

Course: Introduction to Human Nutrition

Course Justification:

Introduction to Human Nutrition is designed to provide all students, regardless of scientific background, with the fundamental knowledge they need to make informed decisions about the foods they eat. It may well be one of the more practical courses they take, at least in the sense that the information they are given can be used every day of their lives.

Having a basic understanding of the principles of nutrition is particularly important because there is now overwhelming evidence that the incidence of the diseases of our present day society – heart disease, hypertension, cancer, osteoporosis, obesity, among others – can be influenced by diet. These so-called chronic diseases typically evolve slowly over one’s lifetime. Thus the ideal audience for such a course is one in which the listeners are still relatively young – the dietary changes they make for the better now (and stick with over time) could have a much more dramatic impact on their risk for disease than those made much later on in life.

Yet all the nutrition knowledge in the world is of little use if it cannot be put into practice. And so this course also emphasizes the how-to’s. A computer-assisted diet analysis tells the student what is and isn’t good about his current eating habits, and lecture material gives him ideas for making positive changes.

In addition to providing this basic information, the course also encourages students to apply that knowledge in the evaluation of the myriad dietary fads with which we are bombarded almost daily -- from very low calorie diets to amino acid supplements, blue-green algae tablets to oat bran doughnuts – and it includes lectures on the government regulation of foods, food advertising and dietary supplements to give students a better understanding of why federal agencies are often powerless to act against seemingly fraudulent programs, products and commercials.

Proposed Revisions

The proposed revision is the creation of new learning outcomes and means of assessing those outcomes to meet the new GER objectives as set forth by the CUE.

Enrollment for the last 5 years:

| | |
|-------------|----|
| Fall 1998 | 57 |
| Spring 1999 | 85 |
| Fall 1999 | 73 |
| Spring 2000 | 80 |
| Fall 2000 | 87 |
| Spring 2001 | 77 |
| Fall 2001 | 93 |
| Spring 2002 | 86 |
| Fall 2002 | 52 |
| Spring 2003 | 81 |

Resource Statement: N/A

Consultation With Other Departments: N/A

Student Learning Outcomes:

By the end of the semester students should be able to:

- ❑ Describe the basic functions of the major nutrients and identify their primary food sources.
- ❑ Explain the causes and dietary management of certain nutrition-related conditions.
- ❑ Identify the basic types of nutrition-related studies and describe potential limitations of each study design.
- ❑ Critically evaluate the claims associated with a new study finding, product or eating style.
- ❑ Identify and describe societal factors that serve as barriers to, or facilitators of, nutrient intake.
- ❑ Assess the quality of their own diet based on current dietary recommendations.
- ❑ Improve their diet if they need and want to, or at least know how to.

Students should also be able to:

1. describe the different types of studies used in nutrition research and the limitations associated with the application/generalization of their findings specific to their methodology; identify the type of any given study being described based on a description of its methods; *use* both of these abilities to evaluate (*make decisions about*) claims that are being made, based on research findings, regarding a diet-disease relationship.
2. Students should be able to identify levels of nutrient and/or food group intake as being deficient, marginal, adequate, more than adequate or excessive; predict the potential effects of those levels of intake on health; evaluate the overall quality of a given diet given specific food group and nutrient levels; and make recommendations regarding changes necessary to improve diet quality.

GER Category Objectives: Natural Sciences

Each course in the natural science category of the General Education Requirements will provide instruction and guidance that help students to:

1. Use the methods and processes of science in testing hypotheses, solving problems and making decisions.
2. Articulate, make inferences from and apply to solving problems scientific concepts, principles, laws and theories.

GER Student Learning Outcomes:

Students should be able to:

1. describe the different types of studies used in nutrition research and the limitations associated with the application/generalization of their findings specific to their methodology; identify the type of any given study being described based on a description of its methods; *use* both of these abilities to evaluate (*make decisions about*) claims that are being made, based on research findings, regarding a diet-disease relationship.
2. identify levels of nutrient and/or food group intake as being deficient, marginal, adequate, more than adequate or excessive; predict the potential effects of those levels of intake on health; evaluate the overall quality of a given diet given specific food group and nutrient levels; and make recommendations regarding changes necessary to improve diet quality.

Means of Assessing GER outcomes:

Students will demonstrate their achievement of this outcome through:

1. A homework assignment in which they are given a set of (exaggerated) claims regarding the ability of a dietary supplement (e.g., soy isoflavones) to reduce disease risk (e.g., heart disease,

osteoporosis, breast cancer). The claims will be presented as being based on “research findings” (E.g., “Research has shown that soy isoflavones can dramatically reduce the risk for heart disease”). Students will be asked to summarize and categorize the studies being used to make the claims, and based on that information and their understanding of the limitations of study designs, describe what is correct, incorrect and/or misleading about those claims.

2. A homework assignment in which they enter a five day food diary into a computer program that determines their nutrient levels. They will then determine the adequacy of those levels, or lack thereof, predict the potential consequences of those levels and make specific recommendations regarding changes, if necessary, to improve diet quality.

decisions about claims that are being made, based on research findings, regarding a diet-disease relationship.

- identify levels of nutrient and/or food group intake as being deficient, marginal, adequate, more than adequate or excessive; predict the potential effects of those levels of intake on health; evaluate the overall quality of a given diet given specific food group and nutrient levels; and make recommendations regarding changes necessary to improve diet quality.

Prerequisites and expectations

There are no prerequisites for this class – it is open to all students on campus. However you must keep in mind that this is a **science** course. Although I won't ever ask you to learn chemical structures or biochemical pathways, I will expose you to those basic principles that underlie what we know about nutrition because that is the only way you can fully understand the information being presented. That level of understanding is, in turn, necessary in order to explain what you've learned in your own words and apply that knowledge to new situations. You will need to do both to do well in this class. ***If you simply try to memorize the material as if it were disconnected bits of meaningless information you will likely be disappointed in the result.***

Required texts

You are expected to purchase the **course pack**, *Human Nutrition: An Inquiry Guided Approach*, that will serve as your notebook during the semester. Overheads of each page will be used as templates for note-taking during class.

You should also purchase the textbook, *Annual Editions: Nutrition 02/03*. This is a collection of articles which you will use for your homework assignments. Several copies of this are also available in the Reserve Room of the library.

Other resources

There are two excellent nutrition texts that are available in the library's Reserve Room filed under NTR 301. They can be used to provide additional information on topics we don't get to discuss and/or can also help to give you a better understanding of material that we do cover.

Tests

Tests will be 50 minutes long and have 45 questions each (multiple choice, matching, T/F). They will cover the material indicated on the syllabus, * **unless otherwise indicated in class** *. Questions will come from lecture only. Learning objectives for each topic can be found in the corresponding section of the course pack. You should be keeping up with the learning objectives as we cover them in class; this will be the best preparation for the tests. Sample questions for each topic can be found at the course web site: <http://www.cals.ncsu.edu/course/ntr301/index.htm>

Final Exam

The final exam will be 75 questions long. It will include 45 questions from the last portion of the semester as well **ten questions from each of the previous three tests**.

Assignments

Food Diary: Once during the semester you will keep a list of everything you eat and drink for a minimum of **5** days (a maximum of 7). At a time to be arranged, you will come to Polk Hall where computers and software will enable you to analyze your diet (no knowledge of computers is necessary -- someone will be there to assist you). Upon completion of the analysis you will answer the questions in the Food Diary section of the course pack. Their purpose is to make you more aware of the contribution individual foods make to your total nutrient intake, as well as make what you're learning

about nutrient needs and functions more relevant. You will be graded on your ability to answer the questions, not on the quality of your diet!

Homework: You will be asked to read specific articles in the *Annual Editions: Nutrition 02/03* textbook and answer questions that are designed to keep you engaged with the course between lectures, provide fuller explanations of concepts and/ or give you additional "food for thought." The questions will be handed out the second week of class and will also be available on the course web site. You may work with others on these assignments, **however the work you hand in must be your own. Duplicate answers will not be accepted.**

1" Papers: Approximately ten times during the semester you will be asked to write a "one minute paper" during class in response to a variety of questions such as "what were the two most important concepts from today's class," "what was most confusing about today's class," "how many different foods did you eat yesterday." These will be read but not graded or returned. They are designed to provide me with periodic feedback and encourage you to reflect on what we have been discussing. Obviously you must be in class to get credit for these. Excused absences will not be counted against you.

Grading

| | |
|------------------|--|
| Tests | 270 pts (135 pts each; drop the lowest grade) |
| Final Exam | 180 pts |
| Food Diary | 200 pts |
| Homework | 225 pts (75 pts each) |
| 1" Papers | <u>125 pts</u> (=8=125 pts; 6-7=100 pts; 4-5=50 pts; =3=0 pts) |
| | 1,000 pts |

Letter grades will be assigned using the following +/- scale:

| | | | |
|----------------|-----------------|----------------|--------------------------|
| A+...970-1,000 | B+....870-899 | C+....770-799 | D+.... 670-699 |
| A....920-969 | B 820-869 | C..... 720-769 | D..... 620-669 F....<600 |
| A-...900-919 | B- 800-819 | C-.....700-719 | D-.... 600-619 |

General Policies and Expectations

***Assignments:** All out of class assignments **MUST BE TYPED**. Please use 1" margins and 11 or 12 point font.

* **Late Assignments:** You will lose **5** points/day (**not** per class period) on each homework and **20** points/day on the Food Diary without a **documented** excuse. This includes weekends and holidays.

* **Attendance:** Attendance is NOT taken daily. However, failure to come to class could result in a missed 1" paper. I do assume that you're in class every day. In general, the more days you miss, the less well you are likely to do.

* **Late Arrivals/Early Departures:** Please make a concerted effort to arrive and leave on time. Constant movement in and out of the classroom is very disruptive.

* **Talking in Class:** This is very distracting to those around you. Chronic talkers will be asked to leave.

***Test make-up:** You may re-schedule a test, or make-up a missed test, only with a **university-approved** excuse (see http://www.ncsu.edu/provost/academic_policies/attend/reg.htm). Anticipated absences

associated with a test must be cleared with me ahead of time, and I must be notified of emergency absences within a week of the missed test date in order to re-schedule or make-up a test.

*Final Exam: Students are not required to take three consecutively scheduled final examinations within any 24-hour period. To reschedule the final test for this class, go to the Department of Registration and Records (1000 Harris Hall) before the end of the semester and have your schedule verified. Then we can work out an alternate time.

*Special needs: Reasonable accommodations will be made for students with verifiable disabilities. Please register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see http://www.ncsu.edu/provost/offices/affirm_action/dss/

Statement on Academic Integrity

You are expected to be familiar with the University's policy on academic integrity found in the Code of Student Conduct and the Honor Pledge described in the brochure on Academic Integrity at NCSU. This information can be obtained from the Department of Student Development located in Harris Hall. The content included in those documents applies to this course. Your signature on a test or assignment means that you have neither given nor received unauthorized aid and represents your commitment to honorable and trustworthy behavior that is in the spirit of the Honor Pledge. If you are in doubt regarding any of these requirements, please consult with me.

TEST/ASSIGNMENT SCHEDULE:

| | |
|--------------------------------|--|
| February 3 | Homework #1 |
| February 14 | Test 1 (Intro to the nutrients; Dietary Guidelines; Nutritional Assessment Techniques; Nutrition Studies; Digestion and Absorption)* |
| March 7 | Food Diary |
| March 19 | Test 2 (Carbohydrates; Lipids)* |
| March 26 | Homework #2 |
| April 9 | Test 3 (Protein; Labeling; Water; Minerals)* |
| April 25 | Homework #3 |
| <u>Final Exam</u> | (Vitamins; Supplements; Weight Control; Exercise; plus questions from three previous tests) * |

Section 001 (MWF, 11:20-12:10):

Wednesday, May 7 @ 9 am

Section 002 (MWF, 12:12-1:15):

Friday, May 9 @ 1pm

***Unless otherwise indicated in class.**



| DATE | TOPIC | Pages in course pack |
|------------------------------------|---|----------------------|
| January 10,13,15,17,22 24 | Life's a bowl of cherries, but how many should you eat? Introduction to the nutrients; the Recommended Dietary Allowances, The Dietary Guidelines and the Food Guide Pyramid; what <i>should</i> we eat, what <i>do</i> we eat? | 8-33 |
| January 27, 29, 31 | “How do you <u>know</u> that if I play with my food I’ll go blind?” Methods used in nutrition research | 34-42 |
| February 3, 5, 7 | Open the hangar... Getting nutrients in and out: digestion, absorption, excretion. | 43-56 |
| February 10, 12, 17, 19, 21, 24 | Peas, pasta, potatoes and pancakes Carbohydrates - structures, functions and food sources; benefits of fiber; dietary requirements; digestion and absorption; lactose intolerance; is sugar really bad for you; sugar substitutes; hyper and hypoglycemia | 57-84 |
| February 26, 28, March 3, 5, 7 | Lipids (AKA Triglycerides, Phospholipids and Sterols) Structures, functions and food sources; dietary requirements; digestion and absorption; lipids and cardiovascular disease; fat substitutes | 85-107 |
| March 17, 21, 24 | Pumping Protein Proteins – structures, functions and food sources; dietary requirements; protein and amino acid supplements; digestion and absorption; food allergies; vegetarianism; protein substitutes. | 108-123 |
| March 26 | What's in a name? How to read a food label; government regulation of labeling and food advertising. | 124-125 |
| March 28, 31, April 2,4, 7 | H₂O, Ca, Na, K, Fe Water: the “most” essential nutrient; functions, deficiencies and toxicities of selected minerals; the role of diet in osteoporosis and hypertension. | 126-145 |

| | | |
|------------------|---|---------|
| April 11, 14, 21 | From A to K Vitamins – functions, deficiencies, toxicities; other suspected and suspicious roles for vitamins in health and disease: CVD, cancer, colds, etc.; antioxidants | 146-166 |
| April 23 | Miracle cure or hopeless hype? Dietary supplements: the good, the worthless; government regulation | 167-169 |
| April 25,28 | A winning diet Nutrition and the athlete- popular misconceptions v. proper eating habits. | 170-181 |
| April 30, May 2 | Girth Control Energy balance and weight control; defining, treating, preventing overweight and obesity | 182-194 |