary sources and scholarly articles, research projects, and project presentations. Examples of topics include Deviant and Degenerate Art (world history through culture from 1800-1980) and WWI and the Treaty of Versailles (military, diplomatic, and colonial world history from 1900-1960).

HIS 390 Historical Methods (3 hrs). This course allows students to study the philosophy and methods of historical research, writing, and thinking. History majors and minors should enroll in this course in the Spring semester of their sophomore year. Prerequisites: Two 100-level history courses or permission of the instructor.

HIS 396 Applied History (1 hr.) This course is designed for History Majors and Minors to focus their practical and intellectual skills toward a rewarding career after graduation. The course will help students explore career/grad school options, connect them to graduates who have excelled in a variety of fields, help them find professional opportunities to present and publish their work, help them develop and refine a stellar cover letter and resume, and help them practice job talks and job market etiquette. Prerequisites: HIS 390, or with the consent of the instructor

HIS 397 History for the Public (1 hr.) This course is open to History Majors and Minors who have completed - or who are currently working on - their undergraduate thesis. It introduces them to the many ways they can present their work to the public including conference presentations, op-eds, journal articles, museum displays, documentary films, and more. Students will be expected to present their work in one or more of these outlets by the end of the course. In doing so, this course will enhance both their professional skills and profile. Prerequisites: HIS 390, or with the consent of the instructor

HIS 398 Independent Study (1-3 hrs.) Systematic reading, guided by members of the department, on particular historical periods, problems, or personalities. Enrollment by permission of the instructor.

HIS 422 Senior Thesis (2 hrs.) The practical application of the techniques of historical research preparatory to HIS 423. Required of all history majors in the fall semester of the senior year. Prerequisites: HIS 390.

HIS 423 Senior Thesis (3 hrs.) The practical application of the techniques of historical research, analysis, and composition culminating in a thesis. Students will defend their theses in seminar. Required of all history majors in the spring semester of the senior year. Prerequisite HIS 422.

HIS 424 Senior Thesis (1 hr.) Rewriting the senior thesis based on faculty and student critiques.

NSC – Natural Science

NSC 108 Introduction to Biology Principles (4 hrs.). This survey course for non-majors is an introduction to the major areas of study in the biological sciences. Emphasis is placed on the general functions of prokaryotic and eukaryotic cells, and various plant and animal systems. Ecological relationships between the organisms and their environment are also investigated. The laboratory elaborates on the general principles and concepts introduced in lecture. Function and interrelationships are the themes. This course is typically offered one or two times each academic year. NSC 108 will satisfy the Scientific Inquiry (lab) Context in Tier II of New Foundations and the Natural Science Inquiry Theme of Breakthrough general education programs. (Previously offered as BIO 108)

NSC 112 Birds, Bugs, and Behavior/Lab (4 hrs.) In this course we use the fascinating study of organisms and their interactions (organismal biology) to better understand the nature of science. Put another way, we will use interesting phenomena and fascinating topics from bird brains to bug behavior to highlight how science works and why it matters. Are 8-foot millipedes real? Giant thunderbirds? How do we evaluate such claims? How can behavior ranging from selfishness to selflessness lead to cannibalism and eusocial “superorganisms”? When does being ‘social’ lead to being in a ‘society’? And what the flock is the difference between a murmuration and a murder of crows? This course also has a corresponding lab where we will use case studies, outdoor observations, and hands-on problem-solving activities to further enhance scientific literacy skills (critical thinking, interpreting data, evaluating evidence). This lecture and lab course is intended for non-majors and fulfills a Breakthrough General Education requirement in the Natural Science Inquiry Theme.

NSC 210 Anatomy and Physiology I (4 hrs.) This class is designed for non-majors who are interested in biological principles as they relate to anatomy and physiology. The overall goal of the course is to promote critical thinking and science literacy by enabling you to make connections and understand applications of anatomy and physiology. Topics will introduce you to homeostasis, histology, bones, muscles, nerves, and senses. This is the first class in a two-course series to be followed by Anatomy & Physiology II for those pursuing non-healthcare careers that require both A&P I and A&P II. Successful completion of A&P I satisfies the Natural Science Inquiry Breakthrough theme. Pre-requisites: None

NSC 220 Anatomy and Physiology II (4 hrs.) This class is designed for non-majors who are interested in biological principles as they relate to anatomy and physiology. The overall goal of the course is to promote critical thinking and science literacy by enabling you to make connections and understand applications of anatomy and physiology. Topics will introduce you to metabolism, cardiovascular system, reproduction, endocrine system, digestion, immunity, and urinary system. This is the second class in a two-course series to be preceded by Anatomy & Physiology I for those pursuing non-healthcare careers that require both A&P I and A&P II. Prerequisites: Successful completion of NSC 210 or instructor approval.

NSC 301 Biotechnology & Society (3 hrs.) The use of biotechnology in society is not new. However, with new innovation and knowledge, use of biotechnology has more recently been brought to the forefront of media speculation. This course will introduce students to the vast number of biotechnologies used in our society, today as well as in the past. We will discuss past, present and potential future effects on society regarding use of this technology. We will visit scientific concepts which has led to the design/development of each biotechnology, and we will analyze the effect on society from an economic, social, cultural, and ethical point of view. Prerequisites: BIO 107, NSC 108, PSY 112, PSY 113, or SOC 111.

NSC 305 Survey of the History of Science (3 hrs.) An introduction to the leading concepts and methodologies of science from the ancient Greeks through the mid-nineteenth century. Prerequisites: a course in natural science, philosophy, or history, or permission of the instructor.

NSI – Natural Science, Interdisciplinary

NSI 4xx Advanced Projects (3 hrs.) Special interdisciplinary courses in the humanities, natural science and mathematics, or social sciences, respectively, are offered under this listing. These courses may not be counted towards meeting major requirements in any major subject, but they may, at the major department's discretion, be applied to collateral requirements for a major. See the Schedule of Classes for topics and Prerequisites. May be repeated for credit with change of topic.

PHY – Physics

PHY/EGR 101 Introduction to Engineering and Design (3 hrs.) This course introduces students to the engineering profession. Emphasis is placed on engineering design, project management skills, software applications, teamwork, and communication. An engineering term project including a written technical report is required for this course. Offered every spring semester.

PHY 105 Introduction to Physics (3 hrs.) An introductory study of the foundations and concepts of modern physical theory. The course stresses the historical significance and philosophic implications of classical mechanics, the special and general theories of relativity and quantum theory. This course is intended for non-science majors. However, students who plan to enroll in PHY 201, but who have not taken high school physics, are encouraged to take this course first. Not open to students with credit in PHY 201. This course is typically offered once per academic year in the spring semester. Prerequisites: MAT 111 or one year of high school algebra.

PHY 201 Physics I (4 hrs.) A study of the science of physics covering topics in mechanics, gravitation and rudimentary quantum physics. Lecture, three hours; laboratory, three hours. This course is offered once per academic year in the Fall semester. Prerequisites: PHY 105 or one year of high school physics and previous or concurrent enrollment in MAT 124 or one year of high school calculus.

PHY 202 Algebra-Based Physics I (4 hrs.) Algebra-based Physics I is an introductory physics course which covers the topics of Newtonian mechanics, conservation laws, and fluid statics and dynamics. The course includes a laboratory. Prerequisite: MAT 111 or one year of high school Algebra.

PHY 212 Physics II (4 hrs.) A continuation of Physics I covering topics in electromagnetism, electric circuits, waves, optics, atomic physics, nuclear physics and particle physics. Lecture three hours; laboratory three hours. This course is offered once per academic year in the spring semester. Prerequisites: Completion of PHY 201 with a C- or better.

PHY 213 Algebra-Based Physics II (4 hrs.) Algebra-based Physics II is a continuation of Algebra-based Physics I and covers the topics of oscillatory motion, waves, electricity and magnetism, optics, and selected topics in modern physics. This course includes a laboratory. Prerequisite: C- or better in Algebra-based Physics I.

PHY 223 Physics III (3 hrs.) A continuation of Physics II covering topics that require a command of calculus and more abstract concepts than those presented in PHY 201 or 212. The course is a study of selected topics in relativity, quantum mechanics and modern physics (including elementary particles). This course is typically offered once per academic year in the fall semester. Prerequisites: PHY 212 and previous or concurrent enrollment in MAT 214.

PHY/EGR 230 Engineering Mechanics & Statics (3 hrs.) Statics is the study of rigid-body mechanics which deals with the equilibrium of bodies. Covered topics include the principles of statics, force systems, internal forces, structural analysis, friction, center of gravity, and moments of inertia. Prerequisites: MAT 224 and PHY 201 with a C- or better.

PHY 314 Thermodynamics (4 hrs.) Study of the general laws of thermodynamics, the kinetic theory of gases and statistical mechanics. Lecture three hours; laboratory three hours. Prerequisites: PHY 223 and MAT 224.

PHY 315 Modern Physics (4 hrs.) The course covers applications of quantum theory and relativity theory to atoms, molecules and subatomic particles. Lecture three hours; laboratory three hours. Prerequisites: PHY 223 and MAT 224.

PHY 324 Light (4 hrs.) A study of topics in geometrical and physical optics and in spectroscopy, including an examination of optical instruments and light sources such as lasers. Lecture three hours; laboratory three hours. This course is typically offered every other academic year in the spring semester and alternates with PHY 325. Prerequisites: PHY 223.

PHY 325 Electronics (4 hrs.) The theory of semiconductor devices and applications of these devices in circuits. The course emphasizes electronic instrumentation and experimental technique. Lecture three hours; laboratory three hours. This course typically is offered every other academic year during the spring semester and alternates with PHY 324. Prerequisites: PHY 212.

PHY 328 Analog Circuits (4 hrs.) We will investigate the theory and experimental procedures of modern electronic analog circuits. There are two main classes of electronics: analog and digital. Analog circuits, covered this semester, deals with electrical signals that can have a continuous range of values, while digital circuits, covered during the second semester of the circuits sequence, involves digital signals that can have only a small number of discrete values. Prerequisites: PHY 212 and MAT 214.

PHY 398 Independent Study (1-4 hrs.) On topics from the major areas of physics, chosen according to the background, requirements, or interests of the individual student. Course work will consist of readings, problem solving, laboratory research, practicums, reports or conferences, as appropriate.

PHY 415 Introduction to Theoretical Physics I (4 hrs.) Vector analysis is developed as a working tool and applied to problems in mechanics and electromagnetic theory. The topics covered include statics, kinematics and dynamics of particles and rigid bodies, moments of inertia and inertia tensors, work and energy, gravitational theory, oscillations and electric and magnetic fields in vacuo and in material substances. Four lectures per week. This course is offered as needed. Prerequisites: PHY 223, MAT 224 and previous or concurrent enrollment in MAT 312.

PHY 416 Introduction to Theoretical Physics II (4 hrs.) Vector analysis is developed as a working tool and applied to problems in electromagnetic theory and quantum mechanics. The topics covered include Maxwell's equations and time-dependent fields, energy and forces associated with these fields, wave propagation and the postulates of quantum mechanics, wave functions, expectation values and the quantization of angular momentum in atoms. Four lectures per week. This course is offered as needed. Prerequisites: PHY 223, MAT 224 and previous or concurrent enrollment in MAT 312.

POL – Political Science

POL 112 Introduction to Political Science (3 hrs.) An introductory study of political action, institutions and argument. Some current controversies in American politics will be considered, together with the experience of other countries where comparison is helpful.

POL 211 American Government and Politics (3 hrs.) An introduction to American government and politics through an examination of interactions between citizens and political institutions in the formation and the execution of public policies.

POL 212 Introduction to International Relations (3 hrs.) This course explores key issues in the international system including war, terrorism, human rights, and international law, international institutions like the United Nations, and theories of international relations.

POL 301 The American Presidency (3 hrs.) A study of the modern American presidency in terms of its concepts and controversies. Prerequisites: POL 211.

POL 304 American Political Theory (3 hrs.) Focuses on the political philosophies expressed in the Declaration of Independence and the U.S. Constitution. Considers the viability of these philosophies in the context of contemporary American society and politics. Prerequisites: POL 112 or 205, or permission of the instructor.

POL 305 International Law and Organizations (3 hrs.) An analysis of the nature, sources, function and development of international law and organizations with special reference to the role and function of the United Nations' system for resolving international disputes. Prerequisites: POL 212 or permission of the instructor.

POL 306 West European Government and Politics (3 hrs.) A study of the foundations, structures and functions of the governments of selected major European countries. Offered every other spring semester. Prerequisites: GTS 201 or HIS 106 or POL 112 or POL 212 or SEC 201 or permission of the instructor.

POL 308 Post-Soviet Politics (3 hrs.) An examination of the history of the Soviet political system since 1917; the influence of ideology; the role played by the Communist Party, the bureaucracy, interest groups and other actors; political culture, socialization and participation; current economic and social policy issues; and the future evolution of the system. Prerequisites: GTS 201 or HIST 106 or POL 112 or POL 212 or SEC 201 or permission of the instructor.

POL 311 Political Parties, Voting and Campaign Strategies (3 hrs.) Reviews the evolution and role of political parties and elections in the American political system. Examines the decline-of-parties thesis and recent developments in campaign strategy. This course is offered in the Fall semester of even-numbered years and students are required to participate in political campaigns of their choice. Prerequisites: POL 112 or 211.

POL 314 American Constitutional Law and Politics (3 hrs.) This course, (1) explores how the decisions of the U.S. Supreme Court have influenced the country's understanding of the Constitution, (2) considers the political forces that shaped the decisions, as well as the political effects of those decisions and (3) details the contours of the significant rights articulated in the decisions. Prerequisites: POL 211.

POL 316 American Jurisprudence (3 hrs.) This course, (1) introduces and critiques the major philosophies of law, (2) applies these philosophies to various issues and cases and (3) orients the student to legal reasoning and other legal methods of analysis and inquiry. This course should help prepare students for the study of law, or law-related topics. Prerequisites: POL 211.

POL 324 Central Europe (3 hrs.) This course will examine the unique problems of this region from an interdisciplinary perspective. Since the demise of the Cold War in 1989, and with it the collapse of the wall between eastern and western Europe, this region has become a crucible for a changing world order and a changing Europe. Analysis of a series of current themes from a political science and a historical perspective will form the backbone of the course. We will also look at the issues from both a regional and a national point of view. These topics will include: the reunification of Germany; the ethnic/nationality question; the legacy of communism; the rise of neo-fascism; diplomatic integration into NATO or the European Union; tensions over Ukraine. Prerequisites: HIS 110, GTS 201, or POL 212.

POL 325 Middle East and North African Politics (3 hrs.) An examination of political issues within and between the countries in the Middle East and North Africa. In this course, students will examine the role of religion in politics, the causes and consequences of military conflicts in the region, efforts to promote (and diminish) the rights of marginalized groups, and the wide diversity of political institutions that exist in the area. Prerequisites: GTS 201, SEC 201, POL 212, or permission of the instructor.

POL 326 Environmental Politics and Policy (3 hrs.) This course seeks to explore and understand four broad, interrelated topics: (1) the major political processes, actors, conditions and controversies involved in the formulation and implementation of environmental policies at the local, national and international levels; (2) some of the major pieces of legislation that constitute environmental policy in the United States and the world community; (3) some of the techniques and approaches that policy analysts employ to assess the effectiveness and costs of environmental policies and (4) issues that will shape environmental politics and policies in the immediate future, such as population growth, global warming, habitat destruction and resource depletion. Offered every other fall semester. Prerequisites: POL 112 or POL 211 or ENV 105.

POL 328 National Security Agencies (3 hrs.) To understand the politics and processes of national security, we must have an understanding of the national security labyrinth at the national level. The purpose of this course is to ensure the students' knowledge about the institutional design, oversight mechanisms and shortcomings, missions, and relationship of the varied institutions of the national security bureaucracy. Prerequisites: POL 211, SEC 201, or permission of the instructor.

POL 332 National Security Law I (3 hrs.) The purpose of this class is to provide an understanding of the sources, impact and limitations of laws that impact the national security of the United States. We will look at the three branches of government and the roles that each plays in the legal environment related to national security. Additionally, there will be discussion of international laws and their effect on the security of the United States. Prerequisites: Any of the following: POL 211; POL 301; POL 305; POL 314; POL 362; any Security Studies course (SEC designation); OR permission of the instructor.

POL 333 National Security Law II (3 hrs.) This class delves deeply into legal issues facing national security, including traditional legal frameworks, and legal questions in emerging areas of national security law. Prerequisite: POL 211, POL 301, POL 305, POL 314, POL 362, or any Security Studies Course.

POL 335 Politics and Security of Developing Nations (3 hrs.) In this course, students will undertake a comparative investigation of the political dynamics of the developing world. Looking across Latin America, Asia, and Africa, students will identify and contrast patterns of political behavior across regions and analyze models of economic development, governance, and security challenges that occur in the developing world. By taking a policy-making perspective, students will assess problems and analyze solutions to current issues in developing nations. Prerequisites: POL 112, 212, SEC 201 or permission of the instructor.

POL 337 Human Rights and Security (3 hrs.) This course examines the evolution of the international system of human rights. It will consider fundamental legal, moral, and political debates related to human rights and look for avenues to make progress in human rights protection. It will also examine the relationship between human rights and human security and the challenges associated with the provision of human security in the 21st century, with special attention paid to human trafficking and economic development. Prerequisites: POL 112, 212, SEC 201, GTS 201, or permission of the instructor.

POL 342 U.S. Supreme Court (3 hrs.) This course is intended to provide insight into the United States Supreme Court. It will cover subjects that include, but are not limited to: understanding Supreme Court opinions; how justices are chosen to sit upon the Court; the reasons why the Supreme Court makes the decisions it does; and the impact of the Supreme Court on the political and legal landscape in the United States. Prerequisite: POL 211 or permission of the instructor.

POL 343 Congress (3 hrs.) This course will broadly examine the legislative branch of the United States government. Topics include: elections, committees, inter-branch relations, and spatial models of voting. The roles of Congress in our political system are two-fold: 1) to represent issues and concerns of the citizenry; and 2) to make policy for the nation – “to govern.” How does the structure of Congress impact the behavior of its members? What makes for “quality” representation? These questions, and more, will be discussed in this course. Prerequisites: POL 112, POL 211 or permission of the instructor.

POL 345 Politics and Film (3 hrs.) Film and visual images can help us understand contemporary politics. Films often shape and illustrate the public's perception of politics. This course will examine the portrayal of politics in movies. The course will have different themes each semester it is taught, including, but not limited to, the American presidency, race and gender, legislative politics, war, terrorism, and elections. Prerequisites: Any of the following: FAR 215, HIS 104, POL 112, or POL 211.

POL 351 Women and Politics (3 hrs.) This course explores the connection between gender and politics in America and in international contexts. Topics under investigation include political participation and the exercise of political leadership by women, the evolution of social movements in support of women's rights, critical social and political issues of concern to women such as health, employment, security, and education, and debates over relevant public policies. Prerequisites: POL 112, 211, 212, WGS 210, or permission of the instructor.

POL 362 American Foreign Policy (3 hrs.) A study of the diplomatic process designed to provide a realistic insight into the stresses and demands upon modern policy-making, including the roles of the president and Department of State. The course includes an analysis of postwar American programs, policies and difficulties in foreign affairs. Prerequisites: POL 211 or 212.

POL 370 Drugs, Politics and Public Policy (3 hrs.) Examines the response of the American political system to the use of psychoactive drugs. Class will consider questions pertaining to the explanation of human behavior, the structure and dynamics of American society and politics, the formation of public policy and fundamental issues of moral and political philosophy to encourage critical and sophisticated thought regarding the actual and desired relationship of American citizens with psychoactive drugs and possible political strategies for responding to perceived issues. Prerequisites: POL 112, or 212.

PSY – Psychology

PSY 112 Psychology as a Natural Science (3 hrs.) An introductory analysis of mental processes and behavior from the perspective of natural science. Includes such topics as the nervous system, sensation and perception, animal and human learning, cognition, memory, and intelligence. Includes a computer-based laboratory designed to explore methodology and key concepts. Offered every semester.

PSY 113 Psychology as a Social Science (3 hrs.) An introduction to human behavior and mental processes from the social science perspective. Includes such topics as social inference, interpersonal relations, cognitive and social development, personality structure and function, motivation and emotion, stress and adjustment, abnormal behavior, and psychotherapy. Includes a computer-based laboratory designed to explore further course topics. Offered every semester.

PSY/EDU 221 Educational Psychology (3 hrs.) The application of psychological principles of learning, cognition, and child and adolescent development to the educational process in elementary and secondary schools. Topics include the impact of psychological knowledge on student learning, teaching, motivation, management of the classroom, and assessment of student learning. Offered every spring.

PSY 231 Sports Psychology (3 hrs.) An examination of the psychological factors influencing participants and, to a lesser extent, spectators in sport. Topics include the use of behavioristic principles to develop skills, and the effects of causal attribution, attention, anxiety, coaching strategy, and imagery on athletic performance. Additional special topics include audience effects, children in sports, and the psychological benefits of exercise. Offered every fall.

PSY 270 Research Tools (3 hrs.) A hands-on exploration of how the psychologist uses the computer to search for literature, analyze data, and report results. Through a series of exercises using primarily PC computers in the psychology laboratory, students learn how to use the Internet to search for previously published research, how to locate and use electronic literature, how to use statistical packages such as Jamovi, and how to generate graphs and other APA style documents. Prerequisites: PSY 112, PSY 113, and MAT 114. Offered every fall.

PSY 274 Methods in Experimental Psychology (3 hrs.) An examination of experimental methods and designs utilized in laboratory research. Topics include the assumptions of science, hypothesis formation, statistical analysis of data, and assessment of theory. Also, technical skills associated with reading literature and presenting findings using APA-style elements are emphasized. MAT 114 Elementary Statistics is recommended but not required. Offered one semester a year. Prerequisites: PSY 112 and 113. Offered every spring.

PSY 290 Biological Psychology (3 hrs.) An exploration of the relationship between human behavior and biology. Basic material on genetics, neuroanatomy and neurophysiology is included, although the focus of the course is behavioral and mental phenomena that can be understood better via an analysis of brain function. Topics covered are: vision, learning, memory, motivation, emotion and abnormal behavior. Offered once every two years. Prerequisites: PSY 112 or BIO 114. Offered every odd spring.

PSY 301 Human Sexual Behavior (3 hrs.) The focus of this course is on the scientific study of human sexual behavior. Current research findings are presented and discussed in class. Topics include: Human anatomy and sexual functioning, pregnancy/childbirth, sex education, sexual and gender expressions, intimate relationships, as well as sexual problems, infections, and sex therapy. Students will discuss and process their own beliefs, attitudes, and assumptions about sexuality through in-class discussion and assignments. Offered occasionally. Prerequisites: PSY 112 or 113.

PSY 305 Industrial-Organizational Psychology (3 hrs.) This course applies the principles of psychology to work and other organizational settings. It presents both traditional industrial applications (personnel selection, job design, training, and performance evaluation), more recent perspectives on organizational performance (group dynamics, romance in the workplace, leadership, problem solving, organizational design, organizational development, and organizational culture and socialization), and recent work in ergonomics and engineering psychology. Offered occasionally. Prerequisites: PSY 112 or 113.

PSY 310 Social Psychology (3 hrs.) A survey of the field of social psychology emphasizing social cognition and inference, patterns of interpersonal relationship, the development and change of attitudes, and group structure and function. Offered every fall. Prerequisites: PSY 113.

PSY 311 Social Psychology Laboratory (1 hr.) Optional laboratory to accompany PSY 310. Offered every fall. Prerequisites: PSY 113 and either PSY 270 or PSY 274.

PSY 312 Developmental Psychology (3 hrs.) A survey of cognitive, emotional, social, and physical development across the lifespan, including the identification of general trends and individual differences in developmental patterns. Offered every fall. Prerequisites: PSY 112 or 113.

PSY 313 Developmental Psychology Laboratory (1 hr.) Optional laboratory to accompany PSY 312. Offered every fall. Prerequisites: PSY 113 and either PSY 270 or PSY 274.

PSY 315 Psychology of Personality (3 hrs.) A survey of the field of personality, emphasizing historical theories of personality, including those of Freud, Jung, Adler, Rogers, Maslow, and others, modern theoretical approaches including trait theory, the self, person-situation interactions, emotion and motivation, and basic methods of investigation. Offered every odd spring. Prerequisites: PSY 113.

PSY 316 Personality Laboratory (1 hr.) Optional laboratory to accompany PSY 315. Offered every odd spring. Prerequisites: PSY 113 and either PSY 270 or PSY 274.

PSY 320 Memory and Cognition (3 hrs.) An investigation of theories and research dealing with cognitive structure and processes. Such topics as long- and short-term memory, forgetting, iconic and echoic storage, concepts, heuristics, and problem solving are included. Offered every even spring. Prerequisites: PSY 112 or 113.

PSY 321 Memory and Cognition Laboratory (1 hr.) Optional laboratory to accompany PSY 320. Offered every even spring. Prerequisites: PSY 112 and either PSY 270 or PSY 274.

PSY 330 Addictive Disorders (3 hrs.) This course will integrate biological, psychological, social and cultural aspects of the use and abuse of a wide variety of psychoactive substances ranging from caffeine to alcohol to heroin. The course will focus on the nature of and criteria for diagnosing substance use disorders (SUDs), and predictors of SUDs. Existing and new/emerging approaches to treatment (medications, counseling, support groups) will also be discussed and explored in class, with a strong focus on reading, understanding, and critiquing original peer-reviewed research on SUDs and their treatment. Offered occasionally. Prerequisites: PSY 274 or PSY 290 or BIO 107 or BIO 114.

PSY 340 Forensic Psychology (3 hrs.) This course will explore the basic principles surrounding the interaction of psychology and the legal system. Forensic Psychology's foundation is within the rubrics of psychological, political science and sociological principles. It is inherently an interdisciplinary course due to its interaction between several fields of learning. Students will learn about several areas within forensic psychology including, but not limited to, what forensic psychology entails, the roles of forensic psychologists, use of psychology in the selection of law enforcement, techniques in criminal investigation, risk assessment, child custody cases, interrogation and confessions, insanity and competency to stand trial, and death penalty trials and appeals. Discussions regarding the cooperative and conflicting nature of the relationship between the legal system and psychology will be prevalent. Offered occasionally. Prerequisites: POL 112, POL 211, PSY 113, or SOC 111.

PSY 364 Stereotyping, Prejudice, and Group Conflict (3 hrs.) This course uses experimental social psychology as the foundation to explore the affective, behavioral, and cognitive processes associated with group interaction and conflict. Utilizing an interdisciplinary perspective, it will integrate psychological, sociological, political, historical, and security-related approaches to understanding stereotypes, prejudice, and discrimination on a local and global scale. Offered occasionally. Prerequisite: PSY 113.

PSY 390 Abnormal Psychology (3 hrs.) This course explores the psychological, cultural, and social factors involved in defining patterns of thought and behavior as abnormal with a focus on mental/psychiatric disorders as defined by the Diagnostic and statistical manual. A strong emphasis is placed on understanding scientific research on predictors of and biological psychological treatments for a wide range of mental disorders (mood, anxiety, personality, substance use, eating/body image, dissociative, psychotic and sexual disorders). Offered every spring. Prerequisite: PSY 113.

PSY 391 Abnormal Psychology Lab (1 hr.) Optional laboratory to accompany PSY 390. Offered every spring. Prerequisites: PSY 113 and either PSY 270 or PSY 274.

PSY 398 Independent Study (1-4 hrs.) This course gives the psychology major an opportunity to increase his/her/their understanding of psychology as a discipline through a program of individual research supervised by a faculty member. The course may be repeated with change of topic. Enrollment by permission of the instructor. Offered occasionally.

PSY 405 International and Cross-Cultural Psychology (3 hrs.) Utilizes an interdisciplinary perspective to focus on a contemporary challenge facing our world: the need to understand persons from different cultures as the globalization of our communications and commerce forces close contact with persons who have a different cultural background from our own. The course includes a cross-cultural examination of many of the basic topics in the field of psychology such as sensation-perception, gender, personality and abnormal. Also focuses on cross-cultural behavioral expectations and fosters development of the skills needed to evaluate a situation and determine the behavioral rules existing in that situation. Offered occasionally. Prerequisites: PSY 113 and one of the following: HIS 334, 356, HUM 277, 278, 294, GTS 201, PHL 102, POL 212, REL 102, SOC 111, WGS 210.

PSY 412 Counseling Theories and Methods (3 hrs.) An introduction to the major theories of counseling and psychotherapy, current issues in the field, and applications for specific groups and settings. The course includes both theoretical and experiential components. Offered occasionally. Prerequisites: PSY 113.

PSY 418/SOC 318 Adult Develop & Aging (3 hrs.) An investigation of theories and research in adult development, from young adulthood to old age. Emphasizes gains and losses in cognitive, social, emotional, and physical development as well as death and grieving. Offered occasionally. Prerequisites: PSY 112, 113, or SOC 111.

PSY 422 Psychology Seminar (3 hrs.) Discussions, readings, and individual papers based on special problems in psychology. Offered every spring. Prerequisites: PSY 112, PSY 113, and either PSY 270 or 274.

PSY 430 Pre-Thesis (3 hrs.) The first course in a two-semester sequence for students wishing to complete a senior thesis. Students will be asked to complete an extensive literature review of a topic approved by their thesis advisor. Offered every spring. Prerequisites: PSY 112, PSY 113, and either PSY 270 or PSY 274.

PSY 431 Senior Thesis (3 hrs.) The senior thesis is a report of extended library research and an experimental study focusing on a topic chosen by the student and approved by a sponsoring member of the department. Library research is performed during enrollment in pre-thesis and the experimental project is executed while taking this course. Offered every fall. Prerequisites: PSY 112, PSY 113, PSY 270 and 274, completion of PSY 430 with a C or higher, and senior standing.

MAT – Mathematics

MAT 110 Quantitative Reasoning for Mathematical Problem Solving (3 hrs.) This course emphasizes basic mathematical principles through problem solving. The focus is on solving problems encountered in typical college courses such as interpreting graphs, applying formulas, computing interest and percentages, understanding statistical output, and solving equations. The quantitative reasoning approach builds critical thinking skills in solving problems and analyzing the outcomes of those contextually. This course is designed for those students who will broadly use mathematics in everyday life, with less technical emphasis on skills for future math courses. This course is for those who do not intend to major in programs requiring additional mathematics. Offered every semester. Prerequisites: None

MAT 111 College Algebra (3 hrs.) The study of linear, quadratic, exponential and logarithmic equations, inequalities, functions and graphs and their applications. Prerequisites: ACT math score between 19 and 23 or SAT math score between 410 and 530 or Accuplacer Advanced Algebra and Functions score of 241 and at least 2 years of high school algebra with at least C's. Not meeting prerequisite requires the student to successfully complete MAT 110 as the Foundational Mathematics requirement. Offered every semester, one or more sections depending on demand.

MAT 114 Elementary Statistics (3 hrs.) A study of the organization and analysis of data including the normal, binomial, chi square and t distributions; estimating population parameters; hypothesis testing; random sampling; central limit theorem; and simple linear regression and correlation. A term project using technology for analysis and testing of data collected from real life is a required component of the course. Prerequisites: ACT math score 23 or SAT math score 540 and 4 years of high school math, including 2 years of algebra with at least B's. Not having prerequisite requires the student to successfully complete MAT 110 Quantitative Reasoning for Mathematical Problem Solving or MAT 111 College Algebra with a grade of C- or better. Offered every semester.

MAT 115 Fundamentals of Data Science (3 hrs.) The focus of this course is to introduce the scientific methods and processes used to analyze large data sets and predictive modeling methods. The course will use statistical methods and exploration techniques to investigate patterns and anomalies in mostly structured large data sets. Underlying theories of statistics will be utilized to explore, interpret, and visualize data in interdisciplinary fields such as health, business, education, and economics. An introduction to R programming language and R Studio will be used throughout the course. Pre-requisites: Evidence of college level statistics course with a grade of C- or better, a math ACT of 25 or higher, a math SAT score of 610 or higher, or AP stats with a score of "4" or higher. Offered spring semester.

MAT 121 Pre-Calculus (3 hrs.) The study of trigonometric, exponential, logarithmic and algebraic functions and their applications. Pre-Calculus is a course for students who plan to take Calculus I. Prerequisites: ACT math score 22 or SAT math score 540 and at least 4 years of high school math, including 2 years of algebra with at least B's. Not meeting prerequisite requires the student successfully complete MAT 111 with a grade of C- or better. Offered every semester or depending upon demand.

MAT 122 Business Calculus (3 hrs.) A terminal calculus course, including a brief review of algebra and the study of the derivatives and integrals of algebraic, exponential and logarithmic functions. Business applications of the derivative and the definite integral are also studied. Prerequisites: ACT math score 23 or SAT math score 540 and at least 4 years of high school math, including 2 years of algebra and some pre-calculus with at least B's. Students not meeting these prerequisites requires the students to successfully complete MAT 111 with a grade of C- or better. Offered every semester or depending upon demand.

MAT 124 Calculus I (5 hrs.) A formal introduction to calculus, including limits, derivatives, techniques of differentiation, optimization, anti-derivatives, definite integrals, and the fundamental theorem of calculus. Applications in science and engineering are included. Prerequisites: ACT math score of 25 (27 preferred) or SAT math score of 600 (630 preferred) and at least 4 years of high school math, including a pre-calculus or trigonometry course with a grade of at least B. Not having prerequisite requires the student to successfully complete MAT 121, Pre-calculus with a grade of C- or better. Offered every semester.

NOTE: A course **leading to the fulfillment** of the Breakthrough math requirement (MAT 114 or MAT 124) must be taken in the first year (MAT 090 Intermediate Algebra, MAT 111 College Algebra, MAT 114 Elementary Statistics, MAT 121 Pre-Calculus, or MAT 124 Calculus I).

MAT 214 Calculus II (4 hrs.) A continuation of MAT 124. This course includes integration of standard forms (integration by parts, trigonometric substitution, etc.), the definite integral, applications of integration and the study of sequences and series. Prerequisites: Completion of MAT 124 with a C- or better, or permission of the instructor. Offered every semester or depending upon demand.

MAT 215 Linear Algebra (3 hrs.) An introduction to the concepts of linear transformations and matrices, determinants, vector spaces, eigenvalues, and selected applications. Prerequisites: Completion of MAT 124 with a C- or better. Offered every fall semester.

MAT 224 Calculus III (4 hrs.) A continuation of MAT 214. This course includes solid analytic geometry, an introduction to vector analysis and differential geometry, partial differentiation and multiple integration. Prerequisites: Completion of MAT 214 with a C- or better. Offered every semester or depending upon demand.

MAT 231 Mathematics for Elementary & Middle School Teachers (3 hrs.) This is the first part of a two-part integrated methods and content course for elementary teachers. This part focuses on the "why" along with the "how" of such topics as problem solving, deductive and inductive reasoning, beginning number concepts, operations with whole numbers, elementary number theory and other appropriate topics such as learning theory and assessment. Prerequisites: Completion of the Tier I mathematics or Foundational math requirement in Breakthrough requirement with a C- or better. Offered every fall semester.

MAT 305 Heart of Mathematics (3 hrs.) A semester-long discussion of the big ideas of mathematics in cultural and applications contexts. Evolution of mathematical ideas in art, the sciences, computing, literature and other disciplines. An introduction to mathematical thinking and problem-solving in many contexts. Prerequisites: MAT 214 with a C- or better, or permission of instructor. Offered in the spring semester of even years.

MAT 310 History of Mathematics (3 hrs.) This course is taught from the viewpoint that mathematics has been a major cultural force in many civilizations. The course will trace the evolution of mathematics and its impact on the human endeavor as civilizations rose and fell throughout history to modern times. Prerequisites: Completion of MAT 124 with a C- or better. Offered in the fall semester of odd years.

MAT 312 Differential Equations (3 hrs.) A study of ordinary differential equations (ODEs). This course is focused on the analytical, geometrical, and numerical aspects of differential equations. First and second order ODEs are studied using various analytical techniques. The Laplace transform is utilized to solve initial value problems of higher-order ODEs. Particular attention is paid to systems of ODEs using phase portraits and numerical analyses. Offered spring semester of odd years. Prerequisites: Completion of CSC 104 and MAT 224 with a C- or better, or by permission of instructor.

MAT 313 Mathematical Probability and Statistics (3 hrs.) This course introduces the student to the mathematics of probability and statistics. The concepts of discrete and continuous probability distributions are studied in detail. The material is applied to the areas of statistical inference, including estimation and hypothesis testing. Offered every spring semester. Prerequisites: Completion of MAT 214 with a C- or better or concurrent enrollment in MAT 214.

MAT 314 Higher Geometry (3 hrs.) A study of various geometric axiomatic systems from both the synthetic and analytic approach, including finite and non-Euclidean geometries. Offered every fall semester or depending upon demand. Prerequisites: Completion of MAT 331 with a C- or better.

MAT 321 Discrete Mathematics and Graph Theory (3 hrs.) This course provides an introduction to an area of mathematics focusing on discrete rather than continuous mathematical structures. Topics explored in this course include number theory, functions and sequences, graph theory, combinatorics, and set theory. Basic definitions and concepts of the field as well as some major results in the area will be discussed. This course prepares students for further study in mathematics, business, or computer-related fields. Pre-requisite: MAT 214 with a grade of C- or better. Offered in even fall semesters.

MAT 331 Mathematics Seminar (3 hrs.) A study of the foundations of mathematics, logical deductive reasoning and proof. Emphasis is on sets and number theory. This course prepares the mathematics major for success in other 300- and 400-level mathematics courses. Prerequisites: Completion of CSC 104 with a C- or better; and MAT 224 with a C- or better or permission of the instructor. Offered every spring semester.

MAT 340 Statistical Computer in R Studio (3 hrs.) A projects-based introduction to R and R Studio with applications in relevant fields. The focus of this course is to work with pre-processed data and flat files, access and format large data from the web, analyze data by methods such as conditional means, regression analysis, and cross-validation techniques, with the focus on statistically analyzing and presenting the data.

MAT 351 Methods of Teaching Elementary & Middle School Mathematics (3 hrs.) This course is the second part of an integrated methods and content course for elementary teachers. Topics include fractions, decimals, geometry, probability and statistics, measurement and other appropriate topics. Offered every spring semester. Prerequisites: C- or better in MAT 231 or permission of the instructor.

MAT 398 Independent Study (1-4 hrs.) Individual study and/or research under the supervision of staff members on a particular topic agreed upon by both the student and the instructor. Enrollment by permission of the instructor and department chair.

MAT 411 Data Science Seminar (3 hrs.) This is a capstone course for majors. Each individual in the class carries out research under the supervision of the instructor in large-scale data analysis using statistical knowledge and computational techniques learned in previous courses. Literature review, regular meetings, progress reports, and a final paper and presentation are required. Topics may be chosen from interdisciplinary fields including, but not limited to, computer science, biology, psychology, engineering, and business. Offered every other spring semester. Prerequisites: MAT 340, ECN 355, and CSC 211 with a grade of C- or better.

MAT 422 Modern Algebra (3 hrs.) A study of the axiomatic development of algebraic structures, including groups, rings, and fields, with selected introductions to topics which may include symmetry groups, factorization, and integral domains. Offered every spring semester. Prerequisites: Completion of CSC 104 and MAT 331 with a C- or better.

MAT 424 Advanced Calculus (3 hrs.) This course is a rigorous study of the foundations of Calculus with emphasis on limits, continuity, differentiation, and Riemann integration. Through the reexamination of those topics, students learn proof techniques which are fundamental to the mathematical field of analysis. Prerequisites: Completion of CSC 104, MAT 331, and MAT 224 with grades of C- or better. Offered every fall semester.

SOC – Sociology

SOC 111 Introduction to Sociology (3 hrs.) This course provides an introduction to the theories and methods used by sociologists to understand society. It explores topics ranging from culture to social institutions, including education, the economy, and government. It also examines how social identities, such as race, class, and gender affect people's lives and life chances.

SOC 315 Gender and Society (3 hrs.) This course examines multiple aspects of gender, including how it is constructed through our social interactions, how it is challenged by people who do not conform to traditional conceptions of gender and sexuality, and how ideas about gender vary by culture. It will also explore the role of social institutions, such as the media, work, and family, in shaping our ideas about gender and sexuality. Prerequisites include any one of the following: SOC 111 or WGS 210.

SOC 317 Race and Ethnicity (3 hrs.) This course explores various aspects of race and ethnicity, including the social construction of racial and ethnic categories, theoretical perspectives on prejudice and discrimination, and how race and ethnicity are embedded in social institutions. The course includes discussion of some of the most pressing issues in American society, such as new forms of discrimination, racial inequality in the criminal justice system, and how the racial/ethnic system is changing over time. Although the course focuses on the United States, it draws on international examples for comparative purposes. Prerequisite: SOC 111.

SOC 318/ PSY 418 Adult Develop & Aging (3 hrs.) An investigation of theories and research in adult development, from young adulthood to old age. Emphasizes gains and losses in cognitive, social, emotional, and physical development as well as death and grieving. Offered occasionally. Prerequisites: PSY 112, 113, SOC 111 or ANT 115.

SOC 332 Prisons and Social Control (3 hrs.) This course offers a critical approach to the study of prisons and social control in society by focusing on prisons as complex social institutions that are shaped by social, historical, political, economic and cultural forces. The course examines such issues as the functions of incarceration and other forms of social control, the dynamics of the prison environment, and the effects of incarceration on prisoners and society more broadly. SOC 111 or ANT 115.

SOC 345 Sociology of Religion (3 hrs.) The course will endeavor to introduce students to the major thinkers in the field of the sociology of religion, to some of its central theories regarding the nature of religion and the relationship between religion and society, and to some applications of its theories to specific religions and societies. Prerequisites include any one of the following: SOC 111, ANT 115; REL 101, 102; CLA 215; HIS 105.

SOC 360 Sociological Theory (3 hrs.) This course will provide students with an overview of classical and contemporary sociological theory. Through a critical examination of primary texts, the course will explore fundamental questions concerning modern societies, including why societies change or remain stable over time, what are the forces that govern human interactions, and how can we explain some of the causes and consequences of social inequality. Prerequisites: SOC 111 or ANT 115.

SOC 363 Deviance (3 hrs.) Deviance is a fluid concept. How we determine what behaviors are "deviant" changes over time and varies according to context. This course will provide an overview of the sociology of deviance, including issues of labeling and stigma, the medicalization of deviance, and the politics that shape how deviance is defined and subject to sanctions. Specific areas of "deviance" that we will address include homosexuality, mental illness, and alcohol and drug use, among others. Prerequisites: SOC 111 or ANT 115.

SOC 375 Social Science Research Methods (3 hrs.) This course is designed to teach students how to collect and analyze data using the qualitative and quantitative methods most commonly employed in the social sciences, including surveys, ethnography, content analysis, qualitative interviews, experiments and focus groups. Students will acquire hands-on experience collecting data using four of these methods and learn how to interpret data presented in academic writing. The course will also address issues pertaining to validity, reliability, sampling, research ethics, and the use of secondary sources. Prerequisites: SOC 111, ANT 115, or POL 112.

SOC 398 Independent Study (1-4 hrs.) Topics of special interest on a tutorial basis, or supervised field research projects. Prerequisites: SOC 111 or ANT 115 or permission of instructor.

SOC 431 Sociology Honors Thesis (2 hrs.) An option for upper-class majors who successfully complete the theory and methods requirements. Students produce an original critical paper based on either library or field research in consultation with the members of the department.