

Eating: Nutrition, Digestion, Appetite – Spring 2017

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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

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-review 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 (10 sessions)	100 pts
Powerpoint Presentation – 40 pts	40 pts
Scientific Inquiry Assignments – 40 points each (2 assignments)	80 pts
Final Exam (comprehensive)	<u>40 pts</u>

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 if 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.**

Weekly Paper Discussions:

Each week (of most weeks), we will discuss a recent scientific paper relevant to the lecture topic/s. Students will write a **1-page summary of the paper (4 points)** and present figures and data from the scientific paper, formally through Powerpoint presentations in groups of 3 students (**6 points**). Each week, one group will lead the discussion and the remaining groups will present a figure.

Before Class Preparation:

- Read the paper carefully and write a summary (~1 page) that will be useful as a reference while you discuss the paper figures within your small group (**due the day of the discussion by 12:00 noon; submit on Blackboard**). Your summary must include a brief **rationale** for why the study was performed, the **hypothesis**, a focused description of each **figure** and **table** including **what was measured** and **what was found**, and a brief statement regarding the overall **conclusions** and **significance** of the paper. Summaries can be written in paragraph, outline, or bullet-point form (it's your choice).
- One group (lead group) will be assigned to organize a Powerpoint presentation. Detailed instructions are on Blackboard.
- The lead group will prepare the Powerpoint – **due 1 week before the paper discussion; submit on Blackboard**. 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 and discuss a particular figure/table and prepare to present it to the class. I will assign figures.
- 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, and what they found.** Each member of the group should speak.
- The lead group will present the conclusions of the paper, criticisms, a new model now supported by the paper.
- The lead group will receive feedback on their presentation and have an opportunity to revise their Powerpoint once more, if needed.

Missed Discussions: If you are going to miss a paper discussion, you may turn in a detailed written summary (~3-4 pages with detailed explanations of each figure/table) 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.

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. 26** 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 Feb. 23 and Apr. 4.**
- Each group will construct a Powerpoint slide summarizing their 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. 19 **Lecture #1 – Diets across the World, Nutrition Research Approaches**
- Tues. Jan. 24 **Lecture #2 – Dietary Reference Intakes, Macronutrients (Carbohydrates)**
- Thurs. Jan 26 How to Perform a Literature Search and Present a Scientific Paper
Group Organization

Tues. Jan 31 **Lecture #3 – Macronutrients (Protein, Fats)**
Thurs. Feb. 2 Paper #1

Tues. Feb. 7 **Lecture #4 – Micronutrients, Supplements, Phytochemicals**
Thurs. Feb. 9 Paper #2

Tues. Feb. 14 **Lecture #5 – Tasting and Smelling Food**
Thurs. Feb. 16 Paper #3

Tues. Feb. 21 **Lecture #6 – Overview of Digestion, Anatomy of Digestive Tract**
Thurs. Feb. 23 Scientific Inquiry Discussion #1 **[Written Assignment due by 10:00 AM]**

Tues. Feb. 28 Paper #4
Thurs. Mar. 2 **Test #1**

SPRING BREAK

Tues. Mar. 14 **Lecture #7 – Digestion (Mouth, Stomach)**
Thurs. Mar. 16 Paper #5

Tues. Mar. 21 **Lecture #8 – Digestion (Small Intestine), Absorption of Nutrients**
Thurs. Mar. 23 Paper #6

Tues. Mar 28 **Lecture #9 – Digestion (Colon), Gut Microbiome, Intestinal Immune System**
Thurs. Mar. 30 Paper #7

Tues. Apr. 4 Scientific Inquiry Discussion #2 **[Written Assignment due by 10:00 AM]**
Thurs. Apr. 6 Paper #8

Tues. Apr. 11 **Lecture #10 – Metabolism**
Thurs. Apr. 13 Paper #9

Tues. Apr. 18 **Test #2**
Thurs. Apr. 20 Video

Tues. Apr. 25 **Lecture #11 – Appetite Control**
Thurs. Apr. 27 Paper #10

Final Exam: Wed., May 3, 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.