ORIGINAL COURSE IMPLEMENTATION DATE:	January 2001
REVISED COURSE IMPLEMENTATION DATE:	September 2018
COURSE TO BE REVIEWED: (six years after UEC approval)	March 2024

Course outline form version: 09/15/14

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: KIN 460	**Number of Credits:** 3 Course credit policy (105)
Course Full Title: Macronutrients: Applications to Sport and Disease **Course Short Title (if title exceeds 30 characters): Macronutrients**	
Faculty: Faculty of Health Sciences	**Department (or program if no department):** Kinesiology

Calendar Description:

Covers fundamental concepts related to carbohydrate, protein, and lipid metabolism and their application to practical situations such as eating for athletic performance, and the prevention, management, and treatment of disease. Nutritional supplements and ergogenic aids are also discussed.

Note: Students with credit for KPE 460 cannot take this course for further credit.

Prerequisites (or NONE):	KIN 260 (formerly KPE 260). Note: One of BIO 201 or KIN 270 (formerly KPE 270) recommended.
Corequisites (if applicable, or NONE):	NONE
Pre/corequisites (if applicable, or NONE):	NONE

Equivalent Courses (cannot be taken for additional credit)

Former course code/number: **KPE 460**

Cross-listed with:

Equivalent course(s): **KPE 460**

Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.

Transfer Credit

Transfer credit already exists: ☐ Yes ☒ No

Transfer credit requested (OReg to submit to BCCAT):
☐ Yes ☒ No (if yes, fill in transfer credit form)

Resubmit revised outline for articulation: ☐ Yes ☐ No

To find out how this course transfers, see **bctransferguide.ca.**

Total Hours: 45

Typical structure of instructional hours:

Lecture hours	30
Seminars/tutorials/workshops	15
Laboratory hours	
Field experience hours	
Experiential (practicum, internship, etc.)	
Online learning activities	
Other contact hours:	
Total	**45**

Special Topics

Will the course be offered with different topics?
☐ Yes ☒ No

If yes, different lettered courses may be taken for credit:
☐ No ☐ Yes, repeat(s) ☐ Yes, no limit

Note: The specific topic will be recorded when offered.

Maximum enrolment (for information only): 36

Expected frequency of course offerings (every semester, annually, every other year, etc.): every other year

Department / Program Head or Director: Alastair Hodges	**Date approved:**	October 2017
Faculty Council approval	**Date approved:**	October 2017
Campus-Wide Consultation (CWC)	**Date of posting:**	November 24, 2017
Dean/Associate VP: Joanne MacLean	**Date approved:**	October 2017
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	March 23, 2018

Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Explain the concepts of digestibility, and how various factors affect the digestion and absorption of carbohydrates, proteins, lipids, and other nutrients.
2. Describe the major metabolic pathways for the synthesis and utilization of carbohydrates, proteins and lipids.
3. Explain how the major metabolic pathways for the macronutrients are integrated during the fed and fasted state, during starvation, and during athletic activity.
4. Describe the pathogenesis of some of the major chronic diseases and the role of macronutrients in their prevention and treatment.
5. Explore the effects of altering the macronutrient composition of the diet on health and athletic performance.
6. Interpret dietary records and analyses and make suggestions for improvement for increasing athletic performance and decreasing risk of chronic disease.
7. Describe regulations governing the sale of nutritional supplements in North America.
8. Describe the effects of some nutritional supplements on athletic performance and disease.
9. Explain the concept of energy balance and how various factors affect energy intake.
10. Explore the role of energy balance in the development and treatment of obesity, and in athletic performance.

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)

Lectures, discussion of readings, case studies.

Grading system: Letter Grades: ☒ Credit/No Credit: ☐ Labs to be scheduled independent of lecture hours: Yes ☐ No ☒

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials (if more space is required, download Supplemental Texts and Resource Materials form)

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Gropper, S. & Smith, J.L.	Advanced Nutrition and Human Metabolism	☒	Cengage Learning	2013
2.	Shils, M.E., et.al. (eds)	Modern Nutrition in Health and Disease	☒	Wolters Kluwer	2006
3.	Burke, L.	Practical Sports Nutrition	☒	Human Kinetics	2007
4.	Maughan, R.J.	Sports Nutrition	☒	Wiley and Sons	2014
5.	Lanham-New, S. (ed)	Sport and Exercise Nutrition	☒	Wiley-Blackwell	2011
6.		Library reserve readings, readings posted to Blackboard site	☐		

Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	%	Midterm exam :	30%	Practicum:	%
Quizzes/tests:	%	Lab work:	%	Field experience:	%	Shop work:	%
Essay:	25%	Debate:	5%	Other:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

Introduction, review

Digestibility

- definition/formulas
- factors affecting digestibility'

Carbohydrates

- digestions and absorption, glycemic index
- glucose metabolism – pathways of disposal and synthesis
- impaired glucose metabolism – pathogenesis of diabetes
  - discussion activity – glycemic index and diabetes management
- fuel utilization during exercise
  - discussion activity – glycemic index and athletic performance

Supplements, food fortification, functional foods

- trends and regulations
- uses for sport and disease

Lipids

- digestion and absorption
- transport in blood, metabolism – pathways of disposal and synthesis
- pathogenesis of cardiovascular disease (CVD)
- cholesterol metabolism
    - discussion activity – dietary modification of blood cholesterol levels
- ω-3 fats – metabolism, potential health benefits
    - discussion activity – fish oil supplements and athletic performance

Proteins

- digestion and absorption
- protein turnover, protein needs for athletes
    - discussion activity – protein and athletic performance
- amino acid metabolism
    - discussion activity – amino acid supplements and athletic performance

Integration of metabolism

- macronutrient utilization in the fed, fasted, and starvation state, and during exercise

Energy balance

- overview, energy intake and expenditure
- obesity and energy balance
- athletic performance and energy balance
    - discussion activity – making weight, training