Queen's University
School of Kinesiology and Health Studies

Course Name: **KNPE 449/3.0** Advanced Protein Metabolism	**Course Instructor:** Dr. Jon McLeod	**Contact Hours:** Lectures: 1 x 3 hrs / 12 weeks
		Prerequisite: Level 4 in a KINE Plan and (HLTH 331/3.0 or KNPE 349/3.0)

Course Description:

The aim of this course is to provide a basic understanding of the biological factors that regulate the size of human skeletal muscle. Specific emphasis will be placed on how nutrition and exercise affect skeletal muscle growth/loss in both the athletic and clinical setting. Students will be provided with insight into the use of isotopic labeling of amino acids and other contemporary laboratory-based techniques used to study human skeletal muscle protein turnover.

Exclusion:
KNPE 493 topic ID: Advanced Protein Metabolism (W'20; W'21)

Course Texts:

There are no textbooks and/or courseware packages associated with taking this course.

Learning Outcomes:

- Explain and describe the biological determinants that regulate human skeletal muscle size.
- Explore how contemporary laboratory-based techniques are used around the world (e.g., isotopic labeling of amino acids, mass spectrometry) to study human skeletal muscle protein metabolism.
- Critically evaluate the strengths and weaknesses of peer-reviewed articles to develop informed perspectives for effective knowledge translation.
- Develop an experimental approach to address an existing knowledge gap in human skeletal muscle protein metabolism.
- Demonstrate critical thinking, research skills and effective communication techniques by delivering a conference-style oral presentation based on a scientific study.

Course Evaluation:

Mid-term	10%
Journal Club Assignment	20%
Mid-term 2	10%
Grant Proposal	25%
Presentations	25%
Weekly Research Paper Quizzes	10%

Course Outline

Introduction and course overview	Fatty acids and skeletal muscle
Amino acids and metabolic tracers	Molecular control of skeletal muscle mass
Resistance exercise and protein nutrition	Mitochondria and skeletal muscle
Exercise, Sex, and Hormones	Muscle atrophy