

# Milken Institute School of Public Health

THE GEORGE WASHINGTON UNIVERSITY

Department of Exercise and Nutrition Sciences

Master of Science in Exercise Science-  
Strength and Conditioning  
2019-20

## Program Director

| Department Address  | Program Director  |
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| Department of Exercise and Nutrition Sciences<br>950 New Hampshire Avenue, NW<br>Washington, DC 20052 | Todd Miller, PhD<br>Director, Weight Management and Human Performance Laboratory<br>GWU Virginia Science and Technology Campus<br>44983 Knoll Square<br>Ashburn, VA 20147<br>Phone: 571-553-0237<br>Email: tamiller@gwu.edu |

## Mission Statement

The mission of this program is to provide formal graduate level academic instruction in the science and theory of resistance training, for the purpose of improving athletic performance and the prevention of inactivity related health disorders.

## Goals

The goals of this program in the Department of Exercise and Nutrition Sciences are to:

- Establish scientific basis for the value of anaerobic exercise, and to provide internal and external programs that promote health behaviors across the lifespan.
- Meet an increasing demand for well-educated professionals capable of delivering a broad range of exercise-based preventive, technical, educational, and rehabilitative services.
- Gain insight into strategies for the prevention and treatment of sarcopenia, osteoporosis and obesity.
- Provide advanced training in exercise physiology as it relates specifically to resistance training for the purpose of increasing athletic performance and the prevention or treatment of inactivity-related health disorders.
- Prepare students with knowledge and skills to take the Certified Strength and Conditioning Specialist (CSCS) exam offered through the NSCA, and the Level One Weightlifting Coaching Course offered through United States Weightlifting (USAW)

## Course Requirements

All GW Department of Exercise and Nutrition Sciences Master Degree students who select the Strength and Conditioning Program enroll in both Core Courses (17 credits) and Program- Specific Courses (19 credits). The 36 credit program includes a culminating experience which is a 6-credit internship plus the successful completion of a Comprehensive Exam.

As an accredited School of Public Health the curriculum in all graduate academic programs must provide a foundation in public health. All graduate students without a prior Masters of Public Health degree from an accredited school of public health will be required to successfully pass the zero-credit, online Pathways to Public Health (PUBH 6080) course within one year of matriculation.

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Department of Exercise and Nutrition Sciences

**Master of Science in Exercise & Nutrition  
Sciences**

**Strength and Conditioning  
2019-20**

### Prerequisites

Undergraduate course in Exercise Physiology (must be completed prior to beginning coursework at GW, and must receive a grade of "B" or better)

|                                 |  | Credits   | Semester Offered                             | Grade |
|---------------------------------|--|-----------|--|-------|
| <b>MSES Core Courses</b>        |  |           |  |       |
| EXNS 6202<br>(DE)               | Advanced Exercise Physiology I                       | 3         | Fall   |       |
| EXNS 6203<br>(DE)               | Advanced Exercise Physiology II                      | 3         | Spring                                       |       |
| PUBH 6002<br>(DE)               | Biostatistical Applications for Public Health        | 3         | Fall & Spring                                |       |
| EXNS 6207<br>(DE)               | Psychological Aspects of Sport and Exercise          | 3         | Fall   |       |
| EXNS 6208<br>(DE)               | Physical Activity: Physiology & Epidemiology         | 2         | Spring                                       |       |
| PUBH 6619<br>(DE)               | Fundamentals of Nutrition Science                    | 3         | Fall & Spring                                |       |
| PUBH 6080<br>(DE)               | Pathways to Public Health                            | 0         | Fall, Spring, Summer                         |       |
| <b>Program Specific Courses</b> |  |           |  |       |
| EXNS 6220                       | Power Training for Sports Performance                | 2         | Spring                                       |       |
| EXNS 6221<br>(DE)               | Science and Theory of Resistance Training            | 3         | Spring                                       |       |
| EXNS 6222<br>(DE)               | Current Topics in Strength and Conditioning          | 2         | Fall   |       |
| EXNS 6223<br>(DE)               | Biomechanical Analysis                               | 3         | Spring                                       |       |
| Elective(s)                     | Approved by Program Director                         | 3         | Fall, Spring, Summer                         |       |
| EXNS 6233                       | Graduate Internship <b>and</b><br>Comprehensive Exam | 6<br>0    | Fall, Spring, Summer<br>Fall, Spring, Summer |       |
| <b>Total Credits</b>            |  | <b>36</b> |  |       |

*\*Pathways to Public Health may be waived for students who have a MPH degree.*

*DE = Distance Education- course delivered online.*

**Course Descriptions and Registration** information can be found on the website: <http://publichealth.gwu.edu/academics/>.

**Exercise and Nutrition Sciences  
Strength and Conditioning – Hybrid Program  
Graduation Requirements**

1. **Graduate Credit Requirement:** 36 graduate credits are required.
2. **Course Requirements.** Successful completion of core courses and the program specific courses are required.
3. **Pathways to Public Health (PUBH 6080).** Successful completion of PUBH 6080 prior to graduation.
4. **Grade Point Requirement.** A 3.0 (B average) overall grade point average is required.
5. **Time Limit Requirement.** The degree must be completed within five years.
6. **Transfer Credit Policy.** Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MS EXSC upon approval. Courses need to have been taken within the past three years from an accredited institution and a grade of B or better earned.

**Suggested Course Sequence**

*(36 credits total)*

**NOTE: PUBH 6080 (0 credits) must be taken in first year.**

**Fall Semester, 1<sup>st</sup> year (9 credits)**

EXNS 6202      Advanced Exercise Physiology I (3)  
PUBH 6002      Biostatistical Applications for Public Health (3)  
EXNS 6207      Psychological Aspects of Sport and Exercise (3)

**Spring Semester, 1<sup>st</sup> year (9 credits)**

EXNS 6203      Advanced Exercise Physiology II (3)  
EXNS 6223      Biomechanical Analysis (3)  
EXNS 6221      Science and Theory of Resistance Training (3)

**Fall Semester, 2<sup>nd</sup> year (8 credits)**

PUBH 6619      Fundamentals of Nutrition Science (3)  
EXNS 6222      Current Topics in Strength & Conditioning (2)  
ELECTIVE      Approved by Program Director (3)

**Spring Semester, 2<sup>nd</sup> year (10 credits)**

EXNS 6208      Physical Activity: Physiology & Epidemiology (2)  
EXNS 6233      Graduate Internship (6)  
EXNS 6220      Power Training Laboratory (2)

## MS, Strength & Conditioning Competency Map

|   | PUBH<br>6002 | EXNS<br>6202 | EXNS<br>6203 | EXNS<br>6207 | EXNS<br>6208 | PUBH<br>6619 | EXNS<br>6233 | EXNS<br>6220 | EXNS<br>6221 | EXNS<br>6222 | EXNS<br>6223 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b><i>MS Exercise Science Core Competencies</i></b>   |              |              |              |              |              |              |              |              |              |              |              |
| Students will demonstrate knowledge and understanding of the physiology of exercise.  |              | I            | I/D          |              | D            |              |              |              |              |              |              |
| Students will demonstrate knowledge and understanding of the pathophysiology of selected chronic diseases and conditions.   |              | I            | I            |              | D/M          |              |              |              |              |              |              |
| Students will demonstrate knowledge and understanding of the role of exercise training and regular physical activity as it relates to improved health, function, and performance across the lifespan. |              | I            | I            |              | D/M          |              |              |              |              |              |              |
| Students will demonstrate knowledge and understanding of various programmatic design variables that can be manipulated to bring about specific exercise- and physical activity outcomes.              |              | I            | I            | D            | D            | D            | M            |              |              |              |              |
| Students will demonstrate knowledge and understanding of current evidence- based aspects of physical activity and exercise training as it relates to improved health.                                 |              | I            | I            | D            | D            | D            |              |              |              |              |              |
| Students will apply various theories of social and behavioral change as they relate to exercise adoption and maintenance and to improved health.  |              |              |              | I/D          | D            |              | M            |              |              |              |              |
|   |              |              |              |              |              |              |              |              |              |              |              |

| <b>MS Exercise Science Core Competencies</b>  | <b>PUBH<br/>6002</b> | <b>EXNS<br/>6202</b> | <b>EXNS<br/>6203</b> | <b>EXNS<br/>6207</b> | <b>EXNS<br/>6208</b> | <b>PUBH<br/>6619</b> | <b>EXNS<br/>6233</b> | <b>EXNS<br/>6220</b> | <b>EXNS<br/>6221</b> | <b>EXNS<br/>6222</b> | <b>EXNS<br/>6223</b> |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Students will evaluate these programs with regard to their effectiveness in improving physical performance and health.  |                      |                      |                      | D                    | D                    |                      | D                    |                      |                      |                      |                      |
| Students will design research studies that are consistent with advancing the field of exercise science.   |                      |                      |                      |                      |                      |                      | D                    |                      |                      |                      |                      |
| Students will integrate applicable statistical and epidemiological theories in the development and evaluation of this research.   | D                    |                      |                      |                      | D                    |                      |                      |                      |                      |                      |                      |
| <b>Program Specific Competencies</b>  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| <i>GOAL: To integrate evidence-based knowledge of exercise physiology, psychology, and the science of exercise training to improve athletic performance.</i>                                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Students will demonstrate knowledge and understanding of the physiology of exercise.<br>[Cognitive: levels 1 and 2].  |                      | I                    | I                    |                      | D                    |                      |                      |                      | D                    | D                    | D                    |
| Students will demonstrate knowledge and understanding of the role of exercise training as it relates to improved athletic performance and health. [Cognitive: levels 1 & 2].                      |                      | I                    | I                    |                      | D                    |                      |                      | D                    | D                    | D                    | D                    |
| Students will demonstrate knowledge and understanding of various programmatic design variables that can be manipulated to bring about specific training outcomes.<br>[Cognitive: levels 1 and 2]. |                      |                      |                      | I                    |                      | I                    |                      | D                    | D                    | D                    | D                    |

| <b>MS Exercise Science Core Competencies</b>   | <b>PUBH<br/>6002</b> | <b>EXNS<br/>6202</b> | <b>EXNS<br/>6203</b> | <b>EXNS<br/>6207</b> | <b>EXNS<br/>6208</b> | <b>PUBH<br/>6619</b> | <b>EXNS<br/>6233</b> | <b>EXNS<br/>6220</b> | <b>EXNS<br/>6221</b> | <b>EXNS<br/>6222</b> | <b>EXNS<br/>6223</b> |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Students will demonstrate knowledge and understanding of current evidence- based aspects of exercise training as it relates to improved athletic performance and health. [Cognitive: levels 1 and 2].                                  |                      |                      |                      |                      |                      |                      |                      | D                    | D                    | D                    |                      |
| <i>GOAL: To utilize social and behavioral theories in designing exercise training programs that lead to maximal improvement in athletic performance and health.</i>  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Students will apply various theories of social and behavioral change as they relate to improved athletic performance and health. [Cognitive: level 3; Affective: levels 3 and 4].  |                      |                      |                      | I/D                  | I/D                  |                      |                      |                      |                      |                      |                      |
| Students will demonstrate skills in the design of exercise training interventions and sport-specific exercise programs that are consistent with these social and behavioral theories. [Cognitive: levels 3-5; Psychomotor levels 3-6]. |                      |                      |                      | D                    | D                    |                      |                      | D                    | D                    | D                    |                      |
| Students will evaluate these interventions with regard to their effectiveness in improving athletic performance and health [Cognitive: levels 3-6].  |                      |                      |                      | D                    | D                    |                      |                      |                      | D                    | D                    |                      |
| <i>GOAL: To utilize statistical and epidemiological theories in the development and production of research related to improved athletic performance and health.</i>  |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |                      |
| Students will design research studies that are consistent with advancing the field of strength and conditioning [Cognitive: levels 3-6].   |                      |                      |                      |                      |                      |                      |                      |                      | D                    | D                    |                      |

| MS Exercise Science Core Competencies   | PUBH<br>6002 | EXNS<br>6202 | EXNS<br>6203 | EXNS<br>6207 | EXNS<br>6208 | PUBH<br>6619 | EXNS<br>6233 | EXNS<br>6220 | EXNS<br>6221 | EXNS<br>6222 | EXNS<br>6223 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b><i>Students will integrate applicable statistical and epidemiological theories in the development and evaluation of this research [Cognitive: level 5; Affective: levels 3-6].</i></b>                             |              |              |              | I/D          |              |              |              |              |              |              |              |
| <i>GOAL: To work with other professionals in the field of Strength &amp; Conditioning for the purpose of gaining practical knowledge of the current state of the profession.</i>                                      |              |              |              |              |              |              |              |              |              |              |              |
| Students will integrate their knowledge of Strength & Conditioning into existing professional experiences with other professionals in the field [Cognitive: level 5; Affective: levels 3-6; Psychomotor: levels 3-6]. |              |              |              |              |              |              | M            |              | I            | D            |              |
| Students will appreciate the role of different strength & conditioning theories and practices among their partners in the field [Cognitive: level 2; Affective; levels 3 and 4].                                      |              |              |              |              |              |              | M            |              | I            | D            |              |

I = Introduced  
D = Developed  
M = Mastered