

MSACN, New York Chiropractic College  
NTR5101 Macronutrients: Carbohydrates, Fats and Proteins  
Winter 2011

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**Course Description:**

This is an online interactive course designed to prepare students to understand how carbohydrates, fats and proteins function in the body; how each macronutrient, alone and when combined, undergoes integrated metabolism within tissues; and how the macronutrients integrate to affect overall metabolism, disease risk and recovery. Suggestions for client counseling on these issues will be presented.

Course credits: 3

**Faculty Information:**

Amy Bidwell

Adjunct Instructor

Virtual Office Hours: TBA

Email: [abidwell@nycc.edu](mailto:abidwell@nycc.edu)

**Course Information:**

Location: Online

Course Format: lectures, readings, class discussions, quizzes, capstone paper and presentation

**TEACH Copyright Notice**

“The materials on this course Website are only for the use of students enrolled in this course for purposes associated with this course and may not be retained or further disseminated.”

**Pre-Requisites:** None

**Required Resources:**

Internet access including access to the NYCC Student and Library Portals, and specifically the Desire2Learn (D2L) Course Learning Management System (LMS) via the following link:

<https://onlinelearning.nycc.edu/>

Technical Assistance:

- For D2L issues, Contact D2L Support at [helpdesk@desire2learn.com](mailto:helpdesk@desire2learn.com) or call **519.772.0323 (Toll Free 1.877.325.7778)**.
- For general directions, review the [video for students on how to navigate D2L](#), which exists both on the NYCC student portal (Course Hyperlinks Section) and on D2L (My Home Page in the Help and Contact Information Section).

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- If you are having problems with your NYCC email, call the NYCC Technology Helpline at **1-315-568-3223** (Hours Mon-Fri, 8 to 4 EST) and a person will get back to you

**Required Textbook:**

Bland, J.S. (2006) *Clinical Nutrition, A Functional Approach*, 2<sup>nd</sup> edition, The Institute for Functional Medicine, Gig Harbor, WA

**Recommended Textbook:**

Lord, R.S. & Bralley, J.A. (2008) *Laboratory Evaluations for Integrative and Functional Medicine*, 2<sup>nd</sup> edition, Metametrix Institute, Duluth, GA.

Gropper, Smith and Gropp (2009) *Advanced Nutrition and Human Metabolism*, 5<sup>th</sup> Edition. Wadsworth Learning.

**Other Readings:**

Selected Journal Articles from the Biomedical Literature

**Course Goals:**

This course is designed to introduce students to the functional aspects of the macronutrients we consume every day. A strong emphasis will be placed upon the aspects of physiology and biochemistry that dictates digestion, absorption, assimilation and excretion of carbohydrates, fats and proteins. A solid understanding of these principles will enhance the student's ability to predict, diagnose and treat conditions associated with various states of dysmetabolism. Furthermore, the course projects and assignments will introduce the students to current concepts in applied clinical nutrition via peer-reviewed research, discussion topics, reading assignments and links to relevant websites.

**Course Objectives:**

At the conclusion of this course, the successful student will:

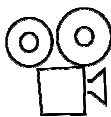
- Compare and contrast the classes of carbohydrates, fats, and proteins in addition to their respective functions in the body.
- Interpret the process of how the digestion and absorption of the macronutrients: carbohydrates, fats and proteins occur.
- Analyze case studies of various patients and make recommendations for carbohydrate, fat and protein intake
- Recommend amounts and types of carbohydrates, fats, and proteins for wellness.
- Recognize the signs and symptoms associated with macronutrient imbalances and make clinical recommendations to restore optimal metabolic function on a well defined time scale.
- Create a protocol of macronutrients that could be used to prevent oxidative damage.

## Instructional Methods:

- This is a 15-week online course which will follow a detailed schedule.
- The student should expect to spend nine hours a week, on average, to successfully complete this course.
- The course is outlined in the *Content* section of the Desire2Learn (D2L) class platform divided into topic modules, which are further subdivided into topics to be covered each week. Within each week section please follow the links to any PowerPoint lectures, videos (including e.g. YouTube clips and recorded demonstrations) as well as reading assignments to prepare for the discussions of the week. You can also go directly to the Assignments section to find readings and projects due each week.
  - Various icons will be used within the PowerPoint lecture to decipher when you should read an extra article that I have posted on D2L or watch a video that is posted on D2L. Below is the legend of the icons that will be used throughout the class.



Indicates that a separate reading has been posted in the content of D2L for that week which pertains to that specific lecture.



Indicates that a separate video has been posted in the content of D2L for that week which pertains to that specific lecture

- **Discussion protocol:**
  - Class participation (a substantial component of the total course grade) will be determined based on individual participation in course discussion. Each week a series of questions will be posted based on the lecture/reading/video material.
  - **Discussion participation** is the major basis for your grade in the course, so I will be looking for quality postings. I consider a good quality posting to be germane to the topic, thoughtful, and concise (**for further detail see the grading rubric listed on the D2L CONTENT dropbox under course information**). Please make sure to use proper grammar and complete sentences!!! As professionals, you may have valuable personal experience to bring to the discussion, which are welcome and appreciated. Remember however that you are also expected to reflect on the course material during discussions. Therefore, backing up your opinions with excerpts from assigned readings or sharing additional relevant articles and studies with the class should also be part of your response. Discussions can be accessed via the *Content* section in D2L under the relevant week listing or directly via the *Discussion* section.

- I expect each student to make **at least 2 postings per week**. At least one of them should contain supporting documentation from the text or other reliable sources and be an original posting. The other may be a response to a classmate or an opinion, but may also reference an outside source, as well. Discussion postings must be made during the appropriate week to receive credit. Late postings are certainly welcome if you desire to continue exploring a particularly topic but note that these will not be recorded for credit. **(10 points per week-5pts/post)**
- **Case Studies** will be posted the first week of the module and the case study report will be due the first week of the following module. Case studies come from actual patients that I have worked with or from the literature. The grading rubric for case studies can be found under the *Content* section in D2L
  - **Please Note:** The case study report is worth a total of 20 points and the grading rubric is available under the *Content* section in D2L.
- **An End of Module Quiz** (10-question timed short-answer) will be available during the last week of each module, students will need to take the quiz on the information presented in that content module. Each question is worth 3 points. The quizzes will be based on lecture, reading and discussion material.
  - **If the quiz is not completed by the deadline, you will not receive credit for it.** These quizzes will have a 60 minute time limit, so make sure you have time to complete it before you start. You only have access to each quiz once. Each quiz will be worth a total of 30 points.
- **The Capstone, Written Paper** will be due in the eleventh week of the term. During the duration of the course, students will work in pairs to write a **10 page** literature review paper (**minimum 15 peer-reviewed original articles reviewed**) on a current topic in the use of macronutrients in the prevention and/or treatment of a disease process or syndrome.
  - Students will be assigned a partner to work with by the end of the forth week of the trimester, 11:59pm on Sunday..
  - Topics are due at the end of the sixth week of the trimester, 11:59pm on Sunday and must be approved by the instructor. Each group needs to have a different topic than the rest of the groups. Please send only one email with your name, your partner's name and the topic.
  - A completed review of literature paper is due during week 12, by 11:59pm on Sunday.
  - **Please Note:** The paper is worth a total of 50 points and the grading rubric is available under the *Content* section in D2L.
- A PowerPoint Presentation covering the capstone written paper will allow for reflective student learning. This presentation will be due during week 13 by 11:59pm on Sunday.

- **Please Note:** The PowerPoint presentation is worth a total of 40 points and the grading rubric is available under the *Content* section in D2L.
- **It is the student's responsibility to familiarize him/herself with and adhere to the standards set forth in the policies on cheating and plagiarism as defined in the student handbook.**

**Assessment Criteria for Course Grading (on a weekly basis):**

<b>Topic/Week</b>	<b>Deliverable/Assessment</b>	<b>Available points</b>
<b>Module I: Carbohydrates (Weeks 1-5)</b>		
Week 1	Online Participation	10
Week 2	Online Participation	10
Week 3	Online Participation	10
Week 4	Online Participation	10
Week 5	Online Participation	10
	<b>End of Module Quiz (Material Inclusive of Weeks 1-5)</b>	30
<b>Module II: Fats (Weeks 6-10)</b>		
Week 6	Online Participation	10
	<b>End of Module Case Study Report Due</b>	20
Week 7	Online Participation	10
Week 8	Online Participation	10
Week 9	Online Participation	10
Week 10	Online Participation	10
	<b>End of Module Quiz (Material Inclusive of Weeks 6-10)</b>	30
<b>Module III: Proteins (Weeks 11-15)</b>		
Week 11	Online Participation	10
	<b>End of Module 2 Case Study Report Due</b>	30
Week 12	Online Participation	10
	<b>Capstone, Written Paper Due</b>	50
Week 13	Online Participation	10
	<b>PowerPoint Presentation Due</b>	40
Week 14	Online Participation	10
	<b>End of Module Quiz (Material Inclusive of Weeks 11-14)</b>	30
Week 15	<b>End of Module Case Study Report Due</b>	20
	Online Participation	10
<b>Total Points for the Course</b>		<b>400</b>

**NYCC Grading Scale:**

Points Earned	Numerical Grade %	Letter Grade	Grade Description
≥ 364	90.0 – 100.0 %	A	Consistently exceeds performance standards
≥ 320	80.0 – 89.0%	B	Meets and occasionally exceeds performance standards
≥ 280	70.0 - 79.0%	C	Meets performance standards
< 279.9	0.00 – 69.9%	F	Fails to meet performance standards. Student required to repeat the course in its entirety

**Make-Up Policy:**

- All work is to be completed as described in the syllabus and must be completed by the due dates listed.
- In the event of an unforeseen circumstance the student must notify the instructor as soon as possible, but no later than 24 hours after the due date. In the case of an unforeseen circumstance, make-up assignments must be turned in within one week of its due date to receive credit. No more than one make up assignment will be allowed unless it is because of illness, mandatory religious obligations, or other unavoidable circumstances or institutionally approved College activities.
- Examinations will be posted for limited time periods which will be clearly communicated to students. It is the student's responsibility to complete examinations during the time period when the examination is available. Students must make arrangements with the instructor if they cannot perform the examination within the allotted timeframe.
- It is the prerogative of the instructor to grant extensions on a case-by-case basis. The instructor reserves the right to request written documentation regarding any requests for an extension.
- **Note: non-participation/performance of 20% or more of the course activities will automatically result in a non-passing grade for the course.**

**Health Clearance Policy:** Not applicable

**Course Calendar:**

Each topic will begin on the Monday date indicated and discussion of that topic will run for one week, until the following Sunday at 11:59pm. Please make sure all assignments and discussions are posted during the specified period of time. **Credit will not be given for late submissions.**

Week	Topic	Reading Assignment	Assessment
<b>Module 1: Carbohydrates</b>			
1 (1/5-1/9)	<b>Introduction to Course Introduction to Functional Medicine</b>	Read Chapter 1, Clinical Nutrition	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
2 (1/10—1/16)	<b>Introduction to Carbohydrates: Structure and Dietary Requirements</b>	Read Chapter 2, Clinical Nutrition	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
3 (1/17- 1/23)	<b>CHO Digestion</b>	Chapter 7 <i>Clinical Nutrition</i> Chapter 1 p.68-75 <i>Gropper</i> Read papers posted on D2L	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
4 (1/24- 1/30)	<b>CHO Energy Production</b>	Chapters 8 <i>Clinical Nutrition</i> Chapter 1 <i>Gropper p.78-101</i> Read papers posted on D2L	Discussion Posts [Due <b>Sunday</b> at 11:59pm] Email Capstone Group Names [Due <b>Sunday</b> at 11:59pm]
5 (1/31-2/6)	<b>Fructose: <i>Separating fact from Fiction</i> Metabolic Syndrome</b>	Read papers posted on D2L	End of Module Quiz [Due <b>Sunday</b> at 11:59pm] Discussion Posts [Due <b>Sunday</b> at 11:59pm]
<b>Module 2: Fats</b>			
6 (2/7-2/13)	<b>Lipids: Structure and Dietary Requirements</b>	Read Chapter 4, Clinical Nutrition (Pages 69-74, 87-94)	Discussion Posts [Due <b>Sunday</b> at 11:59pm] End of Module 1 Case Study [Due <b>Sunday</b> at 11:59pm] Email Capstone Group Topic [Due <b>Sunday</b> at 11:59pm]
7 (2/14-2/20)	<b>Fatty Acid Digestion</b>	Read Clinical Nutrition Ch.7	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
8 (2/21-2/27)	<b>Fatty Acid Metabolism: Beta Oxidation</b>	Read Chapter 5, Lord & Bralley (Pages 276-285)	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
9 (2/28-3/6)	<b>Sterols and Steroid Hormones</b>	Read Chapter 4, Clinical Nutrition (Pages 85-87) Read Chapter 10, Lord & Bralley (Pages 563-574)	Discussion Posts [Due <b>Sunday</b> at 11:59pm]
10 (3/7-3/13)	<b>Arachidonic Acid Cascade</b>	Read Chapter 4, Clinical Nutrition (Pages 74-84)	Discussion Posts [Due <b>Sunday</b> at 11:59pm] End of Module Quiz

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		Read Chapter 5, Lord & Bralley (Pages 286-290)	[Due <b>Sunday</b> at 11:59pm]
<b>Module 3: Proteins &amp; Amino Acids</b>			
11 (3/14-3/20)	<b>Amino Acids, Essential &amp; Nonessential: Sulfation &amp; Urea Cycle; Conjugation</b>	Read Chapter 3, Clinical Nutrition (Pages 41-47)	Discussion Posts [Due <b>Sunday</b> at 11:59pm] End of Module 2 Case Study [Due <b>Sunday</b> at 11:59pm]
12 (3/21-3/27)	<b>Amino Acids, Essential &amp; Nonessential: Branched Chain, Mitochondrial, Glutamine &amp; Excitatory</b>	Read Chapter 3, Clinical Nutrition (Pages 47-52)	Discussion Posts [Due <b>Sunday</b> at 11:59pm] Capstone, Written Paper [Due <b>Sunday</b> at 11:59pm]
13 (3/28-4/3)	<b>Proteins &amp; Peptides: A Functional Approach</b>	Read Chapter 3, Clinical Nutrition (Pages 53-64)	Discussion Posts [Due <b>Sunday</b> at 11:59pm] PowerPoint Presentation [Due <b>Tuesday</b> at 11:59pm]
14 (4/4-4/10)	<b>Protein Digestion and AA Metabolism</b>	Read Chapter 6 Gropper p. 198-221	Discussion Posts [Due <b>Sunday</b> at 11:59pm] End of Module Quiz [Due <b>Sunday</b> at 11:59pm]
15 (4/11-4/17)	<b>Gut Ecology and Review</b>	Read Chapter 7, Clinical Nutrition	Discussion Posts [Due <b>Thursday</b> at 11:59pm] End of Module 3 Case Study [Due <b>Tuesday</b> at 11:59pm]

**Disclaimer:** This syllabus is a representation of the course content, organization and evaluation processes. The faculty teaching this course reserves the right to reasonably alter the sequence of activities, evaluation and assignment dates, and assignment methods or styles. Every effort will be made to inform the class members in advance of such changes. Students are responsible for following the syllabus and any changes instituted by the faculty.

*Information obtained in this course is not intended as a diagnosis or treatment plan for the student, family members, friends or patients of the student in the course. The instructor is not engaged in a doctor-patient relationship with the student and as such, any recommendations made in this class are solely for the purpose of education.*