Eating: Nutrition, Digestion, Appetite – Spring 2018

Instructor: Robin Looft-Wilson, Ph.D.
Kinesiology & Health Sciences, 113 Adair Hall, 757-221-2784, rlooft@wm.edu

Catalog Description:
A combination of lecture and discussion, this course covers basic human nutrition, the physiology of taste and digestion, and the control of appetite through examination of the current scientific/medical literature. This course will develop student presentation and scientific inquiry skills.

Credits: 4 units – 1.5 hr/wk lecture, 1.5 hr/wk discussion/presentation

Prerequisites: a strong background in Biology and Chemistry (e.g., advanced placement Chemistry and Biology)

Textbook: none; we will read recent scientific/medical reviews and original research articles

Specific topics:
- Diversity of nutrition/healthy diets among humans
- How we decide what a healthy diet is (Dietary Reference Intakes)
- How humans sense nutrients/flavors/smells and determine whether foods are edible
- How food is digested from mouth to excretion
- How nutrients that enter the bloodstream are processed and used by tissues in the body
- How appetite and food preferences are controlled by the neuro-endocrine system to ensure intake of the proper nutrients and amount of nutrients

Goals:
- Learn how to critically read a published, peer-reviewed scientific/medical journal article
- Learn how to present scientific figures/data to the class in a clear, concise, and accurate manner
- Learn how to organize a Powerpoint presentation of a scientific paper, including: provide relevant background and context for the paper, explain the hypothesis, explain the methods used, organize the figures/tables, present and critically analyze the conclusions, and present a new model that the study supports
- Learn how to find answers to your nutrition/digestion physiology questions within the scientific literature
- Become skeptical of nutrition/diet claims in popular journalism and learn how to examine the data to confirm or refute the popular conclusions
- Learn how to use the scientific/medical literature database PubMed and clinical trials database, and learn about the scientific publication process and the ranking of scientific/medical journals

Grading:

Tests: 2 Tests – 40 points each	80 pts
Paper Discussions – 10 points each (8 sessions)	80 pts

Vitamin Presentation	20 pts
Mineral/Phytochemical Presentation	20 pts
Research Paper Presentation	30 pts
Scientific Inquiry Assignments – 40 points each (2 assignments)	80 pts
Final Exam (comprehensive)	40 pts
	350 pts total

Tests:

Tests will be multiple-choice. However, there is the opportunity to explain any answers you choose. If a wrong answer is chosen, a logical, valid explanation can sometimes lead to partial or even full credit. If the correct answer is chosen, there will be no deductions for invalid explanations.

Alternative test dates: If an alternate date is needed for tests due to scheduling conflicts, an earlier test date will be allowed if pre-arranged with the professor (1 week notice generally needed). If a later date is needed due to illness or personal crisis (contact the Dean of Students), the test can be taken within one week after the test without penalty. Without an excuse, a late test will be allowed, but **5% will be deducted if taken within one week after the test, and 10% will be deducted is taken later than one week after the test**. Alternate dates for the final exam **require approval from the Dean of Students**.

Lectures:

Weekly lectures are given to provide you with the necessary background to understand the scientific papers. The lectures take the place of a textbook and are often dense with scientific content. **It is highly recommended that you read through the lecture slides before class.**

Paper Discussions:

We will discuss a recent scientific paper relevant to the lecture topic/s. Small groups (4 students) will be assigned a figure or table to present to the class on the discussion day **(10 points each)** and one group will lead the discussion each week **(30 points)**.

Before Class Preparation:

- Figures/tables will be assigned to small groups ahead of time.
- Read the paper carefully and ensure that you understand the entire paper so that you can explain your figure and its significance to the overall paper.
- One group (lead group) will create a Powerpoint presentation of the paper. Detailed instructions are on Blackboard.
- The lead group will prepare the Powerpoint – **due 1 week before the paper discussion; email to me at rlooft@wm.edu**. I will provide feedback for revision within ~48 hours. Please revise before the paper discussion takes place. Indicate on each slide, which student will present the particular slide.

During Class:

- The lead group will present general background and context for the paper, hypothesis, methods, and a model to be tested, if relevant.
- Students will then break into their small groups to finalize their presentation of their particular figure/table.
- We will re-group as a class, and each group will present a figure/table. Be sure to explain: **why the experiment was performed, how the experiment was performed, what they found, and what is the significance of the finding**. Each member of the group should speak.
- The lead group will present the conclusions of the paper, significance, and limitations.
- The lead group will receive feedback on their presentation and have an opportunity to revise their Powerpoint once more, if needed.
- Final Powerpoints will be made available to the class for reference.

Missed Discussions: If you are going to miss a paper discussion, you may turn in a detailed written analysis (~3-5 pages, explaining the purpose, hypothesis, methods, the significance of each figure/table, conclusions, significance, limitations) instead, which will be **due by 5:00 on the day of the discussion**, or points will be deducted (5% if turned in within 1 week, 10% after 1 week). Be advised that it is very difficult to earn full credit with this written option. **You will only be able to take this option for 2 paper discussions**. If you miss more than 2 paper discussions, there is no opportunity to make-up the work, unless the circumstances are unusual. It is unadvisable to miss a paper discussion when your group is leading.

Vitamin and Mineral/Phytochemical Assignments:

- There will be 2 assignments (one on Vitamins and one on Mineral/Phytochemicals) aimed at developing your skills in assessing the scientific background used to design the recommendations for vitamin and mineral intakes, and/or determine the beneficial effects of phytochemicals. Each assignment consists of a group **oral presentation (20 points)**. Specific instructions are on Blackboard.
- Presentations are on **Feb. 8 and Feb. 22**.

Scientific Inquiry Assignments:

- There will be 2 assignments aimed at developing your skills in answering a scientific question. Students will generate the questions. There is a **written portion (20 points)** and an **oral presentation portion (20 points)**.
- Your small group will be asked to submit several questions about nutrition, diet, or digestion that you would like answered. For example: Does fiber consumption promote weight loss? Are certain fats in the diet healthier for the cardiovascular system than others? Is a high protein diet more satiating than high fat or carbohydrate? Are there foods that affect metabolic rate? The more specific the question, the easier it will be to answer. There will be time in class on **Thurs., Jan. 25** to meet with your small group and generate questions. Two questions will be chosen for class assignments.
- Each student will construct and turn in a written analysis of the question (~1 page) on Blackboard. Detailed instructions are on Blackboard. **Due on presentation days: Mar. 22 and Apr. 3 by 10:00 AM**.
- Each group will construct a Powerpoint slide summarizing there answer to the scientific question and a slide with the key references used for support.

- In class (on the "Scientific Inquiry Discussion" dates), your group will present your analysis to the class.

Schedule:

Thurs. Jan. 18	Lecture #1 – Diets across the World, Nutrition Research Approaches
Tues. Jan. 23	Lecture #2 – Dietary Reference Intakes, Macronutrients (Carbohydrates)
Thurs. Jan 25	How to Perform a Literature Search and Present a Scientific Paper Group Organization
Tues. Jan 30	Lecture #3 – Macronutrients (Protein, Fats)
Thurs. Feb. 1	Paper #1
Tues. Feb. 6	Lecture #4 – Micronutrients, Supplements, Phytochemicals
Thurs. Feb. 8	Vitamin Presentation
Tues. Feb. 13	Lecture #5 – Tasting and Smelling Food
Thurs. Feb. 15	Paper #2
Tues. Feb. 20	Lecture #6 – Overview of Digestion, Anatomy of Digestive Tract
Thurs. Feb. 22	Mineral/Phytochemical Presentation
Tues. Feb. 27	Paper #3
Thurs. Mar. 1	**Test #1**
	SPRING BREAK
Tues. Mar. 13	Lecture #7 – Digestion (Mouth, Stomach)
Thurs. Mar. 15	Paper #4
Tues. Mar. 20	Lecture #8 – Digestion (Small Intestine), Absorption of Nutrients
Thurs. Mar. 22	Scientific Inquiry Discussion #1 ***[Written Assignment due by 10:00 AM]***
Tues. Mar 27	Lecture #9 – Digestion (Colon), Gut Microbiome, Intestinal Immune System
Thurs. Mar. 29	Paper #5
Tues. Apr. 3	Scientific Inquiry Discussion #2 ***[Written Assignment due by 10:00 AM]***
Thurs. Apr. 5	Paper #6
Tues. Apr. 10	Lecture #10 – Metabolism
Thurs. Apr. 12	Paper #7
Tues. Apr. 17	**Test #2**
Thurs. Apr. 19	Lecture #11 – Appetite Control

Tues. Apr. 24 Paper #8
Thurs. Apr. 26 TBA

Final Exam: Mon., April 30, 2:00-5:00

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 Student Accessibility Services staff at 757-221-2509 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please visit www.wm.edu/sas.