

# EXERCISE AND HEALTH SCIENCE

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**Department Chair:** Donald Fischer

**Faculty:** Eric Belt, Kathryn Cardwell, Donald Fischer, Trista Olson, Emily Willaert

**Instructors:** Jeremy Karger-Gatzow, Eric Kohn, Erin Ross, Justin Rost

Exercise science is a broad discipline that examines the biological, mechanical, sociocultural, and behavioral aspects of human movement with primary application to human health, exercise, and sport performance. Students completing the Exercise and Health Science degree will study how and why humans engage in and respond to physical activity through an academic skills-based curriculum that promotes ethical, client-centered, and evidence-based decision making. Through integrative and interdisciplinary courses, rich undergraduate research experiences, and meaningful internship and service opportunities, students gain valuable real-world experience and practice the skills necessary to function effectively as exercise and health professionals.

The Exercise and Health Science program prepares students for a variety of careers or graduate study in exercise or health related fields. Examples of careers Exercise and Health Science majors may pursue include strength and conditioning, personal training, coaching, and corporate wellness. In addition, Exercise and Health Science majors may pursue a post-graduate education in fields such as physical therapy, occupational therapy, athletic training, medicine, clinical exercise physiology, sport and exercise psychology, and public health. Students should consult with their department advisor to select courses most appropriate for their intended career or graduate education.

## Assessment

The Exercise Science and Sport Studies Department is committed to the process of academic assessment as a method to enhance student learning and assure achievement of the learning outcomes. Each learning outcome is introduced in the first or second year, reinforced multiple times in subsequent courses, and directly assessed as part of the capstone course. Formative assessment of each learning outcome is administered at least once to provide students feedback on their progress toward achieving the learning outcome. Surveys of senior students and graduates provide an indirect assessment of student learning and achievement of the learning outcomes.

## Majors

- Exercise and Health Science Major (<https://catalog.csbsju.edu/catalog/academic-departments/exercise-health-science/exercise-health-science-major/>)

## Minors

- Exercise and Health Science Minor (<https://catalog.csbsju.edu/catalog/academic-departments/exercise-health-science/exercise-health-science-minor/>)

### EXHS 111 Introduction to Exercise and Health Science (4 Credits)

In this course, students will be introduced to the discipline of exercise science and its application to health science, sports, and physical activity. Students will examine a wide range of exercise science topics, including foundational concepts of the subdisciplines, professionalism, ethics, certification and licensure, career opportunities, and evidence-based practice.

**Prerequisites:** None

**Attributes:** Benedictine Raven (BN)

### EXHS 203 Coaching Methods (2 Credits)

In this course students will learn best practices for coaching and teaching sport skills, as well as creating effective practice plans. Students will practice analyzing exercise and sport techniques, identifying errors, and providing effective feedback. Students enrolled in this course will actively participate in coaching sessions with peers. A-F grading only. Fall and Spring.

**Prerequisites:** None

**Equivalent courses:** ESSS 203, PHED 203

### EXHS 204 Sport Nutrition (2 Credits)

In this course students will discuss and apply the role of various nutrients in sport performance and body composition for athletes. Issues related to drug and supplement use as well as their legality and effects on performance will also be addressed. A-F grading only. Fall and Spring.

**Prerequisites:** None

**Equivalent courses:** ESSS 204, PHED 204

### EXHS 210 Functional Human Anatomy (2 Credits)

In this course, students will examine the macroscopic structure and function of bones, joints, and muscles, and how these structures contribute to human movement. Spring.

**Prerequisites:** None

### EXHS 211 Exercise Science Laboratory Skills (2 Credits)

Competency in laboratory testing and techniques is important for collecting high quality data. In this course, students will develop competency in performing lab skills used by exercise and health scientists. Students will learn to measure physiological variables at rest and during exercise, how to perform maximal and submaximal exercise testing, proper blood draw and safety procedures, the importance of data confidentiality, and common techniques for quantifying physical activity.

**Prerequisites:** EXHS 111

### EXHS 220 Sport Identity (4 Credits)

This course examines personal identity and how it intersects/interacts with cultural and gender roles related to sport experiences. Students will understand that sport serves as a lens that reflects and defines societal roles, beliefs and values. Historical, political and economic views/events will be compared/contrasted with contemporary American sport culture. Underrepresented ethnic groups, physical abilities and gender identity will be discussed in relation to sport representation/power. Intercultural communication and personal bias regarding others will also be discussed. Students will learn to discuss, collaborate with peers and orally present well-researched course related topics to the larger class. Fall.

**Prerequisites:** None

**Attributes:** CSD: Identity (CI)

**EXHS 230 Sports Injury Management I (2 Credits)**

In the context of preparing students to become effective, athlete-centered athletic coaches, part one of the two course sequence provides a foundation for best practices in the preparation for, and prevention, recognition, and care of, sports related emergency situations. The skills taught in this course do not replace professional medical help but offer guidelines and techniques for recognizing and managing emergency conditions until advanced medical help arrives.

**Prerequisites:** None

**Equivalent courses:** ESSS 230

**EXHS 231 Sports Injury Management II (2 Credits)**

In the context of preparing students to become effective, athlete-centered athletic coaches, part one of the two course sequence provides a foundation for best practices in the prevention, recognition, and care of sports related emergency situations. The skills taught in this course do not replace professional medical help but offer guidelines and techniques for recognizing and managing emergency conditions until advanced medical help arrives.

**Prerequisites:** EXHS 230 or ESSS 230

**Equivalent courses:** ESSS 209, ESSS 231

**EXHS 271 Independent study (4 Credits)**

Supervised reading or research at the lower-division level. Approval of department chair required. Not available to first-year students.

**Prerequisites:** None

**Equivalent courses:** ESSS 271, PHED 271

**EXHS 299 Research Practicum (1-4 Credits)**

The student will work jointly with a faculty member in conducting a faculty-designed research project. The course is repeatable for a maximum of four total credits in the department. Prerequisite: Permission of instructor.

**Prerequisites:** None

**Equivalent courses:** ESSS 299

**EXHS 302 Clinical Healthcare: Theory and Application (4 Credits)**

Introduction to the field of clinical assessment of athletic injury and pathology. This course will cover evaluation protocols, initial and progressive management, and principles of rehabilitation. The course includes a laboratory for skill acquisition in hands-on musculoskeletal function evaluation focusing on functional anatomy and the use of special tests to augment evaluation. Prerequisites: EXHS 111 and [EXHS 210 or BIOL 325]. Spring of even years.

**Prerequisites:** EXHS 111 and (EXHS 210 or BIOL 325)

**Corequisites:** EXHS 302L

**EXHS 302L Laboratory (0 Credits)**

**Prerequisites:** None

**Corequisites:** EXHS 302

**EXHS 303 Physical Activity Epidemiology (4 Credits)**

Physical activity epidemiology uses large population-based studies to link behavioral, environmental, and other factors that influence physical activity to health outcomes. This course will use an evidence-based approach to examine how we understand factors that influence health and efforts to increase physical activity. Students will examine methods to assess health as well as subjective and objective methods to measure physical activity, inactivity, and health behaviors. Students in this course will also study basic epidemiological research design including strengths and weaknesses through critical review of major studies. Students will also examine and critique current public health intervention efforts to increase physical activity at the individual and population levels.

**Prerequisites:** (ESSS 111 or EXHS 111) and EXHS 379A

**EXHS 306 Biomechanics (4 Credits)**

In this course, students will explore, integrate, and apply basic mechanical principles that influence human motion in everyday life. Concepts that will be discussed during this course include force and torque (kinetics), linear and angular motion (kinematics), and mechanical characteristics of some biological tissue. Students will also access, read, and evaluate primary research and then synthesize findings to arrive at evidence-based decisions. The laboratory component of the course will emphasize analytical thinking and problem-solving skills through the qualitative and quantitative assessment of human movement.

**Prerequisites:** EXHS 111 and EXHS 379A and (EXHS 210 or BIOL 325)

**Corequisites:** EXHS 306L

**Equivalent courses:** ESSS 306, PHED 306

**Attributes:** Natural World (NW)

**EXHS 306L LABORATORY (0 Credits)**

**Prerequisites:** None

**Corequisites:** EXHS 306

**Equivalent courses:** ESSS 306L, PHED 306L

**EXHS 308 Exercise Physiology (4 Credits)**

In this course students will advance their understanding of the human body's physiological response to exercise. Topics include acute responses and chronic adaptations of the muscular, cardiovascular, respiratory, endocrine, and bioenergetics systems to exercise induced stress. Environmental influences on performance and sex differences will also be explored. In the laboratory portion of the course students will practice the scientific method by assessing physiological capacities using the laboratory assessment methods. Prerequisites: EXHS 211, EXHS 379A and [EXHS 258 or BIOL 216 or BIOL 326]. Fall.

**Prerequisites:** EXHS 211 and (EXHS 379A or EXHS 379B) and (EXHS 258 or BIOL 216 or BIOL 326)

**Corequisites:** EXHS 308L

**Equivalent courses:** ESSS 308, PHED 308

**Attributes:** Natural World (NW)

**EXHS 308L LABORATORY (0 Credits)**

**Prerequisites:** None

**Corequisites:** EXHS 308

**Equivalent courses:** ESSS 308L, PHED 308L

**EXHS 310 Principles of Strength Training and Conditioning (4 Credits)**

Students will develop a functional understanding of exercise science as it applies to strength training and conditioning. Exercise science concepts and principles will be applied to assess human performance, and to design evidence-based exercise programs. In the laboratory portion of the course, students will develop a practical understanding of the principles of test selection and administration, and the principles used to effectively instruct physically active individuals in safe and effective exercise technique. Prerequisites: EXHS 258 or BIOL 216 or BIOL 325. Spring of odd years.

**Prerequisites:** (EXHS 258 or ESSS 258) or BIOL 216 or BIOL 325

**Corequisites:** EXHS 310L

**Equivalent courses:** ESSS 310

**EXHS 310L LABORATORY (0 Credits)**

**Prerequisites:** None

**Corequisites:** EXHS 310

**Equivalent courses:** ESSS 310L

**EXHS 323 Sport in a Diverse Society (4 Credits)**

Students will examine how sport serves as a microcosm of the greater world and how it is a prism through which larger cultural and gender-related issues, values and beliefs can be studied. Historical, political and economic views will be addressed along with LGBTQIA+ issues, Title IX, and feminist perspectives as they intersect with all levels of sport. Students will learn about their own personal culture and other cultures and sub-cultures. Intercultural communication, questions related to justice, and personal bias regarding others will also be explored.

**Prerequisites:** You must take EXHS 111 prior to taking EXHS 323. Before taking a Cultural and Social Difference: Systems Courses (CS) you first must complete the following Integrations requirements; Learning Foundations (LF), Theological Encounter (TE), and Cultural and Social Difference: identity (CI).

**Attributes:** CSD: Systems (CS)

**EXHS 324 Sports and Exercise Psychology (4 Credits)**

In this course, students will examine psychological theories and concepts as they apply to exercise and sport participation and performance. Students will use critical thinking and evidence-based decision-making skills to examine issues and solve problems related to sport and exercise psychology. Students will also discuss professional and ethical issues and apply ethical decision-making skills to the practice of sport psychology. Prerequisite: EXHS 379A or PSYC 235. Spring.

**Prerequisites:** EXHS 379A or PSYC 235

**Attributes:** Social World (SW), Thematic Encounter3 - Truth

**EXHS 371 Independent Study (1-4 Credits)**

Supervised reading or research at the upper-division level. Approval of department chair and completion and/or concurrent registration of 12 credits within the department required. Not available to first year students.

**Prerequisites:** None

**Equivalent courses:** ESSS 371

**EXHS 373 SPECIAL TOPICS IN EXHS (1-4 Credits)**

**Prerequisites:** None

**EXHS 379A Research Methods in Exercise and Health Science - Natural World (4 Credits)**

This course emphasizes the search for truth and the ways in which this search is conducted. Students will be introduced to the wide continuum of research methodologies and experimental designs used in the fields of exercise science and health. Students will study each step of the scientific process with emphasis on the elements leading up to data collection, including identifying relevant background literature, critical reading of scholarly literature, developing a research question, and creating ethical and appropriate research methods. The course includes a detailed examination of different research methods, and basic descriptive and inferential statistics. Research ethics and the role of the Institutional Review Board in protecting the rights of human subjects will also be discussed.

**Prerequisites:** You must take EXHS 111, Math 124 or Psych 221, and INTG 100 or 200 as well as a Cultural and Social Difference: Identity (CI) course prior to taking EXHS 379A.

**Equivalent courses:** EXHS 301, EXHS 379B

**Attributes:** Natural World (NW), Thematic Focus - Truth

**EXHS 379B Research Methods in Exercise and Health Science - Social World (4 Credits)**

This course emphasizes the search for truth from a social science perspective and the ways in which this search is conducted. Students will be introduced to the wide continuum of research methodologies and experimental designs used in the fields of exercise science and health. Students will study each step of the scientific process with emphasis on the elements leading up to data collection, including identifying relevant background literature, critical reading of scholarly literature, developing a research question, and creating ethical and appropriate research methods. The course includes a detailed examination of different research methods, and basic descriptive and inferential statistics. Research ethics and the role of the Institutional Review Board in protecting the rights of human subjects will also be discussed.

**Prerequisites:** You must take EXHS 111, Math 124 or Psych 221, and INTG 100 or 200 as well as a Cultural and Social Difference: Identity (CI) course prior to taking EXHS 379B.

**Equivalent courses:** EXHS 301, EXHS 379A

**Attributes:** Social World (SW), Thematic Focus - Truth

**EXHS 390 Sport Ethics (4 Credits)**

This course introduces students to a variety of theories of moral reasoning, ethical and unethical behavior in sport, and the development of moral education through sport. Students will engage in learning about how they should act in order to support the moral foundation necessary for sport to function effectively while examining actions that would be considered just or unjust. Students will wrestle with questions such as "how should I act" or "what type of an athlete, coach, official, manager, fan or parent should I be" through readings and discussions. Decision-making models based on moral reasoning theory and other principles of strategic reasoning will be employed as students navigate case studies and issues related to sport. Fall.

**Prerequisites:** None

**Restrictions:** Enrollment limited to students with a class of Junior, Sophomore or Senior.

**Equivalent courses:** ESSS 390

**Attributes:** Cmnty Engaged Learning Req, Human Experience (HE), Thematic Encounter3 - Justice

**EXHS 394 Research Design (2 Credits)**

This course assists students in designing and completing a proposal for an independent or group research project in exercise and health science. Students will integrate theoretical concepts from previous exercise and health science coursework to formulate a research question, conduct a background literature review, and develop appropriate and ethical methods for data collection. Students will complete and present the full proposal within the context of the course. To enroll in the course, students must submit an Independent Learning Project application.

**Prerequisites:** EXHS 379A

**EXHS 395 Research Seminar I (1 Credit)**

Students in this course will continue the work they began in EXHS 394 Research Design, including finalizing research proposals and applying for Institutional Review Board review, if necessary. Students will pilot their procedures and begin data collections for their research projects. Students will communicate their ideas, challenges, and progress to class colleagues throughout the semester. Throughout the research process, students will be asked to reflect upon the process, on how their project has integrated their previous coursework, and how performing research has changed their perspectives on health and human performance. To enroll in the course, students must submit an Independent Learning Project application.

**Prerequisites:** EXHS 394

**Equivalent courses:** ESSS 395

**EXHS 396 Research Seminar II (1 Credit)**

Students on this course will continue the data collection process for research projects started in EXHS 395. Students will communicate their ideas and progress to class colleagues. After data collections, students will analyze data and interpret the results. Conclusions will be drawn from the results and the final projects will be presented on or off campus. Throughout the research process, students will be asked to reflect upon the process, on how their project has integrated their previous coursework, and how performing research has changed their perspectives on health and human performance. To enroll in the course, students must submit an Independent Learning Project application.

**Prerequisites:** EXHS 395 or ESSS 395

**Equivalent courses:** ESSS 396

**Attributes:** Experiential Engagement (EX)

**EXHS 397 Internship (1-4 Credits)**

A supervised experience in a health or exercise field that fulfill the Capstone requirements for the Exercise and Health Science major. An opportunity to apply knowledge and skills under direct supervision of a site supervisor in an approved setting. Prerequisites: approval of the department chair and a faculty moderator; completion of the pre-internship Legal and Professional Issues seminar. A completed Internship Learning Contract form is required to enroll in the course.

**Prerequisites:** None

**Equivalent courses:** ESSS 397, ESSS 397A, EXHS 397A, PHED 397, PHED 397A

**Attributes:** Experiential Engagement (EX)

**EXHS 397A NON-CAPSTONE INTERNSHIP (1-4 Credits)**

A supervised experience in a health or exercise field that promotes the integration of theory with practice. An opportunity to apply knowledge and skills under direct supervision of a site supervisor in an approved setting. Prerequisites: approval of the department chair and a faculty moderator; completion of the pre-internship Legal and Professional Issues seminar. A completed Internship Learning Contract form is required to enroll in the course.

**Prerequisites:** None

**Equivalent courses:** EXHS 397

**Attributes:** Experiential Engagement (EX)