

KINE 350 Science of Nutrition
Course Outline & Syllabus, Fall Semester 2018
TR 9:30 – 10:50AM in Tucker 127A

Instructor: Ken Kambis, Ph.D.
Adair Hall 109
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Office Hours: TR 1:00-2:00PM

Course Description

Nutrition is a science that studies the effect of foods we consume on our health, growth, and reproduction. The required text for this course is *Understand Nutrition*, 14th edition by Whitney/Rolfes. I have also selected, MindTap, the accompanying online learning solution. This comprehensive online learning solution includes interactive activities, assignments, and study tools that will help you master the subject matter and stay organized and efficient. An e-textbook is also included with MindTap and can be printed from your computer. A number of assignments will be delivered through this online learning solution and will count toward your grade. There are two options for you to choose from regarding your course materials (select one):

KINE 350 Science of Nutrition course 9:30-10:50 TR using *Understanding Nutrition* 14th Edition +

Bundle: (custom) *Understanding Nutrition* (with 2015-2020 Dietary Guidelines Supplement), Loose-leaf Version, 14th + MindTap Nutrition, 1 term (6 months) Printed Access Card for Whitney...
ISBN: 9781337350389

OR

MindTap Only: MindTap Nutrition, 1 term (6 months) Printed Access Card for Whitney/Rolfes
Understanding Nutrition
ISBN: 9781305406339

Both options can be purchased directly from Cengage when registering for MindTap through my Blackboard course or from the College bookstore. Please refer to the Getting Started with MindTap folder in Blackboard for more details. Note: If you select to purchase the bundle from Cengage, the ship time for the Loose-leaf text is approximately 5-7 days.

This text will be the source of a scientific basis of nutrition and metabolism which is essential for an understanding of healthy nutrition. Highlighted supplements provide readings that include research in nutrition. Selected “hot topics in nutrition” will be discussed in class periodically.

This introductory science of nutrition course, which carries COLL 200 NQR (reaching out to the CSI Domain) credit, will range from discussion of methods of scientific inquiry used to determine needs for individual nutrients through in-depth treatment of life-cycle nutrition issues. Beginning with review of development of theories and how they are tested, basic biochemistry and physiology are discussed. The anatomy of the gastrointestinal system is introduced along with a history of experiments that resulted in our present level of understanding of the physiology of nutrition. The course will deal with assessment of nutritional status and how we know that nutrition is essential to health. Large nutrients necessary for energy production and raw materials as well as vitamins and minerals are reviewed from a biochemical

transformation and interaction perspective. Eating disorders, weight loss and gain, body composition changes, and factors that influence food consumption are discussed. Changes in the food supply relative to food processing, additives, naturally occurring toxicants, and microorganisms in food are covered. Nutrition throughout life: The unique needs of older adults, exercising individuals, pregnant and lactating women, infants, adolescents, and nutrition for special populations are also discussed. Consumer concerns about foods and water are addressed throughout the course.

Grading: Chapter quizzes plus in-class Mid-term and Final exams will count 250 points toward your maximum of 500 points. MindTap assignments as well as course assignments in Blackboard will provide you with another possible 250 points. The ratio of the number of points you accumulate to the maximum 500 possible will be the basis of your grade on the 10-point scale below.

System of Grading: 10-point scale. (-) grades are 2 points above cutoff for lower letter grade & (+) grades are 2 points below cutoff for higher letter grade; e.g. B- = 80 or 81 and B+ = 88 or 89.

Five Specific 1- Day Diet Diary Analyses (Nutrients Report) Due by 11:59PM, on Due Days

See instructions in Blackboard

Download your Nutrient Report and submit via the designated assignment site in Bb

COLL 200 NQR Criteria:

The Natural World and Quantitative Reasoning (NQR). Courses in this domain examine the natural world and physical universe and the means by which humans observe, measure, model, and interpret it. Courses explore the process of scientific discovery, including the methods required to gather and assess empirical data, investigate the predictions of existing theories, and develop experimentally testable hypotheses. Courses may also focus on mathematical or computational methods as applied to these investigations. Students develop their understanding not only of the foundations, implications, and uses of scientific knowledge but also how scientific approaches can be used to create tangible products.

Required text:

Whitney, E.N. and Rolfes, S.R. *Understanding Nutrition*. 14th Edition + MindTap. (see above for specifics)

SCIENCE OF NUTRITION SYLLABUS

A significant majority of your text readings are in the NQR Domain while many of your additional required readings and MindTap assignments reach out to the CSI Domain. Notations are included to help you transition from basic science to the cultural, societal, and individual application of nutrition science.

Lecture Series

- I** COLL 200 Criteria, Scientific method, overview, food choices, psychology of hunger and appetite. Planning a healthy diet. Chap. 1-2
Readings: Text Chapters 1 & 2. Kale Recipes 2016 ppt.; *Childhood Malnutrition Linked to Higher Blood Pressure in Adults* (NQR&CSI).
<https://newsarchive.heart.org/childhood-malnutrition-linked-to-higher-blood-pressure-in-adults/>. Also, check out the AHA link to “Healthier Kids Program”
K. Carpenter – *A Short History of Nutrition Science Part 1 (1785-1885)*; Chapter post-tests
MindTap Assignments: All that are available including, Video: Healthy Diet-A Cultural Perspective (CSI); Case Study 1A – Reducing an Individuals Disease Risk (CSI); Global Nutrition Watch 1A. Highlight 1: Nutrition Information & Misinformation (CSI).
- Record and analyze all food and drink consumption for Monday, September 10, 2018 – Submit the Nutrients Report by 11:59PM Friday, September 14, 2018*
- II** Anatomy and physiology of the GI Tract; Chap. 3
Digestion, absorption and transport.
Readings: Text Chapter 3; Cryan & Dinan, 2012, *Mind-altering microorganisms: the impact of the gut microbiota on brain and behavior* (NQR); Chapter post-test.
All MindTap Assignments including: Digestion, Anatomy of the Digestive Tract, Muscular Action of Digestion, Secretions of Digestion, The Final Stage of Digestion (NQR). Video: The Myth of Juice Cleanses. Global Nutrition Watch 3A.
- III** Carbohydrates: Metabolism, hexoses, Chap. 4
bonding requirements and condensation,
sugar alcohols, starch, dietary fiber.
Readings: Text Chapter 4; Morenga, et al., *Dietary Sugars & Body Weight – 2013*; Kumar, 2013 – *Flavonoids and Health*; K. Carpenter: *A Short History of Nutrition Science Part 2 (1885-1912)*; Ulijaszek et al., 2013, *HFCS & T2 Diabetes* (NQR&CSI); Chapter post-test.
All MindTap Assignments including: The Chemist’s View of Carbohydrates; Monosaccharides; Disaccharides; Polysaccharides (NQR); Case Study: Sweetness and Kcal. Control (CSI); Highlight 4 Carbs, kCalories, and Controversies, Carbohydrates’ kCalorie Contributions, Disaccharides’ Share in the Problem, Insulin’s Response, Critical Thinking Questions.
- Record and analyze all food and drink consumption for Wednesday, September 26, 2018 – Submit the Nutrients Report by 11:59PM Saturday, September 29, 2018*
- IV** Lipids: Acid and methyl groups, the Chap. 5
carbon chain, triglycerides, saturation,
adipogenesis and adipolysis.
Readings: Text Chapter 5; Chapter post-test.
All MindTap Assignments including: Video: Americans & Diet (CSI); The Chemists View of Fatty Acids & Triglycerides (NQR); The Chemists View of Phospholipids and Sterols (NQR); Digestion, Absorption, & Transport of Lipids

(NQR).

- V** Protein: Amino acids and side groups, essential AA's, denaturation. Chap. 6
Digestion, absorption, and transport.
Readings: Text Chapter 6; Volpe, 2013 - *Increasing Muscle Mass* (NQR); *Protein Ranking* (NQR); Chapter post-test.
All MindTap Assignments including: BBC video: Nutrigenomics; Case Study: Protein Adequacy.

Mid-Term Exam: Tuesday, October 9, 2018 BRING LAPTOP TO CLASS

- VI** Metabolism: Enzymes and coenzymes, Chap. 7
biochemical reactions, transfer of energy, catabolism, oxidation.
Readings: Text Chapter 7; Hagobian, et al., 2012, *Effects of acute exercise on appetite hormones and ad libitum energy intake in men and women* (NQR). Merra, et al., *VLCD & Ketogenic Dieting*; K. Carpenter: *A Short History of Nutrition Science Part 3 (1912-1944)*; Chapter post-test.
All MindTap Assignments including: Chemical Reactions in the Body (NQR); Case Study 7A-Excessive Alcohol Intake (CSI).

Record and analyze all food and drink consumption for Friday, October 19, 2018 – Submit the Nutrients Report by 11:59PM Sunday, October 21, 2018

- VII** Energy balance, BMR, fatness, Chap. 8-9
adaptive thermogenesis, weight control
Readings: Text Chapters 8 & 9; van Buel et al., 2014, *Misconceptions about fructose-containing sugars and their role in the obesity epidemic* (CSI); Blomain et al., 2013, *Mechanisms of Weight Regain following Weight Loss* (NQR); *ISPN Position Stand – 2107* (CSI); Chapter post-tests.
All MindTap Assignments including: Body Weight and Body Composition (NQR); Health Risks Associated with Body Weight & Body Fat (CSI); Eating Disorders (CSI); Global Nutrition Watch 8 (learning assessment); The Latest and Greatest Diet; Global Nutrition Watch 9.

- VIII** The Vitamins: Water soluble, fat Chap. 10-11
soluble, absorption, transport, storage, deficiency diseases, toxicities.
Readings: Text Chapters 10 & 11; Semba (2102) *The Discovery of Vitamins*; Chapter post-tests.
All MindTap Assignments including: BBC videos: Do Vitamins Really Help?; Vitamin D (before) and Vitamin D (after)-NQR; Case Study: Fatigue with a Vitamin-Poor Diet (NQR); Global Nutrition Watch 10 (CSI); Case Study: Low Vitamin D (NQR).

Record and analyze all food and drink consumption for Saturday, November 10, 2018 – Submit the Nutrients Report by 11:59PM Wednesday, November 14, 2018

- IX** Water and Minerals: Homeostasis, Chap. 12-13
hypohydration, PCOP, NaK Pump, pH,

electrolytes, inorganic elements.

Deficiencies and toxicities.

Readings: Text Chapters 12 & 13. K. Carpenter: *A Short History of Nutrition Science Part 4 (1945-1985)*; Chapter post-tests.

All MindTap Assignments including: Water Volume and Recommended Intakes (NQR); Blood Volume and Blood Pressure (NQR); Fluid and Electrolyte Balance/Imbalance (NQR); Acid/Base Balance (NQR); Highlight 12: Osteoporosis and Calcium (NQR-CSI); Case Study 12: Fluid and Calcium Intake for a Young Athlete (NQR).

- X** Nutrition and physical activity: Chap. 14
Principles of conditioning, female athlete triad: Eating disorders, amenorrhea and osteoporosis. Energy systems.
Readings: Text Chapter 14; Manore - 2015, *Weight Management for Athletes and Active Individuals: A Brief Review* (CSI); Chapter post-test.
All MindTap Assignments including: Energy Systems and Fuels to Support Activity (NQR); Vitamins and Minerals to Support Activity (NQR); Fluids and Electrolytes to Support Activity (NQR); Diets for Physically Active People (CSI); Highlight 14: Supplements as Ergogenic Aids (CSI).

Record and analyze all food and drink consumption for Sunday, December 2, 2018 – Submit the Nutrients Report by 11:59PM Wednesday, December 5, 2018

Supplemental Nutrition Information Available on Blackboard
Processing (NQR), Toxicology (NQR), World Hunger (CSI), Class Notes
Environmental Issues NQR-CSI).

Final Exam

December 18: 9:00AM – 12Noon: BRING LAPTOP TO CLASS

Important Dates

August 30: 9:30AM - First KINE 350 Class Meeting in Tucker 127A
August 28 – September 7: Drop/Add
September 8 – October 28: Withdrawal Period
Monday, September 10: Record All Food & Beverage Consumption
Friday, September 14: Submit “9/10 Nutrients Report” by 11:59PM
Wednesday, September 26: Record All Food & Beverage Consumption
Saturday, September 29: Submit “9/26 Nutrients Report” by 11:59PM
October 9: Mid-term Exam
October 13-16: Fall Break
Friday, October 19: Record All Food & Beverage Consumption
Sunday, October 21: Submit “10/19 Nutrients Report” by 11:59PM
Saturday, November 10: Record All Food & Beverage Consumption.
Wednesday, November 14: Submit “11/10 Nutrients Report” by 11:59PM
November 21-25: Thanksgiving Break

Sunday, December 2: Record All Food & Beverage Consumption
Wednesday, December 5: Submit “12/2 Nutrients Report” by 11:59PM
Friday, December 7: Semester Summary Assignment due by 11:59PM.
December 7: Last Day of Classes

December 18: KINE 350 Final Exam 9:00AM – 12Noon

Five 1- Day Diet Diary Analyses (My Eating Feedback-Nutrients Report) Submitted by 11:59PM on Due Dates

See instructions in Blackboard

Submit your Nutrients Report on the Bb designated site under “assignments.”

Accommodations

It is the policy of William & Mary to accommodate students with disabilities and qualifying diagnosed conditions in accordance with federal and state laws. Any student who feels s/he may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact the [Student Accessibility Services](#) staff at 757-221-2509 or at sas@wm.edu. SAS staff will work with you to determine if accommodations are warranted and, if so, to help you obtain an official letter of accommodation.

The College Honor System

"The College of William & Mary has had an honor code since at least 1779. Academic integrity is at the heart of the College, and we all are responsible for upholding the ideals of honor and integrity. The student-led honor system is responsible for resolving any suspected violations of the Honor Code, and I will report all suspected instances of academic dishonesty to the honor system. The Student Handbook (www.wm.edu/studenthandbook) includes your responsibilities as a student and the full Code. Your full participation and observance of the Honor Code is expected. To read the Honor Code, see www.wm.edu/honor"