

# Doctor of Science in Health Science Human and Sport Performance



ROCKY MOUNTAIN  
UNIVERSITY of  
HEALTH PROFESSIONS

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## Curriculum

The vision of Rocky Mountain University of Health Professions (RMUoHP) is to become widely recognized for excellence in healthcare education. The Doctor of Science (DSc) in Health Science with concentration areas in Athletic Training, Clinical Electrophysiology, Health Promotion and Wellness, Human & Sport Performance, and Neurologic Rehabilitation prepare and support students to complete an academic terminal doctoral degree which can provide opportunities for employment in institutions of higher education, healthcare and research clinics, hospital settings and other healthcare venues. The DSc in Health Sciences prepares stewards of healthcare disciplines.

Each concentration is committed to the development of lifelong scholars who can conduct, evaluate, publish, present and integrate research findings into their daily academic agenda and/or clinical practice; act in leadership roles in their discipline and community; provide the highest level of intervention to their patients/clients; and participate in undergraduate and graduate education environments to effectively teach the next generation of evidence-based clinicians, scholars and educators in academic and healthcare programs.

The program is designed for practitioners and educators to continue professional work obligations during the program while attending eight semesters of didactic work followed by qualifying exams and completion of a dissertation. The dissertation emphasizes the application of scientific principles related to the application of evaluation, intervention and research of clinically related issues of inquiry seen in healthcare and education. Dissertation committee members are known experts in the field from across the United States with members of the RMUoHP faculty providing guidance and support.

## Degree Objectives

The DSc in Health Science Program is committed to the development of the healthcare professional who can:

- Conduct and disseminate evidence-based sound, ethical, cost-effective scholarship;

- Make significant and relevant contributions to the current body of scientific knowledge in the discipline;
- Develop knowledge expertise in the area of dissertation interest;
- Develop and deliver instructional designs, strategies and curriculum based upon best practices in the scholarship of teaching and learning.
- Influence ethical and legal management of healthcare through education of providers, consumers, and society at large;
- Enhance leadership abilities, including competence in the roles of clinician, researcher, educator, and leader;
- Describe and distinguish the various theories associated with the concentration area and develop advanced evidence-based practice knowledge.

## **Curriculum**

**Core Courses:** All students are required to complete a set of core research courses including evidence based practice, quantitative and qualitative inquiry, biostatistics, epidemiology as well as required theory courses. These courses provide the foundation for the dissertation phase and research process.

**Concentration Courses:** Students are required to select a concentration area before enrolling in the DSc program. Concentration courses provide further knowledge, skills and abilities essential to advanced clinical practice and support research areas students often pursue.

## **Concentrations:**

- Athletic Training
- Clinical Electrophysiology
- Health Promotion & Wellness
- Human & Sport Performance
- Neurologic Rehabilitation
- Pediatric Science

## **Admission Requirements**

1. A master's or professional practice degree beyond the baccalaureate from an accredited college or university.
2. Grade point average of 3.2 (on a 4.0 scale) on all work completed during the Master's or professional practice degree (i.e, DPT, PA).
3. Possess writing and oral communication skills sufficient to conduct and deliver the results of meaningful research. Must submit an essay that includes current personal, intellectual and professional interests and why the student is applying to the degree program.
4. Submit a current Curriculum Vitae.
5. Possess information technology skills sufficient to effectively participate in RMUoHP's DSc program and effectively conduct research.
6. Have successfully completed, with a grade of B- or better, at least one course in Research Methods or Statistics at the Master's or higher level.
7. Prefer a minimum of one (1) year in clinical practice.

\*Exceptions to these criteria will be considered on a case-by-case basis with consultation of the concentration director.

### **Concentration – Human and Sport Performance**

The Human and Sport Performance concentration includes a multidisciplinary focus with courses designed to increase the student's competency and knowledge base in the various disciplines of exercise science, injury prevention, health, and sport or occupational performance. The core courses and directed independent study courses are designed to expand scientific inquiry and outcomes assessment, enhance research and consultation skills, and improve teaching and administrative skills, and offers expanded study in the advanced skills of applied sport science, human performance evaluation, strength and conditioning methods, training program design for various populations, the use of advanced coaching theories and strategies, advanced nutrition, and the development and use of technology in various areas of sport and occupational performance.

The program is designed to enable practitioners to continue professional work obligations during the didactic portion of the program while completing eight semesters, consisting of online and blended course work. Students engage in readings, assignments, threaded discussions, group activities well as attend on campus face-to-face interaction with peers and mentors in a traditional classroom setting. During the blended terms students travel to campus for 4-6 days of immersion experiences. Courses noted "Online" have no on-site days allotted. For all courses, students complete coursework throughout the entire semester. A written qualifying examination and dissertation are required following the didactic portion of the curriculum.

The Human and Sport Performance is committed to the development of an individual who can:

- Integrate current best practices into the evaluation of sport performance
- Modify practice strategies to optimize changing practice environments;
- Effectively educate patients/clients, families, students, other healthcare professionals and the general public;
- Effectively interact with other members of the healthcare system and/or performance team to support human performance enhancement;
- Review, use and critique research literature;
- Conduct methodologically sound clinical and applied research;
- Impact the future to enhance and ensure quality human performance intervention strategies.

### **\*Eligibility Requirements:**

1. A Master's degree in an area related to human performance, exercise science, kinesiology or other allied health programs.

## Program Module Calendar

	Start Date	On-site Dates	End Date
Semester 1 Sum 2017	May 8, 2017	June 7-11, 2017	August 25, 2017
Semester 2 Fall 2017	September 5, 2017	ONLINE	December 22, 2017
Semester 3 Win 2018	January 8, 2018	March 1-4, 2018	April 27, 2018
Semester 4 Sum 2018	May 7, 2018	ONLINE	August 24, 2018
Semester 5 Fall 2018	September 4, 2018	November 2-6, 2018	December 21, 2018
Semester 6 Win 2019	January 7, 2019	February 27-March 3, 2019	April 26, 2019
Semester 7 Sum 2019	May 6, 2019	June 14-16, 2019	August 23, 2019
Semester 8 Fall 2019	September 3, 2019	November 1-3, 2019	December 20, 2019
Semester 9 Winter 2020	Dissertation	CC 833A	
Semester 10 Summer 2020		CC 833B	
Residency		Student must register for Residency Credit (CC 877A, CC 877B, etc.) each semester until dissertation is completed & minimum credit requirement for program is attained.	
Eight-year deadline from start of program is May 8, 2025			

## Semester 1

(7 credits)

Start Date	On-site Dates	End Date
May 8, 2017	June 7-11, 2017	August 25, 2017

### **HS 710 Evidence-based Practice (3 credits; 2 days On-site)**

This course is designed to prepare healthcare professionals with the knowledge, skills and abilities necessary to make independent judgments about the validity of clinical research and to implement evidence-based clinical practice in their careers. This course will focus on the concepts of evidence-based practice with emphasis on forming answerable clinical questions and effective literature search strategies. The evaluative approach to appraising the research literature will prepare the students to judge the evidence on: 1) the accuracy and validity of diagnostic tests and the application of important diagnostic tests in the care of a specific patient; 2) the effectiveness of clinical interventions; 3) the natural history of health-related conditions; 4) risk of harm from select preventative and therapeutic interventions. Based on presentation of case scenarios, students will be required to formulate the key question(s), rapidly search medical and health-related databases, appraise the evidence with a critical analysis and describe application of the evidence in a clinical context. Instructor: Patrick McKeon, PhD, ATC, CSCS; Jennifer McKeon, PhD, ATC, CSCS

### **HS 712 Research Methods: A Quantitative Approach (3 credits; 2 days On-site)**

This course provides an introduction to general research principles and research ethics. The student will be introduced to the following topics in the research process: question formulation, principles of measurement, basic design and methodological features, issues of reliability and validity, and fundamentals of conducting a literature review. A quantitative article critique will be conducted in class and outside of class. The class format will include lecture, small group discussion, and practice. Instructor: Douglas Powell, PhD, CSCS, TASC-F

### **HS 714 Scientific/Professional Writing (1 credit; Online)**

This pass/fail course reviews PubMed, Index Medicus, other search methodologies, American Medical Association Manual of Style editorial format, the composition of a scientific/professional manuscript, and the style of Scientific/professional writing, its construction and formats. Instructor: Lori Thein Brody, PhD, PT, SCS, ATC

## Semester 2

(5 credits)

Start Date	On-site Dates	End Date
September 5, 2017	ONLINE	December 22, 2017

### **HS 760 Instructional Technology (2 credits; Online)**

This course identifies, explores, and practices the use of instructional technology in the design and delivery of online, blended, and traditional classroom learning environments. Best practices for online and blended course design and strategies for online instructional delivery will be discussed. Current instructional technologies utilized in the 21<sup>st</sup> century higher education classroom will be systematically design, created, shared, and reviewed. Instructor: Jan Reese, MS

### **HP 702 Applied Sports Science (3 credits; Online)**

This course reviews the various disciplines that play important roles in sports performance enhancement including biomechanics, motor learning, exercise physiology, and sport psychology. In addition, sociological aspects will be discussed regarding applications of science to different populations including athletes and tactical personnel. Applied projects will assist the student in taking foundational knowledge and applying it to real world sports scenarios to solve problems, enhance training, reduce injuries, or improve performance. Lecture, discussion, and presentation by student. Instructor: Brad Schoenfeld, PhD, CSCS, CSPS, FNSCA

## Semester 3

(6 credits)

Start Date	On-site Dates	End Date
January 8, 2018	March 1-4, 2018	April 27, 2018

### **HS 720 Survey of Qualitative Research (3 credits; 2 days On-site)**

This course introduces the student to qualitative research methods and their applications to problems and phenomena in healthcare. Emphasis is placed on the appropriate use and differences of qualitative methods, their philosophical underpinnings, and application to clinical issues. Instructor: Angela R. Merlo, PT, DPT, PhD

### **HS 722 Biostatistics 1 (3 credits; 2 days On-site)**

The purpose of this course is to introduce the student to biostatistics, the science of evaluating information in a biological setting. Such topics as simple descriptive statistics, basic probability concepts, probability distributions (normal & binomial), sampling distributions, and an introduction to t-distributions will be covered. Instructor: Tom Cappaert, PhD, ATC, CSCS

## Semester 4

(6 credits)

Start Date	On-site Dates	End Date
May 7, 2018	ONLINE	August 24, 2018

### **HS 732 Biostatistics 2** (3 credits; Online)

The purpose of this course is to build upon the topics introduced in Biostatistics 1. This course will cover such topics as interval estimation, confidence intervals, hypothesis tests, and one and two-sample t-tests. *Prerequisite:* HS 722. Instructor: Tom Cappaert, PhD, ATC, CSCS

OR

### **HS 734 Qualitative Research 2** (3 credits; Online)

This course is the second in a two-course sequence on qualitative research methods that extends and elaborates on the topics covered in HS 720. Major approaches used in conducting qualitative research and the application of these methods to problems and phenomena in healthcare will be examined. The emphasis of the course is on the collection, management, analysis, and interpretation of qualitative data. Exploration and application of topics such as sampling, interviewing and observation techniques, data analysis methods, and reporting of qualitative research will be addressed. Evaluation and critique of research studies utilizing qualitative methods will also be examined. *Prerequisite:* HS 720. Instructor: Angela R. Merlo, PT, DPT, PhD

### **HP 610 Advanced Sport Performance Technology** (3 credits; Online)

This course will focus on technologies that have been developed to reach human interests or goals related to a particular sport. It will focus on the types, and appropriate selection and use of technology by which sport performance coaches attempt to improve training and competitive surroundings and enhance overall athletic performance. The course will provide knowledge and application of using specialized equipment and the latest modern technologies to perform tasks more efficiently, such as equipment, athletic sports gear (clothing and footwear), advanced computer stimulations and motion capture. Instructor: Bryan Mann, PhD, CSCS, FNCSA

## Semester 5

(9 credits)

Start Date	On-site Dates	End Date
September 4, 2018	November 2-6, 2018	December 21, 2018

### **HS 730 Epidemiologic Methods** (3 credits; 1.5 days On-site)

This course will introduce the student to important epidemiological methodology/concepts commonly used in evidence-based practice/medicine. The course will focus on the common observational designs, and common measures of disease frequency, risk association, and validity of diagnostic tests. The use and

construction of receiver operating curves will be discussed. The course will also include an introduction into logistic regression and survival analysis methods in how they apply to disease outcomes/disorders. Students will conduct and apply basic epidemiological concepts using statistical software, and learn how to design and develop. The student will be provided with information to aid in data collection and management. *Prerequisite: HS 710.* Instructor: Jason Brummitt, PT, PhD, ATC, CSCS

**HS 727      Survey Mixed Methods Research      (3 credits; 1 day On-site)**

This course will familiarize students with theory and application of survey research design and methods with integration of a mixed methods approach. Students will learn the principles and practices of conducting survey research including: accounting for and reducing sources of error, designing appropriate sampling strategies, assessing the reliability and validity of self-constructed questionnaires and interview protocols, administering surveys through various means and analyzing and reporting results of survey research. How to integrate qualitative inquiry with survey research to develop and conduct a mixed method study including writing results will be emphasized. Instructor: Leamor Kahanov EdD, ATC, LAT

**AT 631      Motor Control and Movement Analysis      (3 credits; 2 days On-site)**

Discussion and analysis of scientific principles related to the mechanical understanding of motor control and the human body in motion. Review of related literature and research in motor learning and control. The focus of this course will be on qualitative analysis of motor assessment as related to musculoskeletal assessment and physiotherapy interventions. Instructor: Kathryn B. Schwartzkopf-Phifer, DPT, OCS, CSCS; Kyle Matsel PT, DPT, SCS, CSCS

## Semester 6

(8 credits)

Start Date	On-site Dates	End Date
January 7, 2019	February 27-March 3, 2018	April 26, 2019

**HP 704      Methods and Programming in Strength and Conditioning      (3 credits; 2 days On-site)**

This course will expose students to advanced methods in various venues of strength and conditioning. Current research and practice are examined for advanced training strategies in use at different levels of competition. Students will examine different methods currently in use in the field and discussed in the literature on selected topics and demonstrate appropriate implementation of advanced training methods. Additionally, this course will refine the students' ability to construct an advanced training program designed to enhance performance in specific ways. The student will demonstrate the ability to critically analyze and alter a training program. Instructor: Tony Moreno, PhD, CSCS



**HS 740 Teaching and Learning Theory (3 credits; 2 days On-site)**

This course incorporates a learner centered approach to course development and instructional delivery based on the best evidence of how people learn. Students will demonstrate both traditional and innovative instructional techniques and strategies for teaching in didactic and clinical settings based upon the evidence-base of best teaching practices. Instructor: Malissa Martin, EdD, ATC

**HS 800 Dissertation Prep I (2 credits; 1 day On-site)**

The conduct of scientific inquiry requires careful planning and forethought to assure the eventual implementation of a study will successfully result in interpretable and meaningful measurements and that valid conclusions may be drawn. This course will provide students with the necessary background and experience to formulate a clearly delineated hypothesis/research question-driven dissertation prospectus that can be used to convince funding agencies and/or doctoral committees to support the study. Emphasis will be placed on developing a clear background, scientific/clinical rationale, and hypothesis/research question along with the start of a methods section and strategies to form a dissertation committee. In addition, this course will provide key information about the responsible conduct of research, the informed consent process, and the Institutional Review Board process so the student will be able to design a safe and ethical environment for their volunteer subjects. Instructor: Tom Cappaert, PhD, ATC, CSCS and Mike Miller PhD, CSCS\*D

## **Semester 7**

(8 credits)

<b>Start Date</b>	<b>On-site Dates</b>	<b>End Date</b>
May 6, 2019	June 15-16, 2019	August 23, 2019

**HP 706 Sports Nutrition for Human Performance (3 credits; Online)**

This course will discuss, in detail, scientific and practical applications of nutrition for sports. Integrated discussions spanning exercise physiology and nutrition on topics that relate to aerobic and anaerobic performance, health, weight gain, weight loss and recovery will be covered. Class assignments will broaden the student's knowledge, writing ability and competence at both retrieving and summarizing scientifically-based information.

**HP 710 Applications of Exercise Science in Tactical Fitness and Performance (3 credits; 2 days On-site)**

This course will introduce students to the various methods and strategies for improving performance in military, law enforcement, and fire department venues. Topics such as injury prevention and tactical job preparation will be discussed with students completing applied projects in selected tactical operations. Tactical fitness research and literature will serve as the content for developing professionals capable of supporting the tactical field with evidence-based practice. Instructor: Mark Abel PhD, CSCS\*D, TSAC-F\*D

**HS 752 Curriculum Development****(2 credits; Online)**

This course examines various classical and modern curriculum theorists as they apply curriculum development. Emphasis is placed on congruence between institutional mission, philosophy, and goals; professional standards; and needs and expectations of a program's communities of interest. Students design a curriculum to meet the needs of a stated role and setting. Instructor: Kristen Johnson, EdD, PT

**Semester 8****(4 credits)**

Start Date	On-site Dates	End Date
September 3, 2019	November 1-3, 2019	December 20, 2019

**HS 810 Dissertation Prep II****(1 credit; 1 day On-site)**

This course is a continuation of HS800 Dissertation Prep I where students will finalize their written prospectus. Students will continue securing dissertation committee commitments and be prepared to defend a mock prospectus defense via presentation while on campus. Students prepare for the Institutional Review Board process by completing the CITI Human Subjects Research course, becoming familiar with the online submission platform, and drafting informed consent documents. Instructors: Tom Cappaert, PhD, ATC, CSCS and Mike Miller PhD, CSCS\*D

**HP 714 Recovery and Regeneration****(3 credits; 2 days On-site)**

This course will examine the science and history behind various advanced methods of recovery and regeneration techniques for the human body. The evidence will be reviewed in numerous topics including nutritional strategies, sleep habits, hydrotherapies, cryotherapy, sports supplementation, nutrient timing, and massage therapy. Through an evidence led approach, students will demonstrate the ability to evaluate and identify various types of fatigue, prescribe the appropriate regeneration modality, and periodize a recovery program based upon the principles learned in HP 704 (Methods and Programming in Strength and Conditioning). Instructor: Robert Pettitt PhD, FACSM, ATC, CSCS

## **Dissertation Phase**

*(Eight-year deadline from start of program to complete degree)*

*(12-credit minimum)*

Each doctoral student will be required to complete a dissertation that is evidence-based and involves applied research of experimental, nonexperimental, or descriptive designs. Examples of dissertations include: small randomized control trials; single-case/subject designs, quasi-experimental designs, qualitative methods, survey research, epidemiological designs (cross-sectional, cohort or case-control) normative research, and correlational designs.

**In 9<sup>th</sup> semester students will complete comprehensive exams**

**CC 833A      Doctoral Dissertation 1 – Semester 9      (6 credits)**

**CC 833B      Doctoral Dissertation 2 – Semester 10      (6 credits)**

*Semesters of Dissertation Residency Credit (CC 877A, CC 877B, etc.) as needed*