Applied Sport Analytics : BS-ASA

Core Curriculum Courses		
See the Core Curriculum Requirements (https://coursecatalog.tamuc.edu/undergrad/core-curriculum-requirements/)		42
Mathematics		**21**
MATH 1324	Math for Business Applications I *	
MATH 1325	Mathematics for Business Applications II	3
or MATH 177	Business Applications in Mathematics II	
MATH 2318	Linear Algebra	3
MATH 303	Introduction to Data Science	3
MATH 341	Statistical Modeling	3
MATH 403	Mathematical Statistics II	3
MATH 453	Essentials of Statistics	3
Business Analytics		**18**
BUSA 326	Data & Information Management	3
BUSA 415	Principles of Business Process Analysis & Design	3
BUSA 421	Data Science	3
BUSA 423	Business Analytics Programming	3
BUSA 424	Business Analytics Modeling	3
BUSA 447	Data Visualization	3
Sport Management		**15**
HHPS 110	Introduction to Sport Analytics in Sport Management	3
HHPS 210	Sport Psychology	3
HHPS 316	Organizational Strategy & Implementation in Sport Management	3
HHPS 410	Economics & Finance of Sport & Recreation	3
HHPS 420	Marketing for Sport & Recreation	3
Capstone & Internship		**3-6**
HHPK 463	Senior Capstone in Exercise Science	3
or BUSA 428	Project Management	
BUSA 431	Internship	3-6
or HHPS 450	Internship in Sport & Recreation Management.	
Electives		**21**
Total Hours		**120-123**

* This course can be used to satisfy the Core Curriculum Requirements

BUSA 1305 - Business Computing Systems
Hours: 3
A study of introductory business computing concepts and the role of information systems, data analysis, developing skills in quantitative literacy, logical reasoning, and interpretation of results.

BUSA 315 - IS Security & Risk Management
Hours: 3
This course provides an introduction to the fundamental principles and topics of Information Systems Security and Risk Management at the organizational level. Students will learn critical security principles that enable them to plan, develop, and perform security tasks. The course will address hardware, software, processes, communications, applications, and policies and procedures with respect to organizational IS Security and Risk Management.

BUSA 326 - Data & Information Management
Hours: 3
This course introduces core concepts in data and information management. The focus of the course is on understanding data characteristics and information transformation, identifying organizational information requirements, developing a conceptual data model based on organizational information requirements, converting the conceptual data models into relational data models, and implementing and utilizing a relational database. The student will become knowledgeable on how to interpret the information in supporting management decisions.

BUSA 379 - Business Process Management & ERP Systems
Hours: 3
In this course students will be introduced to key concepts and approaches to business process management and improvement. The main focus of this course is both understanding and designing business processes. Students will learn how to identify, document, model, assess, and improve core business processes. Students will be introduced to process design principles. The way in which information technology can be used to manage, transform, and improve business processes is discussed. Students will be exposed to challenges and approaches to organizational change, domestic and offshore outsourcing, and inter-organizational processes

BUSA 415 - Principles of Business Process Analysis & Design
Hours: 3
This course discusses the process, methods, techniques and tools that organizations use to determine how they should conduct their business, with a particular focus on how computer-based technologies can most effectively contribute to the way business is organized. The course covers a systematic methodology for analyzing a business problem or opportunity, determining what role, if any, computer-based technologies can play in addressing the business need, and articulating business requirements for the technology solution.

BUSA 416 - Innovative Analytics Technology
Hours: 3
This course teaches students basic knowledge of emerging technology applications in analytics and decision making. Students learn innovative technology design and management from hands-on class projects.

BUSA 421 - Data Mining
Hours: 3
This course provides students with a foundation in basic data mining, data analysis, and predictive modeling concepts. Using practical business cases and projects, students will learn data analysis and data mining implementation techniques for business knowledge insights through a process of inference, model fitting, and learning from examples. The goal of the course is to teach students fundamental data mining techniques that are commonly used in practice. Data mining topics include linear classifiers, clustering, dimension reduction, classification and prediction methods, decision trees, time series analysis, optimization analysis, simulation methods, regression models, and model training/testing/evaluation. Prerequisites: MATH 1325 and ECO 302 or MATH 403 or MATH 453.

BUSA 423 - Business Analytics Programming
Hours: 3
This course introduces applications programming in the large enterprise system environment. The program development and design process is introduced including computer-based concepts of problem-solving, structured programming logic and techniques, algorithm development and program design. Topics include program flowcharting, algorithms, input/output techniques, looping, modules, selection structures, file handling, control breaks, pseudocoding, and user documentation.

BUSA 424 - Business Analytics Modeling
Hours: 3
This is an applied course developing fundamental knowledge and skills for applying management science models to business decision making. Topics include decision analysis, simulation and risk models and optimization models, including the use of software for business applications. Prerequisites: MATH 1325. Crosslisted with: BUSA 542.

BUSA 428 - Project Management
Hours: 3
This course discusses the processes, methods, techniques and tools that organizations use to manage their information systems projects. The course covers a systematic methodology for initiating, planning, executing, controlling, and closing projects. This course assumes that project management in the modern organization is a complex team-based activity, where various types of technologies (including project management software as well as software to support group collaboration) are an inherent part of the project management process. This course also acknowledges that project management involves both the use of resources from within the firm, as well as contracted from outside the organization.

BUSA 431 - Internship
Hours: 3
This course provides an opportunity for selected students to earn elective credits in Business Analytics through supervised work experience with area business firms under the supervision of a faculty member. Prerequisites: 6 hours of BUSA or department approval.

BUSA 432 - Supply Chain Analytics
Hours: 3
This course focuses on sound insights and improved decision-making in supply chain management from rigorous data analysis. Students learn how to provide problem solving and decision-making process by integrating analytical methodologies which include the study of important supply chain functions and solution techniques. Additionally, students will gain valuable analytical insights on major supply chain functions which include: demand forecasting, procurement assessment, inventory analysis, transportation, supply and subcontract pricing, and primary logistics.

BUSA 447 - Data Visualization
Hours: 3
Student will learn the fundamentals of storytelling concepts, narrative theories, methods for research, cleaning and analyzing datasets, and focus on developing stories using Tableau and other creative data tools. This course is also offered Face to Face (F2F) at ETAMU Dallas campus.

BUSA 489 - Independent Study
Hours: 1-4
Individualized instruction/research at an advance level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisites: Consent of department head.

BUSA 490 - Honors Thesis
Hours: 3
Honors Thesis specified by faculty or department head.

BUSA 491 - Honors Reading
Hours: 3
As specified by Honors or department head.

BUSA 497 - Special Topics
Hours: 1-4
Organized class. May be repeated when topics vary.

HHPK 1301 - Foundations of Kinesiology
Hours: 3
A survey course in human movement that includes the historical development of movement and sport from ancient through contemporary cultures. Physiological, sociological, and psychological principles affecting human movement and sport are also studied.

HHPK 1306 - First Aid and Safety
Hours: 3
This course is designed to develop the knowledge and skills necessary to be effective in providing safe environments and as a first responder to accidents and/or sudden illness. Life saving skills, accident prevention principles, and the proper use of Automated External Defibrillators (AED) will also be included.

HHPK 1338 - Concepts of Physical Activity
Hours: 3
This course is designed to provide information related to the need for continuing physical activity and its contribution to human well-being. Units of instruction will include procedures for assessing fitness levels in the various components of physical fitness and techniques used in developing physical fitness among students.

HHPK 2356 - Prevention & Care of Athletic Injuries
Hours: 3
This course provides foundational knowledge in the prevention, recognition, assessment, and management of sport-related injuries. Topics include musculoskeletal anatomy, injury prevention strategies, emergency care, basic assessment and treatment techniques, taping and protective equipment, and legal and ethical issues in athletic training. Prerequisites: BSC 2401 with a minimum grade of C or HHPK 290 with a minimum grade of C, or consent of instructor.

HHPK 250 - Physical Activity Skill I: Conditioning, Individual and Dual Sports
Hours: 3
The purpose of this course is to develop the techniques for sports conditioning and fundamental skills used in teaching individual/dual sports. This course will also focus on the various stages of games skill development for a variety of activities.

HHPK 251 - Physical Activity Skills II: Team Sports.
Hours: 3
The purpose of this course is to develop the techniques utilized in fundamental skills for team sports. This course will also focus on the various stages of games skill development. An emphasis will be placed on designing a variety of learning experiences for grade appropriate team sports.

HHPK 253 - Lifetime Sports and Activities
Hours: 3
The purpose of this course is to develop the techniques for fundamental skills used in a variety of lifetime sports and activities.

HHPK 280 - Dance Intensive I: Techniques of Ballet, Jazz & Contemporary Dance
Hours: 3
This course is a lecture/studio course in the techniques of Ballet, Jazz, and Contemporary dance designed for health, music and theater performance majors, and others who are interested in dance. The course is designed to give students a working knowledge of ballet, jazz and contemporary dance for the purpose of using dance as a foundation for somatic bodywork and stage movement.

HHPK 290 - Structural Kinesiology
Hours: 3
This course provides in-depth coverage of musculoskeletal anatomy as a foundation for learning components of simple and complex motor tasks and emphasizes proper execution and analysis of joint movement and common exercises. The student learns to interpret data, incorporate knowledge into practical applications, and make inferences regarding cause and effect relationships within nutrition.

HHPK 291 - Physiology in Kinesiology
Hours: 3
There is increasing awareness in this country of the importance of physical activity for overall health. In this course students will gain insight into the physiology behind exercise science looking specifically at how the musculoskeletal, cardiovascular, respiratory, and nervous systems respond to physical activity. Additionally students will examine how the body reacts differently depending on activity type, environmental condition, and participant age. Prerequisites: HHPK 290 with a minimum grade of C.

HHPK 302 - Adapted Physical Education
Hours: 3
A course designed to provide knowledge related to individuals with disabilities and the effects of these disabilities upon motor development and the performance of motor activities. Categories of disabilities include orthopedic difficulties, learning challenges, cardio-respiratory disorders, behavior disorders, sensory impairments, and other permanent and temporary disabilities. Prerequisites: 2.5 GPA and junior/senior status.

HHPK 304 - Motor Development
Hours: 3
This course examines basic concepts and contemporary issues associated with physical growth and motor behavior (perception to action) across the lifespan. Topics include physical and neurological growth, perception, motor control, and environmental influence. Prerequisites: HHPK 154 with a minimum grade of C or HHPK 1338 with a minimum grade of C, 2.5 GPA.

HHPK 308 - Integrated Adventure Education
Hours: 3
Philosophy of outdoor education in a physical education program; designing and implementing outdoor adventure activities in an experiential and interdisciplinary manner for reinforcing the Texas Essential Knowledge and Skills. Prerequisites: Instructor approval and 2.5 overall GPA.

HHPK 309 - Fundamental Rhythms and Dance
Hours: 3
This course fosters appreciation of rhythms and dance movements in a cultural context, includes analysis of dance performance, and develops basic understanding of the various dance components. Prerequisites: Junior or senior classification, instructor approval, and 2.5 overall GPA.

HHPK 311 - Introduction to Coaching
Hours: 3
This course is designed to increase awareness and basic knowledge of coaching principles. This class is intended to foster new ideas and promote personal growth within each individual. Emphasis will be placed on both the science and art of coaching. Students will be challenged to develop personal coaching philosophies that complement their individual attributes. Prerequisites: 2.5 GPA.

HHPK 314 - Teaching Methods in Physical Education I
Hours: 3
Principles and practices related to the learning of children's movement skills, fitness, and active lifestyles will be investigated. This course includes the scientific basis for motor performance, curricular organization, and pedagogical methodology related to the elementary school physical education program. Prerequisite: HHPK 1338 with a minimum grade of C, and junior/senior standing. 2.5 GPA.

HHPK 315 - Teaching Methods in Physical Education II
Hours: 3
A course designed to enable the student to learn the processes of movements and skill acquisition of students in middle/secondary schools. Using state standards, it provides information related to curriculum selection and implementation of middle/secondary public school physical education programs. Students will demonstrate competencies in presentations utilizing various instructional strategies. Prerequisites: HHPK 1338 with a minimum grade of C, and junior/senior standing. 2.5 GPA.

HHPK 316 - Resistance Training
Hours: 3
Students will learn fundamental resistance training exercises and the associated musculature, movement patterns, and equipment demands. Students will perform these resistance training exercises using various pieces of strength equipment to better understand musculature, stability, and movement demands.

HHPK 317 - Applied Dance Kinesiology
Hours: 3
This course is an introduction to the musculoskeletal system and basic health information as applied to dance and somatic bodywork. Students will study the anatomy and kinesiology related to dance and movement, injury prevention, and healthy lifestyle choices. The kinesiological concepts presented will be applied using the context of dance movement.

HHPK 319 - Tactical Strength and Conditioning
Hours: 3
This course is designed to introduce students to the concept of tactical strength and conditioning for tactical professions (law enforcement, fire/ems, military). A basic understanding of fitness and wellness, training methodology, and aspects of performance will increase your understanding of course material. Students will 1. Experience an overview of the NSCA TSAC-F curriculum, 2. Observe career paths of TSAC practitioners, 3. Evaluate a variety of fitness programs and standards currently in place by professions, 4. Acquire education on funding resources for future practices, and 5. Explore potential mentorship or internship opportunities working with the tactical population.

HHPK 322 - Principles of Strength and Conditioning
Hours: 3
Examination of the theoretical knowledge and practical skills associated with strength and conditioning performance coaching. Students will practically apply classroom knowledge during interactive training sessions including performing fitness assessments and creating exercise prescriptions.

HHPK 324 - Health and Kinesiology for Children
Hours: 3
A course designed to acquaint elementary education majors with current health information and activities appropriate for the pre-kindergarten through fourth grade child. Principles of kinesiology, analysis of motor skills, and age appropriate interdisciplinary activities will be explored one-half of the semester.

HHPK 335 - Kinesiology
Hours: 4
A study of human musculoskeletal anatomy and biomechanics, emphasizing how joint structures and muscles influence movement. Topics include Newton’s laws of motion, kinetic and kinematic principles, and methods of analyzing human movement. Applications focus on improving performance, enhancing technique, and reducing injury through biomechanical principles. Prerequisite: BSC 251 OR BSC 2401 OR HHPK 290 with a minimum grade of C. 2.5 GPA.

HHPK 350 - Motor Learning and Motor Control
Hours: 3
The study of the acquisition of psychomotor skill and neuromuscular function in the control of movement. Prerequisites: BSC 251 OR BSC 2401 OR HHPK 290 with a minimum grade of C. 2.5 GPA.

HHPK 355 - Evidence Based Practice in Exercise Science
Hours: 3
This course introduces the principles of Evidence-Based Practice (EBP) and prepares students to use clinical outcomes, available research, and data to enhance patient/client care. Topics include formulating a research question, searching for evidence, and critical appraisal of the literature. Prerequisites: GPA 2.5 or higher.

HHPK 366 - Dance Improvisation and Creative Expression
Hours: 3
A studio course in creative movement and improvisation. Students will experience contact and structured improvisational problems, interaction between dancers and study the elements of time, space, and force while interacting with other movers.

HHPK 397 - SPECIAL TOPICS
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

HHPK 417 - Measurement and Evaluation
Hours: 3
This course is intended to address the current practices in conducting data-based measurement and evaluation processes. Specifically, this course will examine statistical techniques necessary for manipulation and interpretation of various performance data. Prerequisites: MATH 1314 (with a minimum grade of C) or 141 (with a minimum grade of C) or 175 (with a minimum grade of C) or 179 (with a minimum grade of C) or MATH 1332 (with a minimum grade of C) and junior or senior standing, 2.5 GPA.

HHPK 424 - Technology and Assessment in Physical Education
Hours: 3
This course includes the use of technology in physical education and physical activity programming. Current methods and activities for assessment in physical education will also be included. Specifically, this course will examine statistical techniques necessary for manipulation and interpretation of various performance data. Prerequisites: MATH 1314 (with a minimum grade of C) or 141 (with a minimum grade of C) or 175 (with a minimum grade of C) or 179 (with a minimum grade of C) and junior or senior standing, 2.5 GPA.

HHPK 425 - Introduction to Laban Movement Analysis
Hours: 3
This course is an introduction to the principles of movement analysis by Laban including effort, shape, space, and body using the Bartenieff approach.

HHPK 437 - Internship in Kinesiology
Hours: 3-6
This course provides supervised (off-campus) experiential learning in corporate, clinical, or community health, wellness, and conditioning settings. Students apply academic knowledge in professional environments, gain career experience, and develop connections through guided mentorship and reflection. Prerequisites: Senior standing; instructor approval required.

HHPK 445 - Administration and Leadership
Hours: 3
This course includes the study and application of administration tasks and leadership within exercise science professions. Topics include facilities, program assessment and planning, legal/ethical issues, policies and procedures, personnel, marketing, and risk management. Prerequisites: Junior or senior standing, GPA 2.5 or higher.

HHPK 450 - Exercise Physiology
Hours: 4
Topics will include aerobic and anaerobic energy sources for muscular activity, physiology of muscle contraction; strength, and flexibility; the role of nervous system control of muscular activity; pulmonary and circulatory physiology; gas exchange and transport; body composition and weight control; pediatric exercise physiology. Prerequisites: BSC 251 OR BSC 2401 OR HHPK 290 with a minimum grade of C. 2.5 GPA.

HHPK 451 - Topics in Exercise Science
Hours: 4
Advanced topics in exercise science to include biomechanics, exercise physiology, and/or motor learning. Prerequisites: Prerequisites: BSC 251 with a minimum grade of C or BSC 2401 with a minimum grade of C and BSC 252 with a minimum grade of C or BSC 2402 with a minimum grade of C, 2.5 GPA. Senior standing.

HHPK 460 - Fitness Assessment
Hours: 4
Introduction to a variety of laboratory and field tests utilized in the assessment of body composition, aerobic, and anaerobic fitness. The course will provide lab-based experiences for applying theory to assessment and evaluation of human performance with an emphasis on practical application. Prerequisites: HHPK 290 with a minimum of C. GPA 2.5 or higher.

HHPK 461 - Exercise Prescription
Hours: 3
Theory, principles, and practice of exercise prescription for aerobic and resistance exercise programs for health, fitness and performance. Prerequisites: HHPK 460 and GPA 2.5 or higher.

HHPK 462 - Exercise Prescription for Varied Populations
Hours: 3
An introduction to the basic skills and knowledge required to safely prescribe and administer health and fitness programs in special populations. An overview of each unique physiology, effects of the condition on the exercise response, effects of exercise training on the condition, and recommendations for exercise testing and programming is presented in a selected topics format. Examples of populations covered include those with cardiovascular, pulmonary, and metabolic diseases, as well as pregnant women, youth, and the elderly. Prerequisites: HHPK 461 and GPA 2.5 or higher.

HHPK 463 - Senior Capstone in Exercise Science
Hours: 3
Capstone course for Exercise Science that integrates theory, research, and practical experience in the field with career exploration and preparation. Prerequisites: HHPK 462, senior standing, and GPA 2.5 or higher.

HHPK 470 - Program Design in Strength & Conditioning I
Hours: 3
This course prepares kinesiology professionals to design and apply strength and conditioning programs by integrating advanced principles of resistance training and endurance conditioning. Emphasis is placed on exercise technique, program design, and interpreting research to enhance athlete performance.

HHPK 473 - Program Design in Strength & Conditioning II
Hours: 3
This course advances the application of sport and exercise science in strength and conditioning, with emphasis on resistance training, plyometrics, and speed/agility program design. Focus areas include exercise technique, research interpretation, and advanced programming for athlete performance. Prerequisites: HHPK 470.

HHPK 489 - Independent Study
Hours: 1-4
Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisites: Consent of department head.

HHPK 490 - H Honors Thesis
Hours: 1-6
Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisites: Consent of department head. Note: May be repeated when the topic varies.

HHPK 491 - Individual Honors Reading
Hours: 3
Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisites: Consent of department head. Note May be repeated when the topic varies.

HHPK 492 - HHP Study Abroad
Hours: 3
This course provides opportunities to explore Sport (Exercise Science, Sport Management, Coaching, etc.) through international travel. Students will build knowledge, skills, and attitudes about Global Sport through site visits, guest speakers, and participation in international activities. Potential research will be a vital part of this course. Prerequisites: instructor approval.

HHPK 497 - Special Topics
Hours: 0-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

HHPS 100 - Foundations of Sport & Recreation Management
Hours: 3
Foundations of Sport and Recreation Management. An introductory course that includes the history, philosophy, principles, issues, challenges and opportunities in the sport and recreation industry, both in the private and public sectors.

HHPS 110 - Introduction to Sport Analytics in Sport Management
Hours: 3
Provides students with a basic understanding of how data is used in decision making in a variety of sports contexts. Topics include data management, data visualization, and the use of data analysis within decision making in sports management and sport recreation.

HHPS 205 - Governance & Ethics in Sport & Recreation
Hours: 3
This course focuses on the study of ethical problems in the sport and recreation industry and the governance structures in place that a) perpetuate these problems and b) can be used to address them. Students will improve their problem solving skills, developing strategies to manage the impact of ethical issues in sport and recreation.

HHPS 210 - Sport Psychology
Hours: 3
Sport Psychology. An overview of the principles of psychology as applied to sport or recreational activity for enhanced interactions and performance.

HHPS 230 - Sport Consumerism
Hours: 3
This course examines the nature of sport consumerism and its impact on sport organizations, athletes, and society. Students will analyze fan motivations, buying behaviors, media consumption, and global sport culture. Special attention will be placed on management practices, organizational evaluation, budgeting and financial principles, risk management, and ethical considerations within the sport industry. Through applied projects, weekly quizzes, and professionalism-based engagement, students will develop the ability to manage consumer-focused operations in sport organizations.

HHPS 240 - Sport Agency
Hours: 3
This course provides an in-depth exploration of the sport agency industry, examining the roles, responsibilities, and practices of sport agents and agencies. Students will gain hands-on experience with athlete representation, contract negotiation, brand development, compliance, and event management. Emphasis will be placed on both the business operations of sport agencies and the ethical, legal, and financial considerations that shape the industry. By the end of the semester, students will understand the inner workings of sport agencies and will be able to develop a simulated agency plan, represent mock clients, and critically evaluate the evolving agent landscape.

HHPS 301 - Therapeutic Recreation
Hours: 3
The history, purpose, and trends of therapeutic recreation. (Blended/W)

HHPS 302 - Sport Tourism Management
Hours: 3
Comprehensive study of the sport travel and tourism industry. Covers all aspects of sport tourism including economics, finance, and marketing

HHPS 305 - Programming and Events in Sport and Recreation
Hours: 3
Exploration and examination of the foundations and basic sport programming skills, methods, and techniques necessary to deliver sport and recreational activities within a variety of settings, agencies, and/or organizations.

HHPS 310 - Facility and Venue Management
Hours: 3
An examination of the history of sport and recreation facilities, along with appropriate procedures for the planning and operating of current and future sport and recreation facilities. Planning, organizing, coordinating, and managing of sport and recreation venues and facilities will be the focus. Prerequisites: HHPS 100, 110. Junior/Senior Standing.

HHPS 316 - Organizational Strategy & Implementation in Sport Management
Hours: 3
This course provides Sport & Recreation Management students with hands-on experience in applying organizational strategy within sport and recreation contexts. Each year, students will collaborate with a selected sport organization on campus to identify and address specific issues or initiatives, such as enhancing campus culture, increasing attendance at events, or boosting community engagement. The course emphasizes rapid problem identification, strategic planning, and implementation to deliver actionable solutions within the semester. Prerequisites: HHPS 100, 110, and 305. Junior/Senior Standing.

HHPS 317 - Group Exercise Instruction
Hours: 3
Examination of the theoretical knowledge and practical skills in preparation for national certification in group exercise training. Participants will practically apply classroom knowledge during interactive teaching sessions for group exercise. Prerequisites: 2.5 GPA.

HHPS 318 - Individual Exercise Instruction
Hours: 3
Examination of the theoretical knowledge and practical skills in preparation for national certification in personal training. Participants will practically apply classroom knowledge during interactive training sessions including performing fitness assessments and creating exercise prescriptions. Prerequisites: 2.5 GPA.

HHPS 319 - Introduction to Tactical Strength and Conditioning
Hours: 3
Students will explore concepts of biomechanics, muscle anatomy, adaptations to exercise, bioenergetics, and nutrition as it applies to the tactical athlete. Prerequisites: 2.5 GPA.

HHPS 320 - Legal & Ethical Issues in Sport and Recreation Management
Hours: 3
Examinion of legal and ethical concepts related to sport and recreation management. Topics will include athletic participation and eligibility, public facility use issues, constitutional due process, and contracts and tort law as applied to participants and spectators. Concepts, models, and techniques to use in managing ethical dilemmas will be explored. Prerequisites: HHPS 100, 110. Junior/Senior Standing.

HHPS 330 - Athletic Fundraising
Hours: 3
This course provides an introduction to the principles and strategies of fundraising within the sports industry. Students will explore key topics such as donor relations, sponsorships, event planning, and revenue generation, with a focus on practical applications in collegiate, professional, and community sports organizations. The course also emphasizes the development of effective fundraising campaigns and the ethical considerations involved in sports fundraising

HHPS 350 - Social Issues in Global Sport Economy
Hours: 3
An examination of social and ethical issues which affect sports, the sport industry, and sport managers in today's global marketplace. Topics include a survey of the cultural, economic, and political structures which compose, and contribute to, an ever-changing and expanding international sport industry. Sport and recreation organizations and the production and consumption of sport products and events will be examined related to their roles in global sport commerce. Prerequisites: Junior/Senior Standing.

HHPS 397 - Special Topics
Hours: 0-4
Organized class. May be repeated when topics vary

HHPS 400 - Management of Sport & Recreation Organizations
Hours: 3
An examination of the management and operational techniques and strategies for sport and recreation programs. Functions related to the administration and management of sport and recreation organizations will be examined, including planning, leading, organizing, and evaluating sport organizations. Topics include the determination of strategic direction for sport and recreation organizations and effective implementation of strategies. Prerequisites: HHPS 100, 110. Junior/Senior Standing.

HHPS 402 - Coaching Psychology
Hours: 3
This course examines the psychological principles and techniques that enhance coaching effectiveness and athlete performance. Topics include motivation, leadership, communication, team dynamics, and mental skills training. Students will learn how to apply psychological strategies to improve individual and team outcomes in various sports settings

HHPS 403 - Advanced Topics in Applied Sport Psychology
Hours: 3
This course builds on foundational concepts from introductory sport psychology, offering an in-depth examination of advanced psychological strategies to enhance athletic performance and well-being. Topics include advanced mental skills training, coping with pressure, injury rehabilitation, and the psychological aspects of elite performance. Students will apply theory to practice through case studies and research, preparing them for roles in performance enhancement and athlete support. Prerequisites: HHPS 210.

HHPS 404 - Recreation and Fitness Services
Hours: 3
The study of the recreation and Fitness entertainment industry. Emphasis fitness, wellness, sporting and entertainment venues, tourism attractions, and other public and private sector special events that fitness and wellness providers should plan and manage.

HHPS 410 - Economics & Finance of Sport & Recreation
Hours: 3
An examination of the principles of finance as applied to budgeting, operations, and business decisions in recreation and sport organizations. Topics include financial indicators for strategic planning, strategies for generating income, and the allocation of resources. Prerequisites: HHPS 100, 110. Junior/Senior Standing.

HHPS 420 - Marketing for Sport & Recreation
Hours: 3
A survey of marketing concepts, advertising, consumer behavior, market research, strategic planning and the marketing of sport or recreation as a consumer product. Prerequisites: HHPS 100. Junior/Senior Standing.

HHPS 448 - Practicum in Sport Management
Hours: 3
This course is designed to give students practical work experience and supervised internal experience in Sport Management. Prerequisites: HHPS 100, 110, 305, 310. Junior or Senior standing. Instructor Approval required.

HHPS 449 - Practicum II in Sport & Recreation Management
Hours: 3
This course is designed to give students practical work experience and supervised mentorship with a sport or recreation organization. Current job-related topics, networking, and job procurement techniques will be discussed. Site must be approved by the department and internship coordinator.

HHPS 450 - Internship in Sport & Recreation Management.
Hours: 3
This course is designed to give students practical work experience and supervised mentorship with a sport or recreation organization. Current job-related topics, networking, and job procurement techniques will be discussed. Site must be approved by the department and internship coordinator. Prerequisites: HHPS 100, 110, 210, 305, 310, 316, 320, 350, 400, 410, 420. Senior Standing.

HHPS 489 - INDEPENDENT STUDIES
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

HHPS 490 - H - Honors Thesis
Hours: 3
H Honors Thesis. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisite Consent of head. Note: May be repeated when the topic varies.

HHPS 491 - H Honors Readings
Hours: 3
Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member.

HHPS 497 - Special Topics
Hours: 0-4
Organized class. May be repeated when topics vary

MATH 1314 - College Algebra
Hours: 3
This course covers an in-depth study and applications of quadratics, polynomial, rational, exponential and logarithmic functions, and systems of equations. Additional topics such as arithmetic and geometric progressions; sequences and series; and matrices and determinants are included. In order to take this course, students must meet or exceed the benchmark determined by the state for the TSI assessment, or have one of various TSI exemptions, or be concurrently enrolled in MATH 131 in the co-requisite model.

MATH 1324 - Math for Business Applications I
Hours: 3
Functions (linear, quadratic, polynomial, rational, exponential, and logarithmic), mathematics of finance (simple and compound interest, future and present value of an annuity, etc.), probability and statistics, linear programming, and systems of linear equations and matrices. To enroll in this course, students must meet or exceed the benchmark set by the state for the TSI assessment, or have one of the various TSI exemptions, or be concurrently enrolled in MATH 131 in the co-requisite model.

MATH 1325 - Mathematics for Business Applications II
Hours: 3
This course is the basic study of limits and continuity, differentiation, optimization and graphing, and integration of elementary functions, with emphasis on applications in business, economics, and social sciences. This course is not a substitute for MATH 2413, Calculus I. Prerequisites: MATH 1314 with a minimum grade of C or MATH 1324 with a minimum grade of C.

MATH 1332 - Contemporary Mathematics
Hours: 3
Intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. Topics include introductory treatments of sets and logic, financial mathematics, probability and statistics with appropriate applications. Number sense, proportional reasoning, estimation, technology, and communication should be embedded throughout the course. Additional topics may be covered. In order to take this course, students must meet or exceed the benchmark determined by the state for the TSI assessment, or have one of various TSI exemptions, or be concurrently enrolled in MATH 120 in the co-requisite model.

MATH 1342 - Elementary Statistical Methods
Hours: 3
Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Appropriate technology will be used. In order to take this course, students must meet or exceed the benchmark determined by the state for the TSI assessment, or have one of various TSI exemptions, or be concurrently enrolled in MATH 120 in the co-requisite model.

MATH 1350 - Mathematics for Teachers I
Hours: 3
This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the conceptual development of the following: sets, functions, numeration systems, number theory, and properties of the various number systems with an emphasis on problem solving and critical thinking. There will be an emphasis placed on developing an understanding of mathematics and learning how to teach these concepts to elementary-level students. Prerequisites: MATH 1314 with a minimum grade of C.

MATH 1351 - Mathematics for Teachers II
Hours: 3
This course is intended to build or reinforce a foundation in fundamental mathematics concepts and skills. It includes the concepts of geometry, measurement, probability, and statistics with an emphasis on problem solving and critical thinking. There will be an emphasis placed on developing an understanding of mathematics and learning how to teach these concepts to elementary level students. Prerequisites: MATH 1350 with a minimum grade of C and MATH 1314 with a minimum grade of C.

MATH 2305 - Discrete Mathematics
Hours: 3
A course designed to prepare math, computer science, and engineering majors for a background in abstraction, notation, and critical thinking for the mathematics most directly related to computer science.Topics include: logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, combinatorics, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques Prerequisites: MATH 2413 Calculus I with a minimum grade of C.

MATH 2312 - Pre-Calculus
Hours: 3
In-depth combined study of algebra, trigonometry, and other topics for calculus readiness. Prerequisites: MATH 1314 with a minimum grade of C.

MATH 2318 - Linear Algebra
Hours: 3
Introduces and provides models for application of the concepts of vector algebra. Topics include finite dimensional vector spaces and their geometric significance; representing and solving systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion; matrices; determinants; linear transformations; quadratic forms; eigenvalues and eigenvector; and applications in science and engineering. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 2320 - Differential Equations
Hours: 3
Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods,and boundary value problems; application of differential equations to real-world problems. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 2413 - Calculus I
Hours: 4
Limits and continuity; the Fundamental Theorem of Calculus; definition of the derivative of a function and techniques of differentiation; applications of the derivative to maximizing or minimizing a function; the chain rule, mean value theorem, and rate of change problems; curve sketching; definite and indefinite integration of algebraic, trigonometric, and transcendental functions, with an application to calculation of areas. Prerequisites: MATH 2312 with a minimum grade of C.

MATH 2414 - Calculus II
Hours: 4
Differentiation and integration of transcendental functions; parametric equations and polar coordinates; techniques of integration; sequences and series; improper integrals. Prerequisites: MATH 2413 with a minimum grade of C.

MATH 2415 - Calculus III
Hours: 4
Advanced topics in calculus, including vectors and vector-valued functions, partial differentiation, Lagrange multipliers, multiple integrals, and Jacobians; application of the line integral, including Green’s Theorem, the Divergence Theorem, and Stokes’ Theorem. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 100 - TSI
Hours: 0

MATH 120 - Foundations of Mathematics for Non-STEM Non-Algebra Majors
Hours: 3
Intended for Non STEM (Science, Technology, Engineering, and Mathematics) majors. In particular, students who are majoring in fields considered to be in the "liberal arts" (students who will not be continuing in an Algebra-intensive math pathway), and who are not TSI complete, will take this course. Course topics include: sets, Venn diagrams, basic arithmetic/algebra operations, rational expressions, exponents and radicals, evaluating formulas, Fundamental Counting Principles, Summation and subscript notation, dimensional analysis, graphing, and the beauty of mathematics. The course helps prepare students for further study in first year college level non-STEM math courses. This course is considered developmental and may not be used to satisfy any mathematics or degree requirements.

MATH 131 - Intermediate Algebra
Hours: 3
May not be used to satisfy any mathematics or degree requirements. This course covers: Basic algebraic operations, equations and inequalities, polynomials, functions, rational expressions, exponents and radicals, quadratic equations, and graphing. This course is being used as a co-requisite course to support students in their study at the level of college mathematics, specifically in College Algebra or Business Mathematics.

MATH 177 - Business Applications in Mathematics II
Hours: 3
This course includes an intense Algebra review, followed by an extensive look at derivatives in Calculus, as applied to future courses in Business. This course is intended for Business majors. Topics include an in-depth Algebra review (solving equations and systems of equations), finding derivatives, matrices, and in-depth applications problems. Prerequisites: MATH 1314 or MATH 1324 with a grade of C or better.

MATH 189 - Independent Study
Hours: 0-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: consent of department head.

MATH 289 - Independent Study
Hours: 0-4

MATH 297 - Special Topics
Hours: 0-4

MATH 301 - Introductory Geometry
Hours: 3
Topics will include plane and solid Euclidean geometry, including the properties of parallels, perpendiculars, triangles, and circles along with perimeter and formulas for area of plane regions and for the surface area and volume of solids. Prerequisites: MATH 1351 with a minimum grade of C or MATH 2414 with a minimum grade of C.

MATH 303 - Introduction to Data Science
Hours: 3
An introductory course in data science with an application in statistical software R. Students will learn about the fundamental concepts, tools and techniques to solve data driven problems. Students will also develop skills in data analysis such as preparing, cleaning, manipulating, visualization and reporting techniques along with basic statistical methods. Emphasis will be given on hands-on experience with real-world datasets and practical applications. Prerequisites: MATH 1342 - Elementary Statistical Methods or MATH 1314 - College Algebra or similar courses with grade of “C” or better.

MATH 316 - Mathematical Methods in Physics & Engineering
Hours: 3
Mathematical techniques from the following areas: infinite series; integral transforming; applications of complex variables; vectors, matrices, and tensors; special functions; partial differential equations; Green's functions; perturbation theory; integral equations; calculus of variations; and groups and group representatives. Prerequisites: MATH 2415 Calculus III or Math 314 with "C" or higher, or consent of instructor.

MATH 317 - Numerical Analysis
Hours: 3
(Same as CSCI 317) Computer algebra systems will be introduced. Topics include methods for approximate solutions of equations in one variable, polynomial approximation methods, numerical calculus, splines and accuracy acceleration, linear systems of equations, and finite differences. Prerequisites: MATH 2414 with a minimum grade of C and COSC 1436 with a minimum grade of C.

MATH 321 - College Geometry
Hours: 3
Advanced treatment of standard topics in Euclidean geometry for teachers and others using informal and axiomatic approaches. Includes proofmaking techniques, traditional and transformational geometry, finite geometries, and a brief introduction to other geometries. Prerequisites: MATH 2305 with a minimum grade of C.

MATH 325 - Partial Differential Equations
Hours: 3
This course studies the general theory of partial dierential equations with emphasis on linear equations and the basic techniques for solving initial boundary value problems involving one unknown function and one independent variable. In addition, this course will helps student understand how to model the world in terms of partial dierential equations, and how to solve those equations and interpret the solutions. Topics may include transport equation, Laplace's equation, heat equation,wave equation, application of Sturm-Liouville's theory, Fourier series/transforms, Green's functions,method of characteristics, Duhamel's principle, and maximum principle. Prerequisites: MATH 2320 with a minimum grade of C.

MATH 326 - Mathematical Modeling and Simulation
Hours: 3
An introduction to developing, solving, and validating mathematical models of real-life problems. Topics may include unconstrained and constrained growth models, epidemiological models, equilibrium analysis, stability, force and motion, predator-prey model, enzyme kinetics, data-driven models, probability distributions, and high-performance computing. Case-study approach will be implemented. Prerequisites: MATH 2415 with a minimum grade of C and MATH 2320 with a minimum grade of C.

MATH 332 - Methods of Mathematical Proofs
Hours: 3
This course trains students on mathematical proof to deepen and broaden the knowledge of various aspect of discrete mathematics that will lay a foundation for further study of many fields in mathematics including topology, analysis, number theory, abstract algebra, probability, and computer science. Topics may include: functions and relations on sets, equivalence relations and partitions of sets, mathematical theorems and proofs, Peano Axiom and natural numbers, Cardinality and Cantor's theorem, the barber's Paradox and the Axiom of Choice, Countably infinite sets and Hilbert's infinite hotel paradox, algebraic, metric and topological structures on a set. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 333 - Advanced Linear Algebra
Hours: 3
Covers real and complex vector spaces, subspaces, linear operators, eigenvalues and eigenvectors, inner product spaces, operators on inner product spaces, singular value decomposition and pseudo-inverse, canonical forms. Prerequisites: MATH 2414 with a minimum grade of C and MATH 2305 with a minimum grade of C or MATH 2318 with a minimum grade of C or MATH 332 with a minimum grade of C. Crosslisted with: MATH 531.

MATH 334 - Abstract Algebra
Hours: 3
Properties of the integers, permutations, groups, rings, integral domains and fields. Prerequisites: MATH 2305 with a minimum grade of C. Crosslisted with: MATH 550.

MATH 341 - Statistical Modeling
Hours: 3
A calculus-based course in statistical regression models with an application in R. Topics covered include: Introduction to statistical models, simple linear regression, multiple linear regression, parameter estimation, inference in linear regression models, regression diagnostics, model selection, and multicollinearity. Prerequisites: MATH 2414 with a grade of "C" or higher.

MATH 342 - Mathematics for Machine Learning
Hours: 3
This course will introduce mathematical concepts from calculus, linear algebra and optimization required for Machine Learning. Basic Machine Learning concepts including, activation functions, loss function, weights, and popular learning methods such as gradient descend and the stochastic gradient descend methods will be introduced. Prerequisites: Linear Algebra-MATH 2318 and MATH 2413-Calculus I with Min Grade of C.

MATH 361 - Mathematical Modeling of Science for Middle School I
Hours: 3
Mathematics will serve as the basis of the course and the following topics will be covered: Mathematical modeling, transformation of functions, data analysis skills, linear models, exponential growth and decay, logarithmic functions, logistic models, power and polynomial models, inverse and direct variation, periodic models and trigonometric functions. Prerequisites: MATH 1350 with a minimum grade of C.

MATH 362 - Mathematical Modeling of Science for Middle School II
Hours: 3
Mathematics will serve as the basis of the course and the following topics will be covered: Trigonometric functions and relationships, rate of change, derivative concepts, extrema and points of inflection, accumulating change, concepts of the definite integral, finite difference equations. Technology will be a vital part of the course. Prerequisites: MATH 361 with a minimum grade of C.

MATH 371 - Science and Math Education Theory and Practice
Hours: 1
Learning theory and teaching practices for science learning assistants. Topics include questioning strategies, conceptual development, formative assessment, argumentation, metacognition, and nature of science. Prerequisites: Instructor permission. Crosslisted with: PHYS 371, CHEM 371, BSC 371.

MATH 372 - Mathematics Structures and Applications
Hours: 3
A study of the algebraic processes, polynomials, equations, inequalities, functions, graphs, and mathematics of finance. Prerequisites: MATH 1351 with a minimum grade of C or MATH 2414 with a minimum grade of C.

MATH 380 - Mathematics History
Hours: 3
A survey of the history of mathematics; attention will be given to the origin, development and importance of mathematical ideas. Prerequisite: MATH 301.

MATH 389 - Independent Study
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: consent of department head.

MATH 397 - Special Topic
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary

MATH 402 - Mathematical Statistics I
Hours: 3
A calculus-based course in statistics. Topics covered include probability and its properties; discrete random variables and their probability distributions; continuous random variables and their probability distributions; joint probability distributions; sampling distributions and central limit theorem; one- and two-sample point and interval estimation problems; test of hypotheses; and other topics as time allows. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 403 - Mathematical Statistics II
Hours: 3
A calculus-based course in statistical inference. Topics covered include functions of random variables - moment generating functions; methods of point estimation; correlation; simple and multiple linear regression; ANOVA; Bayesian statistics; and other topics as time allows. Prerequisites: MATH 402 (Mathematical Statistics I) or similar statistics courses with a minimum grade of C.

MATH 411A - Real Analysis I
Hours: 3
Properties of real numbers, continuity, differentiation, integration, sequences, and series of functions. Prerequisites: MATH 2415, or Math 314 with a minimum grade of C, or Consent of Instructor.

MATH 426 - History of Mathematics
Hours: 3
Selected topics in the history of mathematics; the growth of algebra, trigonometry, geometry, and the calculus; the contribution of different cultures; selected biographies of mathematicians. Prerequisites: MATH 2414 with a minimum grade of C or consent of Instructor.

MATH 436 - Real Analysis
Hours: 3
Real number system; sequences and series; limit, continuity and differentiation; sequences and series of functions; uniform convergence; the Riemann integral, proofs in real analysis. Prerequisites: MATH 2414 Min Grade C and MATH 2305 with a minimum grade of C. Crosslisted with: MATH 511.

MATH 437 - Number Theory
Hours: 3
Mathematical induction, divisibility, prime numbers, congruences, factorization, arithmetic functions, quadratic reciprocity, primitive roots, diophantine equations. Prerequisites: MATH 2305 with a minimum grade of C.

MATH 438 - Complex Analysis
Hours: 3
This course covers one-dimensional complex analysis, including complex numbers, elementary complex functions, analytic functions, Mobius transformations, integration in the complex plane, and infinite series of complex numbers and variables. Prerequisites: MATH 2415 with a minimum grade of C. Crosslisted with: MATH 538.

MATH 439A - Functions Complex Variables I
Hours: 3
Geometry of complex numbers, mapping, analytic functions, Cauchy-Riemann conditions, complex integration. Taylor and Laurent series, residues. Prerequisites: MATH 436 or MATH 438 with a minimum grade of C, or Consent of Instructor.

MATH 440 - Topology
Hours: 3
Ordinals and cardinals, topology of the real line, metric spaces, topological spaces, sequences, continuity and homeomorphisms on topological spaces. Prerequisites: MATH 2305 with a minimum grade of C or MATH 2414 with a minimum grade of C. Crosslisted with: MATH 522.

MATH 453 - Essentials of Statistics
Hours: 3
Techniques of statistical applications concerning descriptive statistics, tests of hypothesis, regression and analysis of variance. Prerequisite MATH 1314 or above with a minimum grade of C.

MATH 454 - Introduction to Sports Analytics
Hours: 3
An introductory course in sports analytics with a focus on using the R programming language. Students will learn fundamental concepts, techniques, and tools used to analyze sports data, evaluate player performance, optimize game strategies, and make data-driven decisions in sports management. Throughout the course, we will conduct exploratory data analysis, correlations, ANOVA, regression models, as well as non-parametric statistical models commonly implemented in pro sports. Prerequisites: MATH 403 - Intro to Mathematical Statistics or MATH 303 - Intro to data science or similar courses with grade of “C” or better.

MATH 460 - Math for Secondary Teachers
Hours: 3
Mathematics for Secondary Teachers. Three semester hours. Exploration of problems in algebra, trigonometry, analytic geometry, calculus, Euclidean geometry, probability, statistics and discrete mathematics using technology. The course is intended as a capstone study for prospective secondary teachers of mathematics. Graphing calculators and computers will be employed to illustrate and encourage conjecturing and problem solving with an emphasis on applications. In addition, a brief survey will be made of major documents and resources pertinent to secondary mathematics teachers, such as the NCTM Standards. Prerequisites: MATH 2414 with a minimum grade of C.

MATH 486 - Image Processing with Applications
Hours: 3
This course will introduce students to image processing and image enhancement by applying mathematical methods in the spatial domains – first and second derivatives and the gradient; Image Restoration; Transformation, and applications will be introduced. Skills for working with image processing (IP) algorithms and tools including development and coding IP algorithms will be introduced. Prerequisites: MATH 2414-Calculus II with Min Grade of C.

MATH 489 - Independent Study
Hours: 1-4
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. May be repeated when the topic varies. Prerequisite: consent of department head.

MATH 490 - H Honors Thesis
Hours: 3
H Honors Thesis Hours: 6 Individualized instruction/research at an advanced level in a specialized content area under the direction of a faculty member. Prerequisite Consent of head. Note May be repeated when the topic varies.

MATH 491 - H Ind Honors Readings
Hours: 3
Hours: One to four - Organized class Note May be graded on a satisfactory (S) or unsatisfactory (U) basis. May be repeated when topics vary

MATH 497 - Special Topics
Hours: 0-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.