NST 10 – INTRODUCTION TO HUMAN NUTRITION

DEPARTMENT OF NUTRITIONAL SCIENCES & TOXICOLOGY

UNIVERSITY OF CALIFORNIA, BERKELEY

FALL 2019

Lecture:	Mondays and Wednesdays, 6:00 – 7:00 P.M., Wheeler Hall
Discussion Section:	50-minute discussion each week, please see your schedule for date/time/location
Professors:	Marc Hellerstein MD, PhD (Course Director) march@berkeley.edu Office Hours M 3:00 – 4:30PM, 309 Morgan
	Joseph Napoli PhD jna@berkeley.edu Office Hours Tuesdays 2:00 – 3:00 PM, 231 Morgan
	William Evans PhD William.Evans@berkeley.edu Office hours Mondays 3:30-4:30 PM, Room 309 Morgan
Course Administrator:	Ashley Reaver, MS, RD areaver@berkeley.edu Office hours Mondays 4:00-5:00pm, Morgan 229

NST10 COURSE OVERVIEW:

This course focuses on the relationship between diet and health, and how the human body responds to different diets and food components including carbohydrate, fat, protein, vitamins, minerals, water, and alcohol. The course also emphasizes how diet interacts with activity and the impact of exercise or sedentary life-style on health. We will discuss the role of diet and activity in disease and optimal health, based on current knowledge in the field of nutritional and medical science. After successful completion of this course, each student should be able to make informed decisions about food and how this relates to activity and the consequences on health. The ultimate goal is that students gain sufficient knowledge to be intuitive about nutritional and behavioral choices that affect their lives.

Course Objectives:
By the end of the semester, students will:

1. Understand the basic functions of nutrients and their properties that influence how organs function in health and disease.
2. Identify the major nutrients and their roles in biologic function and human health.
3. Be familiar with the topics of energy balance, oxidation-reduction, metabolic transformations and nitrogen balance as well as how these relate to metabolic control in the human body.
4. Understand the natural history of common chronic diseases in the modern world, such as obesity and type 2 diabetes, fatty liver disease, metabolic syndrome and cardiovascular disease, carcinogenesis and cancer.
5. Understand how organs utilize nutrients and how disorders of nutrient utilization and metabolic transformations can lead to disease, and the roles of phytochemicals, whole foods and purified components and supplements.
6. Understand the biology of different types of exercise, factors affecting physical performance, and the relation between physical activity and chronic disease
7. Be familiar with biologic and nutritional aspects of different stages of life, including adolescence, pregnancy, and aging
8. Be able to integrate the above to real world conditions such as obesity, exercise performance and sports, malnutrition, starvation, growth, reproduction, fitness, pregnancy, aging and food intake regulation, as well as behavioral conditions such as eating disorders.

The class meets for 2 hours of lecture and 1 hour of a smaller discussion section per week. The lecture is available via audio-cast (a recording of the lecture can be heard but you cannot see slides) and is available through bCourses. The discussion sections are led by Graduate Student Instructors (GSIs) and provide a

forum for discussing current research and consumer nutrition-related ideas, application of lecture material, concepts and products. Information discussed in sections is an essential component of the course and will be on the exams.

COURSE MATERIALS:

- Smolin & Grosvenor, Nutrition: Science and Applications, 4th edition. ISBN: 9781119321644. There are two options for purchasing the textbook, listed below. The previous edition of the textbook is also acceptable, however readings may be slightly changed.
  1. New, printed text in the bookstore packaged with an ebook access code (about $110).
  2. Ebook available at: http://www.wiley.com/WileyCDA/Section/id-828529.html (about $60).

  Note: Three copies of the textbook are also on permanent reserve at the Moffitt library.
- Access to bCourses and the USDA SuperTracker, https://www.supertracker.usda.gov

ENROLLMENT:

Adding and dropping the course will take place through Tele-Bears. Please visit registrar.berkeley.edu for information about late adding/dropping. Discussion sections begin on Wednesday, Sept. 4.

ASSIGNMENTS:

Five discussion section assignments, worth 10 points each, will be given throughout the semester. Assignments are due in discussion section and will be graded by your GSI. Five (5) points will be deducted for each week they are late. Assignments emailed, left in professor or GSI mailboxes or under office doors will NOT be accepted. You will be granted one late assignment, which can be turned in one week late for full credit. Any assignment-related questions should be directed at your GSI.

There will be one diet analysis project, worth 25 points, which provides an opportunity for you to evaluate and critique your diet and personal nutrient needs. The project requires you to record and analyze your diet for three days using the free USDA SuperTracker program available at https://www.supertracker.usda.gov. The diet analysis project cannot be used as your "free" late assignment.

ATTENDANCE IN SECTION:

Students are required to attend sections. Sections will include new material not covered in lecture as well as exam reviews and presentation of the assignments. Students may miss up to 2 sections to receive the 10 points for section attendance.

EXAMS:

There will be 3 midterm exams and 1 cumulative final. Each exam will consist of 50 multiple-choice questions. Your lowest midterm grade will be dropped, but all students are required to take the final exam.

There will be NO make-up or early exams. NO EXCEPTIONS. FOR ANYONE.

Please plan accordingly. Any questions or concerns related to exams must be addressed no later than one week from when exam grades are posted – after 1 week, exam grades are final.

If you require additional arrangements per the Disabled Students' Program (DSP) protocol, report this to your GSI by **September 9**. You must also be officially filed with DSP in order to have special arrangements.

COURSE GRADE:

Cheating and plagiarism on assignments and exams is not tolerated and can result in failing the course and expulsion from the university. All policies found in the Campus Code of Student Conduct will be enforced.

Your grade is based on a percentage. There is no rounding of points or additional assignments if you do not receive the grade you desire. A curve will be employed with the following distribution, after dropping the lowest midterm score.

FINAL GRADE: WILL BE ACCORDING TO THE FOLLOWING DISTRIBUTION, BASED ON TOTAL SCORE

COMPONENT	POINTS	TOTAL POINTS
2 Midterms + 1 Final	100 points per exam	300 points from exams
5 Section Assignments	10 points per assignment	50 points from section
1 Diet Analysis Project	25 points	25 points from DA project
Attendance in section	10 points	10 points from attendance
COURSE GRADE		**385 points**

A or A+ = 25% of students A- = 30% " "
B+ = 20% " " B = 10% " " B- = 7% " "
C+ = 3% " " C = 2% " " C- = 1% " "
Lower than C- = up to 2% " "

Class Schedule	Lecture Topic	Prof	Reading (GV = Grosvenor)	Section Topic	Section Reading/ Assignment (pp.)
Aug. 28, Wed	Introduction to the course: the modern field of nutrition and health	MH	GV 1:4-31 MH Chapter Obesity	**No Section**	
Sept. 2, Mon	Labor Day –No Class				
Sept. 4, Wed	Health consequences of obesity and related conditions	MH	MH Chapter Obesity Insel 9:335 – 386 MH Insel 285		
Sept. 9, Mon	Why do diets fail? Energy balance and weight control: what works, do macronutrients matter	MH		The DRIs	
Sep. 11, Wed	Nature of nutrients. macronutrients and micronutrients	JN			

Sep. 16, Mon	Digestion, absorption and metabolism of macronutrients	JN	GV 1.2, 1.3	Nutrition Labels	**Assignment 1 due** The DRIs
Sept. 18, Wed	Lipids I	JN	GV Chapter 5		
Sept. 23, Mon	Lipids II	JN		**Exam Review**	**Assignment 2 due** Nutrition Labels
Sep. 25, Wed	Calorie deficiency: effects on metabolism, growth and reproduction; lifespan	MH	Insel 7: 297-302 Anorexia Endo		
Sep. 30, Mon	Protein/calorie deficiency: stunting in children, interaction with infection,	MH	Cahill NEJM		
Oct. 2, Wed	**Exam 1**	GSIs			
Oct. 7, Mon	Dietary carbohydrates: insulin resistance and glycemic control	WE	GV 110-149 WE – High CHO diet (Evans, *Arch Int Med*)	Food Insecurity	**Assignment 3 due** Nutrition Research
Oct. 9, Wed	Protein metabolism, nutrition and exercise	WE	GV 202-213 Protein Needs, Exercise and Aging (*J Am Col Nutr*		
Oct. 14, Mon	Changing nutritional needs with aging	WE	Evans (*NEJM*) Bed Rest, Evans (JAMA) Sarcopenia, cachexia, inactivity Evans *Am J Clin Nutr*	Protein & Vegetarianism	**Assignment 4 due** Food Insecurity
Oct. 16, Wed	Exercise in the prevention and treatment of chronic disease	WE	Exercise is the Real PolyPill (*Physiology*)		
Oct. 21, Mon	Muscle biology and the physiology of exercise and sport	MH	GV 492-533	**Exam Review**	
Oct. 23, Wed	Natural history of nutrition-related chronic disease (1): Insulin resistance/, type 2 diabetes, fatty liver disease	MH			
Oct. 28, Mon	**Exam 2**	GSIs			

Oct. 30, Wed	Natural history of nutrition-related chronic disease (2): metabolic syndrome/ cardiovascular disease	MH		Popular diets	
Nov. 4, Mon	Fat soluble vitamins	JN		Dietary Supplements	**Assignment 5 due** Popular Diets
Nov. 6, Wed	Water soluble vitamins	TBD	GV 303 - 342		
Nov.11, Mon	**Veterans Day Holiday**			**No section**	
Nov. 13, Wed	Eating disorders and reproductive health; bone, calcium and osteoporosis	MH	Insel 12:489-498 GV 414-441		
Nov. 18, Mon	Nutrition and pregnancy	MV	GV 582-610	Food Technology	
Nov. 20, Wed	Dietary recommendations	AR			
Nov. 25, Mon	Natural history of nutrition-related chronic disease (3). Diet and carcinogenesis; prevention of cancer	MH		**No section**	
Nov. 27, Wed	No Class (Thanksgiving)				
Dec. 1, Mon	**Exam III**	GSIs		Review for Final & Course Evaluation Reminder	**Diet Analysis Project due**
Dec. 3, Wed	Review for Final Exam	MH/ JN			
Dec. 9 - 13	RRR Week			**No section**	
Dec. 20, Fri	**Final Exam**	GSIs		**No section**	