ADVANCED MEDICAL NUTRITION THERAPY

Nutrition 316
Spring 2017

Time and location of the course: Wednesdays 1:30 pm – 4:30 pm; Location: Room 118

Instructors:
Kathy Prelack, PhD, RD
kprelack@tufts.edu | Phone 617.371.4756
Office Hours: by appointment

Kelly Kane, MS, RD, LDN, CNSC
kkane@tuftsmedicalcenter.org | Phone 617.636.8309
Office Hours: by appointment

Tufts Graduate Credit: 1 credit
Prerequisites for taking this course: Graduate standing or instructor consent

Course Description: The goal of the course is to expand students’ knowledge on a variety of common pathophysiological conditions and integrate this knowledge with the intervention of clinical nutrition therapies.

Course Objectives:
At the completion of the course, students should be able to:

1. Discuss the key elements of nutritional assessment and diet therapy, describe their alterations during various disease states and relate this information to support nutrition intervention strategies in individuals during altered pathological states.
2. Interpret information from medical, social and nutritional histories, combined with biochemical and anthropometrical indices during different pathophysiologival states to assess nutritional status, develop nutrition care plans, and problem solve.
3. Accurately define, both in writing and orally, how pathophysiology of a selected disease state impacts nutritional status and what nutrition interventions are indicated.
Description of assignments, tests, and other required activities:

Assignments for this course include readings, online and in person lectures, one online discussion, in class assignments, one take home exam, two case studies, a clinical controversy discussion and an essay review paper and paper presentation. For the most up to date information regarding assigned readings, instructions, and due dates please login to your Trunk course site and click on the tab labeled "Weekly Overviews."

Readings and Lectures

Students will be expected to read the assigned background materials prior to coming to class and/or listen to the pre-recorded lectures as applicable each week. Familiarity with the recorded lectures will be necessary in order to understand the in-class assignments and activities. Supplemental readings, although not required, may also be posted and are highly recommended.

Online Discussion

For the online discussion, all students must participate in the graded discussion forum. Each student will be expected to post thoughtful comments relevant to the assigned topic and the specific questions posed by the instructor. Students will be graded on the quality and timeliness of their postings, as well as their understanding of the assigned materials. Students are expected to participate actively and in a timely fashion. Students may submit their postings only during the week in which the discussion forum is active.

Take Home Exam

The first half of the course will focus on the core subject areas of nutrition assessment and nutritional therapy during pathophysiology. The take home exam will assess this material.

Clinical Controversy Discussion

There will be one Clinical Controversy discussion which serves to highlight a current controversy in practice. You and your group members will be asked to take a specific position on a clinical topic that is currently controversial. You will need to identify 1 peer reviewed journal article that supports your position, while your “opponents” will research the alternate view. You will be asked to represent your position and defend it as a practice standard.

Case Studies

There will be two case studies during the semester. Topics in specific pathological states and methods of nutritional therapy during these disease states that are
presented in the lectures both by the instructors and guest lecturers will be addressed and students will answer questions based on the case studies.

**Essay Review Paper (approximately 10-15 pages, double-spaced)**

Paper topic will be chosen by the student and approved by the instructors. Paper topics are due on 3/15/17 and will be discussed in class. Topic should not be one that is presented as part of the scheduled lectures, although special instances of a general topic discussed in during lecture is acceptable. The paper should reflect the current state of knowledge in the particular area as supported by research and expert opinion in the field. The content’s focus should be on the nutritional implications and dietary management of the specific disease state or condition. An overview of physiological mechanisms of the disease and aspects of treatment should be included. Paper should include an introduction, review of literature, discussion of important findings, and conclusion. The conclusion should include directions of the future research and controversies if applicable.

**Essay Review Paper Presentation**

A presentation of your paper will take place during the last class. Each student will present their topic orally to the class and will be graded by their peers. The presentation should be no longer than 10-15 minutes in length.

**Summary of Assignments and Grading**

<table>
<thead>
<tr>
<th>Assignment(s)</th>
<th>Grading Weight</th>
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<tbody>
<tr>
<td>In Class and Online Discussion</td>
<td>10%</td>
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<tr>
<td>Midterm Take Home Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Clinical Controversy</td>
<td>10%</td>
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<tr>
<td>Case Studies (2)</td>
<td>30%</td>
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<tr>
<td>Paper</td>
<td>20%</td>
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<tr>
<td>Paper Presentation</td>
<td>10%</td>
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<tr>
<td><strong>TOTAL</strong></td>
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<td>Grade</td>
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<td>A+</td>
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<td>94-99.99</td>
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<td>B</td>
<td>84-86.99</td>
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<tr>
<td>B-</td>
<td>80-83.99</td>
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**Class Policies, Expectations, and Evaluation**

Students will have only one opportunity to complete each assignment, and all assignments are due on the date/time specified. Students must submit their online discussion postings only during the week in which a discussion is active or lose ½ point for each day it is late. Students will have only one opportunity to compete the exam. Each exam must be completed and successfully submitted within the specified time period. Students who are unable to complete an assignment on time for any reason should notify the instructors by email (preferred) or phone call prior to the deadline, with a brief explanation for why the extension is needed.

There are NO opportunities for extra credit work.

Students are expected to complete all assignments on their own, i.e. without assistance from other students, faculty, etc. unless otherwise noted. All outside documents used in the preparation of students’ work must be properly referenced. (References to the textbook are not required).

Instructors and other university personnel may request that students submit written assignments to plagiarism prevention resources, websites, or other authoritative databanks, such as (but not limited to) “turnitin.com” or a similar site. These services compare students-produced documents with web content, newspapers, journals, magazines, books, student essays, and other data to determine the originality of student work.

The following guidelines are used in evaluating course performance:

1. Assignments will be evaluated on the basis of completeness, originality, scientific soundness and relevance to the assigned topic.

2. Written work will be evaluated on the quality of thought, completeness, and adherence to guidelines, scientific integrity, and ability to incorporate and communicate ideas and information effectively.
3. Adherence to instructions and guidelines of the assignments.

4. Participation in all class activities and discussion. Missed work will affect your grade unless prior arrangements were requested and approved in writing by the instructors for make-up work.

5. On-line discussions will be evaluated according to the discussion matrix (see below).

**Online Discussion Assignment Grading Criteria**

<table>
<thead>
<tr>
<th>Quality of Posting/Reply</th>
<th>Points</th>
<th>Details</th>
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<tbody>
<tr>
<td>No Posting, Postings are not relevant to questions posed</td>
<td>0</td>
<td>Not Acceptable</td>
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<tr>
<td>Postings reflect reading and are relevant to questions posed</td>
<td>1</td>
<td>Met minimum standards</td>
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<tr>
<td>Postings reflect reading are relevant to questions posed and some outside source material used (must be cited)</td>
<td>2</td>
<td>Exceeded minimum standards</td>
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</table>

**Course texts and Materials:**
There is no textbook for this course. Weekly readings from review or original research articles will be assigned. One-two articles per topic relating to the guest lecture may be required at discretion of speaker and should be completed prior to that lecture.

The following reference books may be used as a complement to the required readings. Krause’s Food and the Nutrition Care Process, 14th edition: Mahan, Escott-Stump, and Raymond. WB Saunders, 2017

**Academic Conduct**
Each student is responsible for upholding the highest standards of academic integrity, as specified in the Friedman School’s Policies and Procedures manual (http://nutrition.tufts.edu/student/documents) and Tufts University policies (http://uss.tufts.edu/studentaffairs/judicialaffairs/Academic_Integrity.pdf). It is the responsibility of each student to understand and comply with these standards, as violations will be sanctioned by penalties ranging from failure on an assignment and the course to dismissal from the school.
## Course & Assignment Schedule:

<table>
<thead>
<tr>
<th>DATE &amp; LOCATION</th>
<th>WEEK and TIME</th>
<th>TOPIC OR CLASS TITLE</th>
<th>ASSIGNMENTS &amp; ACTIVITIES</th>
<th>LECTURER(S)</th>
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<tbody>
<tr>
<td>1/25/17</td>
<td>1</td>
<td>Introduction</td>
<td>Nutritional Assessment</td>
<td>Elizabeth Marino-Costello MS, RD</td>
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<td>1</td>
<td></td>
<td>and Nutrition Focused</td>
<td>Kelly Kane MS, RD</td>
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<td></td>
<td>Physical Assessment</td>
<td>Kathy Prelack, PhD, RD</td>
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<td>2</td>
<td>Pediatric Nutrition</td>
<td>Pediatric Assessment</td>
<td>Kathy Prelack, PhD, RD</td>
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<td></td>
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<td>Assessment, Failure to</td>
<td>Failure to Thrive, and</td>
<td>Annie Paquette, MS, RD</td>
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<td>Thrive, and Pediatric</td>
<td>Pediatric Obesity</td>
<td>Yvonne Penner, RD</td>
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<td>(recorded)</td>
<td>Kelly Kane MS, RD</td>
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<td>Online Discussion</td>
<td>Online Discussion</td>
<td>Kathy Prelack, PhD, RD</td>
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<td>due by 2/8 at 12:00</td>
<td>Online Discussion</td>
<td>Linda Bandini, PhD, RD</td>
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<td>noon</td>
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<td>Kelly Kane MS, RD</td>
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<td>2/8/17</td>
<td>3</td>
<td>Energy Expenditure,</td>
<td>Energy Expenditure</td>
<td>Kathy Prelack, PhD, RD</td>
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<td>Body Composition and</td>
<td>lecture in class</td>
<td>Linda Bandini, PhD, RD</td>
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<td>Metabolic Support in</td>
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<td>Kelly Kane MS, RD</td>
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<td>Critical Illness</td>
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<td>(recorded)</td>
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<td>2/15/17</td>
<td>4</td>
<td>Enteral Nutrition</td>
<td>Metabolic Stress</td>
<td>Kathy Prelack, PhD, RD</td>
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<tr>
<td></td>
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<td>Support (recorded)</td>
<td>Case study activity in</td>
<td>Kelly Kane, MS, RD</td>
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<td>Parenteral Nutrition</td>
<td>Class</td>
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<td>Support (recorded)</td>
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<td>Nutritional Care</td>
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<td>During Metabolic Stress</td>
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<td>Putting it all Together</td>
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<td>Exam Assigned</td>
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<td>Date</td>
<td>Time</td>
<td>Topics</td>
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<td>Instructors</td>
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<tr>
<td>2/22/17</td>
<td>5</td>
<td>Cancer(live)</td>
<td>Cancer and Obesity lectures in class</td>
<td>Alicia Romano, MS, RD</td>
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<td></td>
<td>1:30-3:00</td>
<td>Obesity (live)</td>
<td></td>
<td>Melissa Page, MS, RD</td>
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<td>3:00-4:30</td>
<td>Exam Due</td>
<td></td>
<td>Kelly Kane, MS, RD</td>
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<td>Kathy Prelack, PhD, RD</td>
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<td>3/1/17</td>
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<td>Liver Disease (recorded)</td>
<td>Nutrition in Solid Organ Transplantation lecture in class</td>
<td>Kelly Kane, MS, RD</td>
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<td>1:30-3:00</td>
<td>Nutrition in Solid Organ Transplantation (live)</td>
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<td>Lauren Parsly, RD</td>
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<td>Liver Disease Case Study assigned</td>
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<td>Kathy Prelack, PhD, RD</td>
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<td>1:30-3:00</td>
<td>Eating Disorders (live)</td>
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<td>Kelly Kane MS, RD</td>
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<td>Liver Disease Case Study Due</td>
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<td>Kathy Prelack, PhD, RD</td>
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<td>3/15/17</td>
<td>8</td>
<td>Clinical Controversy</td>
<td>Panel Discussion</td>
<td>Kathy Prelack, PhD, RD</td>
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<td></td>
<td>1:00-4:30</td>
<td>Paper Topics Due</td>
<td></td>
<td>Kelly Kane MS, RD</td>
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<tr>
<td>3/22/17</td>
<td>BREAK</td>
<td>No Class</td>
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<td>3/29/17</td>
<td>9</td>
<td>Hyperlipidemia (live)</td>
<td>Hyperlipidemia lecture in class</td>
<td>Gitanjali Singh, MPH, PhD</td>
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<td>1:30-3:00</td>
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<td>Richard Siegel, MD</td>
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<td>3:00-4:30</td>
<td>Diabetes Mellitus (live)</td>
<td>Diabetes Mellitus lecture in class</td>
<td>Kelly Kane, MS, RD</td>
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<td>Kathy Prelack, PhD, RD</td>
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<td>4/5/17</td>
<td>10</td>
<td>Malabsorption, Pancreatitis, IBD, and Short Bowel Syndrome (recorded)</td>
<td>Allergy lecture in class</td>
<td>Kathy Prelack, PhD, RD</td>
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<td></td>
<td>3:00-4:30</td>
<td>Allergy (live)</td>
<td></td>
<td>John Leung, MD</td>
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<td>Kelly Kane, MS, RD</td>
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<tr>
<td>Date</td>
<td>Time</td>
<td>Event Description</td>
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| 4/12/17    | 11:30–3:00   | Maldigestion and Malabsorption (live)                                               | Malabsorption and Probiotics lecture in class | Joel Mason, MD  
|            |              | Probiotics (live)                                                                    |                                            | Kathy Prelack, PhD, RD  
|            |              | *Gastroenterology Case Study Assigned*                                              |                                            | Kelly Kane, MS, RD      |
| 4/19/17    | 12:30–3:00   | Clinical Roundtable                                                                 | Clinical Roundtable in class               | Kathy Prelack, PhD, RD |
|            |              | *Gastroenterology Case Study Due*                                                   |                                            |                            |
| 4/26/17    | 13:30–3:00   | Renal Disease (live)                                                                | Renal Disease lecture in class             | Dan Weiner, MD  
|            |              | Nutrition in Renal Disease (live)                                                  | Nutrition in Renal Disease lecture in class | Poon Har Poon, MS, RD  
|            |              |                                                                                   |                                            | Kelly Kane MS, RD      |
|            |              |                                                                                   |                                            | Kathy Prelack, PhD, RD |
| 5/3/17     | READING PERIOD | Review of Case Studies and (live)                                                   | Case Study review and in class             | Kelly Kane MS, RD  
|            | 1:30–4:30    | Class Presentations                                                                | Student Presentations in class             | Kathy Prelack, PhD, RD |
| 5/10/17    | FINALS PERIOD | Class Presentations                                                                | Student Presentations in class             | Kathy Prelack, PhD, RD  
|            | 1:30–4:30    | *Paper Due*                                                                        |                                            | Kelly Kane MS, RD      |

This schedule is subject to modifications at the discretion of the instructors.
Course Schedule

Class 1: Nutritional and Biochemical Assessment
Instructors: Kane, Prelack, Marino-Costello
1/25/17

Learning Objectives for class 1: Upon completion of this class, students will be able to:

Nutritional Assessment and Nutrition Focused Physical Exam (live):
- Identify the types of malnutrition and the role of malnutrition in hospitalization.
- Identify the purpose of nutrition screening.
- Name the components of a nutrition assessment and describe the features of each.
- Identify the physical features that can be influenced by an individual's nutritional status.

Biochemical Assessment (recorded):
- Identify the serum electrolytes and symptoms and potential causes of deficiencies and excesses.
- Name at least 2 markers of visceral protein status and the advantages and disadvantages associated with the use of each.
- Identify the components of a complete blood count and iron study and the role of each in the diagnosis of macrocytic and microcytic anemias.

Required Readings for class 1:


Supplementary Readings:
Krause: Chapters 4, 6, 7, 10, 32

Fabiasen C. Phelan KPQ, Cichon B, et al. Short children with a low mid upper arm circumference respond to food supplementation: an observational study from Burkina
Class 2: Pediatric Nutrition Assessment, Failure to Thrive, and Pediatric Obesity

Instructors: Prelack, Kane, Paquette, Penner
2/17

Learning Objectives for class 2: Upon completion of this class, students will be able to:

- Describe assessment of nutritional status in children using appropriate tools and markers.
- Identify specific nutritional concerns during the nutritional support and management of hospitalized pediatric patients including low birth weight infants.
- Define energy and protein requirements in well and diseased children.
- Define failure to thrive and pediatric obesity and the criteria for its diagnosis.
- Describe the role of medical nutrition therapy and the role of the registered dietitian in the management of failure to thrive and pediatric obesity.

Required Readings for class 2:


Supplementary Readings:
Krause: Chapters 16, 17, 18, 42

Barlow SE. Expert Committee Recommendations Regarding the Prevention, Assessment and Treatment of Child and Adolescent Overweight and Obesity: Summary


**Online Discussion:**
Pediatric Obesity

**Class 3: Metabolic Support in Critical Illness and Energy Expenditure**
Instructors: Prelack, Kane, Bandini
2/8/17

**Learning Objectives for class 3:** Upon completion of this class, students will be able to:

Body Composition and Metabolic Support in Critical Illness (recorded):
- Understand the inflammatory response following critical illness and the metabolic sequellae that accompanies it particularly as it relates to energy and protein metabolism.
- Identify the effects of physiologic stress and altered nutrition on body composition.
- Determine appropriate goals for nutrition support using information related to energy expenditure, and protein turnover, and substrate utilization during critical illness.
- Using the burn injury model, apply the concepts of assessment and metabolic support in critically ill.

Energy Expenditure (live):
- Identify the components of energy expenditure.
- Name the methodologies available for determining energy needs and the advantages and disadvantages of each.
- Describe the methods used in calculating daily energy needs, resting metabolic rate, and daily energy expenditure.
Required Readings for class 3:

Body Composition and Metabolic Support in Critical Illness:


Energy Expenditure:


Supplementary Readings:
Krause: Chapters 38, 2


Class 4: Enteral and Parenteral Nutrition Support
Instructors: Prelack, Kane
2/15/17

Learning Objectives for class 4: Upon completion of this class, students will be able to:

Enteral Nutrition Support (recorded):

- Describe different types of enteral feedings, their distinguishing characteristics, and how they are given.
- Determine appropriate route, timing and composition of enteral feeding in various patient settings.
- Identify tube feedings complications and strategies for their management.
- Describe composition of specialty enteral feedings and indications for their use.

Parenteral Nutrition Support (recorded):

- Name the components of parenteral nutrition.
- Identify the indications and contraindications for central and peripheral parenteral nutrition.
- Describe the potential mechanical and metabolic complications associated with parenteral nutrition and methods of management of each.

Required Readings for class 4:

Enteral:


Miller KR, McClave SA, Kiraly NA, *et al.* A Tutorial on enteral access in adult

Parenteral:


**Supplementary Readings:**

Krause: Chapter 13

Enteral:


Parenteral:


**In Class Discussion:**

Parenteral and Enteral Calculations and Discussion

**EXAM ASSIGNED**

**Class 5:** Cancer and Obesity  
Instructors: Prelack, Kane, Page, Romano  
2/22/17

**Learning Objectives for class 5:** Upon completion of this class, students will be able to:

Cancer (live)  
- Define cancer, identify types of cancer, potential causes, and treatment
options.
- Identify the nutritional implications associated with cancer and its treatment.
- Describe conventional nutritional therapies and complementary and alternative medicine in cancer treatment

**Obesity (live)**
- Define adult obesity.
- Describe the relationship between obesity and health.
- Identify useful methods of nutrition assessment in obesity.
- Describe both medical and surgical treatment approaches to obesity and their success rates.

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**Required Readings for class 5:**

**Cancer:**


** Obesity:**


**Supplementary Readings:**

**Obesity:**

Aills L. Blankenship J. Buffington C. Furtado M. *et al.* Allied Health Sciences Section Ad Hoc Nutrition Committee. Bariatric nutrition: suggestions for the surgical weight loss
Learning Objectives for class 6: Upon completion of this class, students will be able to:

Liver Disease (recorded):
- Describe the association of between liver disease and malnutrition.
- Name the possible causes and treatment of various types of liver disease.
- Identify the signs and symptoms of liver disease and the nutritional implications of each
- Define the consequences of liver disease (i.e. portal hypertension, ascites, gastrointestinal bleeding) and describe the nutritional management of each.

Solid Organ Transplantation (live):
- Describe medical nutrition therapy post solid organ transplant, including liver, cardiac, and renal transplants.
- Describe the nutritional implications of common medications in solid organ transplants.

Liver Disease Case Study Assigned

Required Readings for class 6:
Liver:


Solid Organ Transplantation:


**Supplementary Readings:**

Krause: Chapters 29


**CLINICAL CONTROVERSY TOPICS ASSIGNED**

**Class 7: Nutrition and Oral Health and Eating Disorders**

Instructors: Kane, Prelack, Palmer

3/8/17

**Learning Objectives for class 7**: Upon completion of this class, students will be able to:

**Nutrition and Oral Health** (recorded):
- Describe the interrelationship between nutrition and oral health.
- Outline common oral problems through the life cycle.
- Identify how poor oral health affects nutritional status and how to eat for optimal oral health

**Eating Disorders** (live):
- Recognize the differences between disordered eating and eating disorders, and classify eating disorders.
- Identify nutrition related consequences of disordered eating and eating disorders.
- Describe the role of the registered dietitian and of medical nutrition therapy in the treatment of eating disorders.
Required Readings for class 7:

Eating Disorders:

Supplementary Readings:
Krause: Chapters 22 and 25

Class 8: Clinical Controversy Panel Discussion
Instructors: Prelack, Kane
3/15/17

Learning Objectives for class 8: Upon completion of this class, students will be able to:
- Interpret scientific research as presented in peer reviewed journals
- Abstract relevant information
- Communicate findings effectively and persuasively to others

Required Readings for class 8:


Class 9: Hyperlipidemia and Diabetes Mellitus
Instructors: Prelack, Kane, Singh, Siegel
3/29/17

Learning Objectives for class 9: Upon completion of this class, students will be able to:

Hyperlipidemia (live):
- Describe the role of dietary modifications in the prevention and treatment of cardiovascular disease.

Diabetes Mellitus (live):
- Identify the 4 classifications of DM and describe the features and risk factors of each.
- Name the classes of human insulins and analogues and describe the method of action of each.
- Describe the components of medical nutrition therapy for type 1 and type 2 DM

Required Readings for class 9:

Hyperlipidemia:


Diabetes:


Supplementary Readings:

Krause: Chapters 30, 33

Hyperlipidemia:


Diabetes Mellitus:


Joslin Diabetes Center and Joslin Clinic. Clinical nutrition guideline for overweight and obese adults with type 2 diabetes, prediabetes or those at high risk for developing type 2 diabetes. 2007.


Wheeler ML. Dunbar SA, Jaacks SM, et al. Macronutrients, food groups, and eating

**Class 10:**  
**Gastroenterology (Part 1) and Allergy**  
Instructors: Prelack, Kane, Leung  
4/5/17

**Learning Objectives for class 10:** Upon completion of this class, students will be able to:

**Gastroenterology (Part 1-recorded):**
- Describe the clinical manifestations and nutritional management of several gastroenterological disease states, such as pancreatitis and inflammatory bowel disease.

**Allergy (live):**
- Describe the relationship between food allergens and the immunological response.
- Distinguish between food allergies, food intolerances, and food sensitivities.
- Identify symptoms related to food allergies and food intolerances.

**Required Readings for class 10:**

**GI (Part 1):**


**Allergy:**


**Supplementary Readings:**
Krause: Chapter 1, 26, 27, 28
GI


Allergy


Class 11:
Gastroenterology (Part 2)
Instructors: Prelack, Mason
4/12/17

Learning Objectives for class 11: Upon completion of this class, students will be able to:
- Define and differentiate maldigestion and malabsorption.
- Identify factors with cause maldigestion and malabsorption.
- Describe the efficacy and safety of using probiotics and prebiotics under specific clinical conditions.

Required Readings for class 11:
GI (Part 2):


GASTROENTEROLOGY CASE STUDY ASSIGNED

Class 12: Clinical Roundtable
Instructor: Prelack
4/19/17

No Required or Supplementary Readings for class 12:

GASTROENTEROLOGY CASE STUDY DUE

Class 13: Renal Disease
Instructors: Prelack, Kane, Weiner, Poon
4/26/17
Learning Objectives for class 13: Upon completion of this class, students will be able to:

- Describe the causes and management of acute and chronic renal failure.
- Name the nutritional concerns and outline the nutritional requirements and dietary modifications associated in chronic renal disease.
- Describe the methods of renal replacement therapy and the nutritional requirements and dietary modifications associated with each in end stage renal disease.

Required Readings for class 13:


Supplementary Readings:

Krause: Chapter 35


This schedule is subject to modifications at the discretion of the instructor.