NFS 760 - Vitamins and Minerals in Human Nutrition

Department of Health and Nutritional Sciences
College of Education and Human Sciences
South Dakota State University

Great Plains Interactive Distance Education Alliance (GPIDEA)

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Syllabus
Spring, 2011 – Credits: 3

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The preferred method of communication is through D2L email. Virtual office hours: via D2L email. Campus email or phone, if necessary. You should expect a response to your email by the end of the following day. I expect you to communicate with other students in the course via D2L email and the discussion groups.

Course Description

Catalog Description
The study of the functional roles of vitamins and minerals in human nutrition. Course content will include review of essential functions for the vitamins and minerals, health implications of varying amounts vitamins and minerals in the diet, interactions between vitamins, interactions between minerals, vitamin and mineral interactions, and the process of establishing nutrient requirements.

Course Summary
The main course objective is to provide students with the opportunity for graduate level study of the biological functions of vitamins and minerals. Thus, we will approach each nutrient from a mechanistic viewpoint, and then focus on its role in human nutrition. The course will be taught using integrative concepts of nutritional biochemistry, biosignaling, metabolomics, proteomics, and genomics with emphasis on how each of the vitamin and mineral performs its function, particularly, at the molecular and cellular level.

This online course is also offered for registered dietitians or individuals who are registration-eligible through the Great Plains Interactive Distance Education Alliance (GPIDEA), Master of Science in Dietetics program.

Course Goals
Students will learn the mechanisms of action of vitamins and minerals and their role in human nutrition.
Student Learning Outcomes
Upon completion of this course, the student will:
1. Learn how vitamins and minerals perform their functions at the molecular and cellular level.
2. Understand the physiological effects of vitamins and minerals, including mechanisms of deficiency and toxicity.
3. Obtain current knowledge about the role of vitamins and minerals in health and disease.
4. Learn principles for establishing dietary requirements for vitamins and minerals.
5. Critically evaluate and apply new research concepts and theories in the vitamin and mineral area to enhance nutrition research and dietetics practice.

IDEA Survey Objectives
The following IDEA survey objectives are considered essential or important for this course:
1. Gaining factual knowledge (terminology, classification, methods, and trends).
2. Learning fundamental principles, generalizations, and theories.
3. Learning how to apply course material (to improve thinking, problem solving, and decisions).

Instructional Methods
Topics will be covered using the required textbooks and notes (PowerPoint/pdf format) provided on D2L. PowerPoint presentations are used to facilitate instruction. Recommended review journal articles, including those written by the instructor, may be utilized as supplemental sources. Discussion groups will be utilized to facilitate student learning. The course will follow the schedule provided at the end of syllabus. Student knowledge will be evaluated by two exams, two research assignments, weekly quizzes, and participation in discussions. The discussion groups are graded and provided to enhance your understanding and critical evaluation of modern nutritional concepts.

Textbook


Grading Policies
Examinations, Assignments, Quizzes, and Discussions
There will be a midterm and a final exam. The exams will cover information from the corresponding parts of the course (i.e., the final exam is not a comprehensive final). For each of the exams, you will be assigned a list of 4 questions to write long (essay) answers. Each answer must not exceed 5,000 characters (approximately 500 words or one single-spaced page per answer). Examinations will be available on D2L for one week on the dates listed at the end of syllabus (course schedule). You will have a two-hour period (one attempt) to submit your answers as pdf or doc(x) files via the D2L Dropbox. Questions will require some problem solving, and answers should not be mainly descriptive. You may use annotated graphics in your answers. Examples of questions will be given (see Sample Exam in the Quizzes section). The final exam will include one extra-credit, comprehensive question of an increased difficulty (you will have additional 30 min to answer this question). All students may answer the extra-credit question in order to raise a grade. Concerns about specific questions must be presented to the
instructor as soon as possible following an examination, and all scores will be considered as final five days following a given exam.

Students will also be required to prepare two research papers (first in the vitamin nutrition area and second in mineral nutrition) in the format of PowerPoint presentations (not more than 20 slides per presentation, please convert your ppt file to pdf format before submitting via the D2L Dropbox). You will need to select 2-3 original research articles (not reviews) for each of your presentations (e.g., recent articles related to mechanism of action, establishing the nutrient requirements, measurements, bioavailability, epidemiology, etc., of vitamins or minerals). Critical review of the presented papers is essential. Students are not required to get instructor’s approval for research articles selected for their presentations, but are encouraged to contact instructor with questions and requesting help in selecting appropriate publications. The assignments will be due on the first days of the exam weeks (see course schedule).

Quizzes will be used in between exams. The quizzes (10 questions, 15 min each) will be available for one week. The format for quizzes will consist of multiple choice and true-false questions. The quizzes are used to help you keep up with the course material and assess your preparedness for exams. A practice quiz (not graded) is available for you to try out online prior to the first quiz.

Students will post original comments and responses to classmates to each of the five assigned discussion topics. Grading is based on relevance and thoughtfulness to the topic as well as critical review of the posted question.

**Point Distribution**

- Examinations (200 points each) 400 points
- Assignments (200 points each) 400 points
- Quizzes (10 points each) 150 points
- Discussion Groups (10 points each) 50 points
- Total points 1000 points (100%)
- Extra-credit question 50 points

Grades for each student will be based on the actual percent of the total possible points obtained by the student. Based on percent of total points, the following grades are guaranteed (grades will be rounded to the nearest 1/10 percent): A >= 90.0%; B >= 80.0% but < 90.0%; C >= 70.0% but < 80.0%; D >= 60.0% but < 70.0%; and F < 60.0%. One extra credit question will be allowed during the final exam.

**Missed Examinations/Assignments**

Make-up examinations may be taken only due to unavoidable circumstances. A student who misses a regularly scheduled examination due to illness will be given a make-up examination upon submitting documentation of illness from a physician (a pdf copy of the physician’s note). A student who misses an examination for reasons other than illness must have approval from the instructor in order to qualify for a make-up examination. Examinations not made up will be averaged as zero scores in the computation of the student's grade. The make-up exams should be taken early if possible. Make-up exams can be of any format.