

COURSE PLAN

COURSE NO: NTR 300

COURSE TITLE: Advanced Nutrition & Metabolism I

COURSE DESCRIPTION: An intensive study of functions, digestion/absorption, interrelationships and cellular metabolism of macronutrients, determination of nutrient requirements and assessment of nutritional status, fluid balance and acid/base balance during health, disease and exercise. Topics of current research are explored.

CREDITS: 3

CLOCK HOURS/WEEK 3 hours total, 3 hours didactic

INSTRUCTOR: Barbara M. Carlson, MA, RD, CDE
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PREREQUISITES: NTR 210 - Principles of Human Nutrition
CHE 217 - Nutritional Biochemistry
BIO 117/118 or 217/218 Human Anatomy & Physiology I, II

COURSE OBJECTIVES:

1. The student will have a basic knowledge of:
 - A. Exercise physiology
 - Define exercise physiology terms.
 - Explain how nutrition impacts exercise and muscular status.
 - B. Evolving methods of assessing health status
 - Discuss newer methods of assessing health status.
2. The student will have a working knowledge of:
 - A. Public speaking
 - Gain experience in public speaking.
 - B. Nutrient metabolism.
 - Explain how macronutrients are metabolized in the body.
 - C. Fluid and electrolyte requirements.
 - Discuss how the body maintains electrolyte and acid-base balance despite alterations in food/fluid intake.
 - D. Pharmacology: Nutrient-nutrient and drug-nutrient interaction.
 - E. Influence of age, growth, and normal development on nutrition requirements.
 - Identify how nutrient requirements for macronutrients change during the lifespan.
 - F. Nutrition and metabolism.
 - Describe (review) the major metabolic pathways for macronutrients.
 - Discuss the absorption, transport, storage, and metabolism of macronutrients.
3. The student will demonstrate the ability to present an educational session for a group.
 - A. Use current information technologies.

- B. Interpret laboratory parameters relating to nutrition.
- C. Interpret current research.
- D. Calculate and interpret nutrient composition of foods.
- E. Collect pertinent information for comprehensive nutrition assessments.
- F. Determine nutrient requirements across the lifespan.
- G. Measure, calculate, and interpret body composition data.

REQUIRED TEXT:

Advanced Nutrition and Human Metabolism (5th ed.) by James L. Groff and Sareen S. Gropper. Wadsworth Publishing, 2009.

<http://newton.nap.edu/books/0309085373/html/> Required reading can be viewed online at this web address.

Access to the American Dietetic Association website: Evidence Analysis Library. You must be an ADA member (student).

EVALUATION:

Assessment of the student's progress is an ongoing process and involves the student as well as the instructor. The stated course objectives serve as the basis for evaluation. All assignments are due on the date scheduled. NO EXCEPTIONS.

Two examinations at 100 points each*	200 points
Comprehensive final at 150 points*	150 points
Current Topic Paper (100) /Presentation (50)	150 points
Assignments	100 points
TOTAL	600 points

If you are late more than two times, or absent more than twice without a doctor's note, your final numerical grade (on a scale of 1 to 100) will be lowered by 3 points.

<u>POINTS</u>	<u>GRADE</u>
651+	A
630-650	A-
609-629	B+
581-608	B
560-580	B-
539-559	C+
511-538	C
490-510	C-
469-489	D+
420-466	D
Below 420	F

TEACHING METHODS:

1. Lecture/teacher-centered discussion
2. Student-centered discussion
3. Concept mapping
4. Student presentations
5. Reading in textbooks, reference books, periodicals, newspapers, journals, Internet
6. Assignments involving researching, organizing information, and writing

WORK EXPECTED OF THE STUDENT:

1. Students are expected to have read the assignment prior to class and to actively participate in class discussions.
2. Students are responsible for all terms defined in the textbook.
3. Written assignments must be word-processed and completed on 8-1/2" x 11" paper. Spelling, punctuation and grammar will constitute part of the grade for the assignment. One-inch margins and double-spacing is required. Indent for paragraphs.
4. Class attendance is expected. If you must miss a class, a phone call is expected.
5. Assignments are due on the date indicated. **NO EXCEPTIONS.**
6. You must be present for the tests. There will be no make-up tests.

"Your obligations for this course include attendance at the final exam, on the day and time scheduled by the Registrar's Office. You should not make travel arrangements until the final exam schedule is published; if you must make plans early, you should schedule your travel after the last final exam day."

CLASSROOM PROTOCOL

Appropriate classroom behavior is implicit in the Cedar Crest honor Code. Such behavior is defined and guided by complete protection for the rights of all students and faculty to a courteous, respectful classroom environment. That environment is free from distractions such as late arrivals, early departures, inappropriate conversations and any other behaviors that might disrupt instruction and/or compromise students' access to their Cedar Crest College education. Turn off your cells phones prior to entering the classroom.

Honor Code:

The Cedar Crest Honor Code will prevail at all times. Please verify on each test and assignment that the work done is your own with your SIGNATURE. You are not to consult with ANY OTHER STUDENTS when you are given take-home tests, projects, and assignments. PLAGIARISM or any other form of academic dishonesty will result in no points on the paper/exam on which you plagiarized or cheated. In addition, such an act may result in failing the entire course. Please refer to your customs book for a complete explanation of the Cedar Crest Honor Code.

ABSTRACT and CRITIQUE

Objectives: Critically evaluate a scientific original (not a review article) research study related to macronutrient for its validity and application to clinical practice. The guidelines we will use for the course follow the Institute for Clinical Systems Improvement (ICSI) Methodology adopted by the American Dietetic Association. See the ADA Evidence Guide for more information.

Guidelines for Student:

1. Using your research article, complete a review of the article using the guidelines below. Answer the questions concisely but in paragraph format.
2. Use a **12 point font for paper and limit to 2 pages, double spaced.** It is important to learn to write a concise yet comprehensive research review.
3. **Complete a 250 word abstract of your primary research article, with complete citation.**
4. **Submit paper and a copy of the complete article** on the due date provided.

Guidelines for the Research Review:

The Abstract

The abstract should include the method, population, study, results/findings, statistics, conclusions and implications in a comprehensive but concise format. In other words, what was done, to whom, why, how, what was found, why, what are the conclusions and implications for the future. **Follow the JADA guidelines for completion of the abstract.**

The Critique (or Critical Review):

The critical review should critique the primary research article; i.e. discuss the positive points and findings as well as the flaws of the study. Answer the following questions as you read the article. Address positive points and flaws or negative aspects of the article in your critique.

1. Article Citation: title, author(s), sponsor (if stated). Who supported the research? What are the credentials of the author(s)? References current - published within the last 5 yrs.

2. Purpose(s), Hypothesis(es) Objectives: Are they clearly defined? Is the scope of the study and purpose/hypotheses clearly stated?

3. Method: Analyze the study design:

- a. Does the section adequately describe the study design, sample (rationale for selection) and size, setting, procedures and materials?
- b. Type of study: cohort, population based, prospective/retrospective, blinded, etc. Was it appropriate for the purpose?
- c. Sample: How and why was the sample selected; does it represent the target population? Is it applicable to other populations? Is the sample size adequate?
- d. What adjustments may be needed to make it applicable to larger populations? If subjects were randomized - how? Are groups evenly distributed? If stratified, were groups evenly divided with respect to major influencing factors being studied?
- e. Eligibility Criteria: Were clear cut guidelines set for eligibility? Basis of criteria?
- f. Is it valid - do the tests (methods) and statistics employed measure what they are supposed to measure? If intervention - were methods clearly defined? Were there confounding variables not accounted for which may interfere with impact of the intervention? Does the method test the hypothesis (es)? What statistics were used?

4. Results:

- a. Are the results presented in a clear, concise format? Are tables and figures self explanatory?
- b. Look at the statistics used and level of significance (refer to a research or statistics text or JADA: 88(9):1047-1065 for an explanation of statistics).
- c. Were there other factors that could have influenced the results? Are they stated /explained?
- d. Is there adequate data/evidence upon which to draw conclusions?
- e. Is the narrative a clear representation of the findings- pro and con, logical?
- f. Does the narrative agree with/support tables and figures? How is the data expressed?
- g. Do the secondary references support or refute the research findings.

5. Discussion:

- a. This section should interpret the results; show relationships between results and other research, discuss implications for practice, and relate findings to practice.
- b. Has the present study been compared to other similar studies including the secondary studies? If other studies arrived at different conclusions, have they been explained?

- c. Have the drawbacks or limitations of the present study been discussed?
- d. Is it too short; eliminating any results?
- e. Are the assumptions made in the beginning discussed? Supported? Refuted?
- f. Are conclusions supported by the results or by extrapolation? Is factual data referenced?
- g. How do YOUR conclusions compare with those of the authors'? Are alternative explanations for the findings presented and considered?
- h. What is the significance of the research?

6. Summary and Conclusions:

This section usually focuses on practical application of the findings, their relevance to current trends in research and practice and implications for future research.

Procedure:

1. **Indicate the article’s class of research (Table 1) (For purposes of this project it needs to be either A through D. Complete the Article Evaluation Checklist Form (found in Doc Share) and submit with your project (Table 2).**
2. **Grade the article according to the outcome of your critical review (Table 3).**
3. **Provide an evaluation of this project; i.e., what have you learned or what did you find useful about looking at the article carefully. Will this process change the way you “read” research articles?**

Table 1: ICSI Classes of Research Reports

Class	Type of Research
A	Randomized Clinical Trial
B	Cohort Study
C	Case-Control Study (non-randomized)
D	Cross-Sectional Study
M	Meta-Analysis
R	Consensus Statement
X	Medical Opinion

CURRENT TOPICS PAPER/PRESENTATION

OBJECTIVES

Interpret current research.

PROCEDURE

Each student will pick a current topic of interest from the field of macronutrient metabolism and prepare a written paper and presentation for the class. All journal articles used as references must be published within the past 7 years. The topic must be in a current area of nutrition science, experimental or clinical nutrition research or nutrition in medicine dealing with nutrient metabolism.

The report must be 6 to 8 pages in length (not to include the title page or references). Your presentation requires the use of power point and will be graded on vocal aspects of delivery (your use of volume, rate, emphasis, pausing, and articulation), nonverbal aspects of delivery (posture, eye contact, gestures, personal appearance), use of visual aids and handouts. **You will prepare your paper according to the guidelines in The Journal of the American Dietetic Association (found in the Doc Share of your**

ecompanion site). **Please note: this may be different than other papers you have written. It is your responsibility to research this method of preparation.** Draft is due 10/15/2008.

Macronutrient Paper: DUE DATE 11/12/2008

Assignments will be distributed in class and the due date will be assigned at that time.

<u>DATE</u>	<u>TOPIC</u>	<u>READING ASSIGNMENTS</u>
8/27	Interpretation of Research	Gropper, Chapter 16 ADA's Evidence Analysis Workshop Manual – see online document sharing
9/3	Nutrient Recommendations and their establishment Role in Dietary Assessment	http://newton.nap.edu/books/0309085373/html/ Chapters 1-4 in online text
9/10	Carbohydrates	Chapter 4 in Gropper http://newton.nap.edu/books/0309085373/html Chapter 6 in online text
9/17	Carbohydrates Abstract and Critique is due	Chapter 4 Gropper, http://newton.nap.edu/books/0309085373/html/ Chapter 6 in online text
9/24	Fiber Lipids	Chapter 5 and 6 in Gropper http://newton.nap.edu/books/0309085373/html/ Chapters 7, 8, 9 in online text
10/1	<u>Test</u>	<u>Classroom materials, Chapters 2 through 4 from Gropper and nap.edu information</u>
10/8	Lipids	Chapter 6 in Gorpper http://newton.nap.edu/books/0309085373/html/ Chapters 8 and 9 from online text
10/15	Proteins <u>Draft of paper due</u>	Chapter 7 Gropper, http://newton.nap.edu/books

[/0309085373/html/](http://0309085373/html/)
Chapter 10 from online text

10/22	Proteins	Chapter 7 http://newton.nap.edu/books/0309085373/html/ Chapter 10 from online text
10/29	<u>Test</u>	Gropper, Chapters 5 through 7 And nap.edu information Chapters 7,8,9,10
11/5	Integration and Regulation Of Metabolism <u>Papers due</u>	Chapter 8
11/12	Presentations	
11/19	Presentations	
11/26	Body Composition and Energy Expenditure	Chapter 15 - Gropper
12/03	Final	Comprehensive