



EDUCATION MAJORS

Education Curriculum Studies

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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:

- [Education Course Descriptions](#)
- [Health and Exercise Science Course Descriptions](#)
- [Psychology Course Descriptions](#)
- [Math Course Descriptions](#)

Major: EDUCATION CURRICULUM STUDIES

Student's Last Name

First Name

Middle Initial

Advisor

Date Major Declared

| Course # | Title of Course | Hours Completed | Semester Completed | Grade |
|---|--|-----------------|--------------------|-------|
| Required Courses (25 hrs): | | | | |
| EDU 101 | Introduction to Teaching | 1 | | |
| EDU/PSY 221 | Educational Psychology | 3 | | |
| EDU 230 | Child & Adolescent Growth & Development | 3 | | |
| EDU 231 | Education of Exceptional Individuals | 3 | | |
| EDU 290 | Foundations of Education | 3 | | |
| EDU 295 | Place-Based and Service Learning: Education in the Community & the Classroom | 4 | | |
| EDU 306 | Teaching Reading in Elementary/MS | 3 | | |
| EDU 350 | Teaching of Digital Literacy | 3 | | |
| EDU 385 | Diversity in Education | 3 | | |
| EDU 392 | Reading/Writing in Content Areas | 3 | | |
| A minimum of 18 hours chosen from the following courses, choosing one focus area of ECE, ELEM, Middle School, PE, or Secondary (see the majors document to align with – meet with advisor to determine best sequence/and to determine focus area): | | | | |
| ECE/ELEM ED | | | | |
| EDU/HES 207 | Health, Nutrition & Safety | 3 | | |
| EDU 210 | Literature of Children and Youth | 3 | | |
| *EDU 308 | Methods of Teaching Social Studies in Elem/MS | 3 | | |
| *EDU 309 | Teaching Writing in Middle and Secondary Schools | 3 | | |
| *EDU 307 | Teaching STEAM in 21 st Century Classrooms | 4 | | |
| EDU 441 | Reading Assessment & Advancement | 3 | | |
| *MAT 231 | Math for Elementary & MS Teachers | 3 | | |
| *MAT 351 | Methods of Teaching Elem. & MS Math | 3 | | |
| *Middle School as well | | | | |
| Middle/Secondary | | | | |
| EDU/HES 206 | Growth & Development in PE for Elementary | 3 | | |
| EDU 320 | Teaching Middle School: Curriculum & Philosophy of Teaching Middle School | 4 | | |
| EDU 425 | Methods of Secondary Teaching | 3 | | |
| EDU 431 | English in Secondary/Middle Schools | 3 | | |
| EDU 434 | Teaching Physical Education in MS and Secondary | 3 | | |
| EDU 435 | Social Studies in MS and Secondary | 3 | | |

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|---------|---------------------------------------|-----------|--|--|
| EDU 453 | Classroom Management and Organization | 3 | | |
| | Total Hours for Major | 43 | | |

If any substitutions or waivers of requirements are allowed, please list below and initial.

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 genera. 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.

HES – Health and Exercise Science

HES 101 Intro to Exercise Science (1 hrs.) This class will provide an opportunity for students to understand the scope of health professions related to Exercise Science as they begin their studies in the major and explore professions: e.g. medicine, nursing, physician assistant, physical therapy, occupational therapy, personal training, dietetics, chiropractic, strength and conditioning coaching. Students will also meet with WC Career Services, learn about major requirements/ advising, how to write professionally, and how to track and reflect on their progress in the major through major's portfolio (in Canvas).

HES 104 First Aid and Cardiopulmonary Resuscitation (Fee) (1 hr.) Designed around the National American Red Cross modules, this course will provide students with the knowledge and skills necessary in an emergency. The content and activities will prepare students to recognize emergencies and make appropriate decisions regarding care. It will also provide information on the prevention of injury and illness, with a focus on personal safety. Offered fall and spring semesters.

HES 132 Wellness Concepts (2 hrs., second block, Spring semester) Students identify their current wellness status, acquire accurate wellness information, and develop skills to analyze health claims, and work toward personal wellness objectives. Physical Education Majors will take this course concurrently with Physical Fitness (PED A22) to meet state requirements for health-related fitness and wellness. Offered spring semester.

HES 204 Fitness and Wellness Concepts (3 hrs.) Students' baseline fitness values are assessed, fitness principles are learned, and training and behavioral strategies are developed through in-class activities. Students identify their current wellness status, acquire wellness information, develop skills to analyze health claims, and work toward personal wellness objectives. Offered spring semester.

HES 205 Stress Management (3 hrs.) This course introduces students to basic principles and theories of stress and techniques to effectively manage stress. Based on holistic health perspective, student will identify the various causes of stress and be introduced to a variety of stress management techniques and stress-reducing behaviors. Ultimately, students will develop and practice approaches that will contribute to optimal lifelong health.

HES/EDU 206 Elementary Physical Education Methods (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 spring odd semesters.

HES/EDU 207 School Health, Physical Education and 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.

HES 208 Creative Movement and Rhythms (3 hrs.) An introduction to the elements of creative movement and dance. Through a variety of learning experiences, students will examine movement forms as more than just physical activity, but as a means of self-expression and a vital aspect of culture. This course will give students practice in designing movement-learning experiences for persons of all ages. Offered in fall semester.

HES 215 Principles of Motor Learning (3 hrs.) The class will include lecture and laboratory experiences to study the principles and factors that influence motor skill acquisition and development. With an understanding of the theoretical bases, students will learn methods and teaching approaches that improve motor skill development and retention. Offered in odd numbered spring semesters.

HES 220 Social Science in Sport (2 hrs.) An analysis of the significance of physical activity in society and culture. Motivation and self-concept as applied to play, game, sport, and athletics are examined. Offered in fall semester.

HES/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 in fall semester.

HES 232 Care and Prevention of Athletic Injuries (3 hrs.) This course is designed to provide students with introductory information concerning primary injury care and management, with a special emphasis on the preventative aspects of athletic injuries. Students will learn the practical techniques for applying terminology and anatomy for evaluation and care of various injuries as they pertain to the knee, ankle, shoulder, elbow, spine, and head/face. Students will also be introduced to basic modalities used in the field of athletic training, basic training and conditioning guidelines, and how to deal with environmental issues as they pertain to athletics as well as apply those skills in the practical setting. Additional information regarding legal and organizational issues will also be addressed. (Previously offered as HES 230/235).

HES/GTS 240 Introduction to Global Public Health (3 hrs.) The course will study foundational public health concepts in a global context, using an evidence-based approach. Students will understand the complexities inherent in improving health on a global scale, the impact of poverty and inequality, the role of institutions and major players in global health, and the link between global and local health problems and solutions. General Education credit is earned through class activities in which students explore aspects of various cultures (history and tradition, institutions such as family and faith communities, economy, politics and law) and their impact on health status and strategies for prevention and treatment of disease. Offered in fall semester.

HES 251 Introduction to Nutrition (3 hrs.) This is an introductory nutrition class covering the major nutrients (carbohydrates, lipids, proteins, vitamins, minerals, and water) and their role in energy balance, weight management, the digestive process, and overall health. Students will learn the basics of healthy eating through the life cycle along with the basic nutritional science concepts of metabolism and digestion. Students will also learn about nutrition misinformation, fad diets, and food politics. This course will give students the fundamental knowledge they will need to make informed decisions about foods. Course fee required. Offered in fall semester.

HES 261 Introduction to Epidemiology (3 hrs.) This course will introduce basic principles and concepts of epidemiology by describing the various ways that disease (and other health-related conditions and events) occurs in populations. The course will emphasize the practical use of epidemiology and lectures will be complemented by case studies and readings of contemporary issues in disease and public health. Offered online spring semester.

HES 309 History and Philosophy of Physical Education (2 hrs.) Designed to assist students to develop an historical perspective and viable personal philosophy of physical education. Offered in fall odd semesters.

HES 321 Kinesiology (3 hrs.) The study of human motion through the application of anatomical and physiological fundamentals, as well as basic biomechanical principles. Information will be presented in a lecture/ laboratory format. Prerequisites: BIO 107 or BIO 114/115 or BIO 124/125.

HES 340 Exercise Physiology (3 hrs.) This course is designed to study the responses and adaptations of the functions of the human body to physical exercise, and the contribution of exercise to optimal health. This course integrates the knowledge of biological processes and applies it to sport and exercise. The material covered is pertinent to teaching, coaching, and appropriate for students interested in health and exercise. Prerequisites: BIO 114/115 and BIO 124/125 (with a grade of B- or higher) or BIO 107. Offered fall semester.

HES 342 Exercise Prescription (3 hrs.) The class will cover general principles of exercise prescription for healthy persons and individuals with special needs. Particular emphasis will be on training to improve fitness and performance. Fitness testing and risk factor assessment will be the basis of developing a safe effective exercise program. Course Prerequisite: HES/PED 340 Exercise Physiology. Offered spring semester.

HES 350 Theories of Adapted Physical Education (3 hrs.) Designed to identify exceptional children and to provide a learning environment suitable to their needs and capabilities. Offered in spring of odd numbered years, even fall semesters. Requires two hours of lecture and one hour of activity.

HES/WGS 355 Women's Health Issues (3 hrs.) This course will explore the topic from three perspectives: holistic health perspective, a developmental perspective, and sociocultural or global perspective. Readings, discussion, lecture, writings, research, and presentations will consider these perspectives in better understanding women's health issues. Prerequisite: One course from the following: PSY 112, PSY 113, NSC 108, BIO 114/115, SOC 111, WGS 210, REL 102. Offered spring odd semesters.

HES 357 Community Nutrition (3 hrs.) Student will explore the interrelationships between nutrition and health in community settings (local and global communities). The effect of socio-economic, environmental, cultural, and political factors on health and nutritional status will be examined. Food and nutrition policies and interventions designed to enhance the well-being of populations groups will be discussed. Each student will complete a culminating service-learning project based on interest area derived from class readings, discussion and experiences. Prerequisites: One course from the following: PSY 112 or 113; BIO 107, 108, 114, or 124; SOC 111; ECN 212; POL 112; or PHL 101. Course fee required. Offered spring semester.

HES 398 Independent Study Advanced study in health and/or physical education not covered in regular course offerings. Students work on a subject selected in conference with the instructor.

HES 399 Internship Supervised experience in a cooperative program with business, government, community, or related establishment in the areas of health and/or physical education.

HES 405 Measurement and Evaluation in Physical Education (2 hrs.) An examination of various tools of measurement and an analysis of the purposes, values and limitations of measurement tools in relation to objectives. Field experience is included. Offered in spring of odd numbered years. Prerequisites: MAT 114. Offered spring semester.

HES 406 Management in Physical Education and Athletics (2 hrs.) A study in the development and promotion of educationally sound programs. Offered in spring of odd numbered years. Offered spring semester.

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.