I. **DH 256:** BIOCHEMICAL NUTRITION FOR THE DENTAL HYGIENIST

II. **PREPARED BY:** Lisa Kamibayashi, R.D.H, M.S.D.H.

III. **REVISED FOR:** SPRING 2016

IV. **PREREQUISITES:** DH 100, DH 101, DH 102, DH 103, DH 104, DH 105, DH 106, DH 109 & DH 150

V. **UNITS AND HOURS:** THREE UNITS, 3 HOURS 25 MINUTES PER WEEK COURSE MSA 103
   Wednesday 8:00 to 11:25 a.m.

VI. **COURSE INSTRUCTOR:** Lisa Kamibayashi, R.D.H., M.S.D.H.
    OFFICE HOURS: Wednesday 1:00 p.m. to 2:00 p.m.
    Or by appointment
    Contact Information: mrskamiba@gmail.com
    Office Phone: 310-287-4457
    Google Voice: (424) 571-2647

VII. **COURSE DESCRIPTION:**
    The science of nutrition is presented with an emphasis on the biochemical nature of nutrients, digestion, metabolism and growth. The effect of nutrition on health is studied. Clinical states produced by excess or deficiencies of interrelated nutrients are stressed.

VIII. **REQUIRED TEXT:**


IX. **REFERENCES:**
    2015-2020 Dietary Guidelines for Americans
    Choose MyPlate.gov
X. INSTITUTIONAL LEARNING OBJECTIVES:

A. Critical Thinking: Analyze problems by differentiating fact from opinions, using evidence, and using sound reasoning to specify multiple solutions and their consequences.
Assessment: Upon examination, students will identify and apply biochemical and nutritional information that will be used to support dental hygiene practices.

B. Ethics: Practice and demonstrate standards of personal and professional integrity, honesty and fairness; apply ethical principles in submission of all college work.
Assessment: Students will complete all assignments and tests independently unless they are assigned to work in groups.

XI. DENTAL HYGIENE PROGRAM STUDENT LEARNING OBJECTIVES ADDRESSED IN THIS COURSE

PLO II. Health Promotion and Disease Prevention: The dental hygiene students will demonstrate competency in the performance and delivery of oral health promotion and disease prevention service in public health, private practice and alternative settings. The dental hygiene students will be able to apply principles in assessment, diagnosis, planning, implementation and evaluation of treatment. The graduate must also be prepared to influence others to facilitate access to care and services.

PLO-III. Patient Care: The students will demonstrate a through foundation in the biomedical, clinical, and behavioral sciences to achieve successful patient treatment outcomes. Student will utilize critical thinking and sound clinical judgment and cultural sensitivity with patients.

XII. COURSE OBJECTIVES:
As a result of study in this course, the dental hygiene student will be able to:

1. Describe RDAs, their functions, how they are set and the requirements of each specific age group.
2. List the food groups, which foods belong to each group, serving size, nutrients common to specific food groups and recommended servings for different populations from each group. Describe how to perform a diet evaluation and nutritional counseling using the food groups or the exchange system based on both the USDA’s recommendations and recommendations in the scientific literature.
3. Recognize sources of carbohydrates. Assess the role of carbohydrate in the diet and the function of different carbohydrates and relate this to the patient’s dental, periodontal and overall health.
4. Describe characteristics and functions of protein. Understand the importance of amino acid sequence. Relate importance of essential versus non-essential amino acids to diet and health.
5. Relate the relationship of enzymes to the flow of chemicals from dietary intake to new cell material or energy production in a cell.
6. Identify protein sources, understand the concept of quality protein and relate protein status to the patient’s dental, periodontal and overall health.
7. Describe the structure and sources of triglycerides. Discuss the structure and function of cholesterol.
8. Trace digestion and absorption of carbohydrates, proteins and lipids. Recognize the pathways by which saturated and unsaturated fatty acids and amino acids are metabolized.
9. Identify concepts concerning macronutrient intake and subsequent insulin secretion they relate to energy needs/expenditures and their effect on body weight.
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DEPARTMENT OF DENTAL HYGIENE

10. Identify functions, dietary requirements, results of excessive and inadequate intakes and common food sources of the water soluble and fat soluble vitamins, and major and trace minerals.
12. Identify specific vitamins and minerals affecting oral pathology.
13. Apply nutritional information in guiding individuals in meal and snack planning at or away from home.
14. Give nutritional counseling aimed at preventing dental and periodontal disease.
15. Recognize clinical signs of nutritional status.
16. Understand how to read and evaluate a food label.
17. List common food processing practices and additives and explain how they affect nutrient quality.

<table>
<thead>
<tr>
<th>Course SLOs</th>
<th>Assessment Method</th>
<th>Criterion Level</th>
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<tbody>
<tr>
<td>1. Apply biochemical and nutritional information that will be used to support dental hygiene practices.</td>
<td>Students will answer questions on an examination that will be analyzed by using a scantron scanner.</td>
<td>At least 80% of students will correctly answer 75% or more of the examination questions.</td>
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<td>2. Recognize, describe and related biochemical concepts to improve a patient’s oral health.</td>
<td>Students will analyze a patient’s 3-day diet history and counsel them as to deficiencies &amp; strengths. They will submit a paper with their findings.</td>
<td>At least 80% of students will identify 80% or more of strengths &amp; deficiencies as defined by a rubric.</td>
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XIII. METHODS OF INSTRUCTION:

- Lecture/ Presentation
- Videos
- Student participation and presentation
- Hands on activities: Bring Color pens/pencils, Color construction papers, Scissors

XIV. METHODS OF EVALUATION:

The grade for the course will be based on:
2 Midterm Exams ------------------------------- 30 %, (15 % each)
Assignment #1 and #2 ------------------------- 10 %
Risk Assessment Project Nutritional Aspect Project -------- 15 %
Poster presentation -------------------------- 15 %
Final exam ----------------------------------- 30 %

(Final exam must be passing over 70%.)

REMEDICATION If a student has a failing average (69% or lower) for the class prior to the FINAL examination, he or she will be required to complete remediation work. Remediation work will NOT be given if the failing average is due to cheating or plagiarism. In that case, a course of action will be decided by the Dental Hygiene director, the instructor and possible college administrators.
In the case of a failing class average prior to the final exam, remediation work must be completed at least 5 school days before the final examination date so the instructor has time to evaluate the work,
meet with the student, and administer an exam. Remediation will consist of the student outlining chapters from the textbook as determined by the instructor, followed by re-examination during the instructor’s office hours. The grade obtained on the re-examination will be averaged with his/her previous examination grade, not to exceed 70%. Students must pass the final examination to pass the course. Final examinations cannot be retaken for the purpose of raising a student’s grade.

Course letter grade will be based on the following scale:
- 90 – 100% = A
- 80 – 89% = B
- 70 – 79% = C
- 69% & 60% = D
- 59% below = F

Assignments and Project Overview

Assignment #1: Self Diet Analysis
1. Record 3 day diet journals. (Due: 2/17/16)
2. Select ONE diet analysis software to use: Read the article linked from here:
   - Supertracker: https://www.supertracker.usda.gov/default.aspx
     Free online software
   - Cronometer: https://cronometer.com/
     Free online software
3. Enter your three day diet data in the software you chose. For this assignment, analyze your own diet and state and discuss the findings of the following macronutrients (Carbohydrates, Protein, and Lipids) and micronutrients (vitamins and minerals) Total energy consumption and total water consumption. Are you meeting the recommended dietary allowance (RDAs) or adequate intake (AI)? How about energy consumption and water consumption? Write one page narrative report of what your findings about your own diet. (Due: 3/2/16)

Assignment #2: Go window shopping
1. Go to health food store and go to the section where diet supplements (vitamins and minerals) and herb are located.
2. Find diet supplements and herbs that you don’t recognize or no knowledge of. Select 5 of those unknown supplements.
3. Type a research report on those 5 selected supplements and herbs. Make sure to address the following questions.
   a. Brand name/ Packaged Name
   b. Generic name/ statement of identity
   c. The ingredients list
   d. Any self-claim of the supplement
   e. Trustable research on the supplement and your statement of weather this product is effective or not effective.
4. Read the FDA Tips for Dietary Supplement Users
   (http://www.fda.gov/Food/DietarySupplements/UsingDietarySupplements/ucm110567.htm)
   Summarize one paragraph statement of this webpage as a conclusion of the research report.
   (Due: 3/23/16)

**RAP PROJECT NUTRITIONAL ANALYSIS:**

A comprehensive diet analysis on a RAP patient is expected as part of this course. Produce a nutritional analysis and carbohydrate analysis for your RAP patient. If any reason, RAP patient was not found in time, ask a family member or a friend who can complete three day diet journals. Use diet analysis software and create a comprehensive nutritional report for the patient. The report must include macronutrients and micronutrients analysis. Also using Supertracker from USDA, print out the recommended meal plan for the RAP patient and share it with him/her. Write a letter to your RAP patient and share your recommendations based on the diet analysis and sugar exposure analysis. Obtain feedbacks from your RAP patient and share it in the report. The step by step process and instructions are provided as part of RAP project. This section should be submitted before RAP project due date. (Due: 5/4/16)

**WLAC Poster Showcase Project:** Every Spring semester, hundreds of students from different department and programs presents at the poster session on campus. (This year’s date is not set as of today). As a part of class requirements, all students will be participating this poster session to demonstrate the knowledge of dental hygiene students’ in biochemistry nutrition topics. Topics should be related to biochemistry/nutrition. It can be related to dentistry or it does not have to be related to dentistry.

Components of the poster must include all of the followings:
- Introduction
- Current status
- New ideas, concept, or problem
- Discussion using biochemistry knowledge
- Conclusion
- References used (Must have the original research articles available with the poster)

Topics must be approved by the course instructor by [2/24/16]
The poster is due on [5/18/16]
Students are asked to present the poster in class for 5 to 10 minutes. This can be a group project (maximum 3 students in a group) or individual project. More details will be given during class time.

**Communication and Preparation**
- If you are sick or in an emergency situation on the day of class, please email me before the class at mrsksamiba@gmail.com. Please do not leave a message with your classmate.
- Student is required to bring all assigned materials to each class and/or lab session.
- If students socialize during class, their seating arrangement will be changed.
- If a student has a question that is not pertinent to the class material, she should ask the instructor during office hours.
At times, students will be asked to participate in class. Failure to participate when called on will result in a deduction of 1% of grade for each incident.

All reading, video and web assignments are to be done prior to class and/or lab. Failure to do this will reduce your ability to understand and learn the concept being presented.

Please make use of your instructor’s office hours. Your instructor is available for discussion on all course material during office hours and/or by appointment.

**XII. COURSE CONTENT OUTLINE and LECTURE SCHEDULE – SPRING 2016**

Note: The schedule is tentative and subject to change depending upon class progress. Students are responsible for all announcements and materials covered during his/her absence.

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Date</th>
<th>Topics</th>
<th>Reading Assignment of Stegeman Assignment Due</th>
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<tr>
<td>1</td>
<td>2/10/16</td>
<td>Course Introduction Overview of Nutrition</td>
<td>Chapter 1 &amp; 3</td>
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<tr>
<td>2</td>
<td>2/17/16</td>
<td>Nutrition Assessment</td>
<td>Chapter 16, 18 &amp; 21 Assignment Due: 3 day self-diet analysis</td>
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<td>3</td>
<td>2/24/16</td>
<td>Carbohydrates</td>
<td>Chapter 4 Assignment Due: Poster Topic and partners</td>
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<td>4</td>
<td>3/2/16</td>
<td>Protein</td>
<td>Chapter 5 Assignment Due: Self Diet Analysis and writing recommendations</td>
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<tr>
<td>5</td>
<td>3/9/16</td>
<td>Lipids</td>
<td>Chapter 6</td>
</tr>
<tr>
<td>6</td>
<td>3/16/16</td>
<td>Biochemistry and Metabolism</td>
<td>Chapter 2 &amp; 7</td>
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<tr>
<td>7</td>
<td>3/23/16</td>
<td>Vitamins and Minerals for Calcified Structures</td>
<td>Chapter 8, 9 &amp; 10 Assignment: How familiar with nutritional supplements?</td>
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<tr>
<td>8</td>
<td>3/30/16</td>
<td>Exam #1 (90 minutes exam) Preparation for Poster Presentation</td>
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<td>*</td>
<td>Spring break</td>
<td>Enjoy!</td>
<td>Enjoy!</td>
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<tr>
<td>9</td>
<td>4/13/16</td>
<td>Vitamins and Minerals for Soft Tissues</td>
<td>Chapter 11 &amp; 12</td>
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<td>10</td>
<td>4/20/16</td>
<td>Systemic Diseases on Nutritional Status</td>
<td>Chapter 17</td>
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<tr>
<td>11</td>
<td>4/27/16</td>
<td>Older Adults Nutrition</td>
<td>Chapter 15</td>
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<tr>
<td>12</td>
<td>5/4/16</td>
<td>Women and Children Nutrition</td>
<td>Chapter 13 &amp; 14 Assignment Due: Comprehensive Nutritional Analysis for RAP patient</td>
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<tr>
<td>13</td>
<td>5/11/16</td>
<td>Exam #2 (90 minutes exam) Nutrition and Periodontal Diseases Preparation for poster presentation</td>
<td>Chapter 19 &amp; 20</td>
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<td>14</td>
<td>5/18/16</td>
<td>Poster Presentation</td>
<td>Assignment Due: Poster Presentation</td>
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<tr>
<td>15</td>
<td>5/25/16</td>
<td>Poster Presentation</td>
<td>Assignment Due: Poster Presentation</td>
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<tr>
<td>Final</td>
<td>TBA</td>
<td>Comprehensive Biochemistry Nutrition Final Exam</td>
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COLLEGE POLICIES AND STANDARDS
The West LA College faculty, staff and administrators are dedicated to maintaining an optimal learning environment and will not tolerate any disruptive behavior in or outside of the classroom or any academic dishonesty. These standards apply to all students.

Attendance
● Students are expected to attend all classes for which they are registered, to be prompt and to remain in class/lab for the entire time. Students who are unable to attend class regularly, regardless of the reason or circumstance, should withdraw from the class. Instructors may drop a student from a class whenever a student is absent more hours than the number of hours the class meets per week. Withdrawal from class can affect eligibility for federal financial aid.

Dropping a Class
Student wanting to drop a class should drop online at www.wlac.edu, click “For Students,” then “Student Information System.” Students who stop attending a class are responsible for withdrawing from the class to prevent being issued a failing “F” grade in the class.

Special Instructional Accommodation
If there are special accommodations that you require to be successful in this course, please discuss your situation with the professor. To receive accommodations for a special need or disability, students must register with the Office of Disabled Student Program and Services.

Tape recording of lectures and discussions will not be permitted without the consent of the instructor.

Disabled Students Programs & Services (DSPS):
Student Services Building, 3rd Floor (SSB 320)
(310)287-4450
dsp@wlac.edu

Academic Integrity
Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others’ academic endeavors. When there is evidence of cheating or plagiarism in classroom work, the instructor may assign a failing grade, “F,” or zero points to the examination or assignment in which the alleged cheating or plagiarism occurred. Before a substandard grade is issued the instructor will provide the student with supporting documentation of the plagiarism or cheating charge. Instructors have the authority to use plagiarism detecting instruments such as “Turn It In” to detect academic dishonesty.

Forms of Behavior which Violate Academic Integrity
● Cheating. Using any materials or devices or strategies, which provide undue advantage on any exam, assignment, activity or other method of assessment for a course. This includes, but is not limited to, looking at another student’s exam, using phones or other communication systems to text message during exams, taking pictures or images of exams, talking with others during exams, using Internet to find information, or any other system of inappropriate "help." Exams are to be measures of what YOU, as an individual, have learned.
● Collaboration. Working together on papers, exams or other forms of assessment, which are to be completed individually.
Plagiarism. Taking anyone else’s work as one’s own. Presenting another’s words, ideas, forms of expression, materials, or labor without proper citation, referencing, and declaration that this material originated outside the student’s own work.

CONSEQUENCES OF DISHONESTY: Violators of these rules are subject to disciplinary action. Depending upon the seriousness of the conduct, the student disciplinary procedures may range from receiving a zero for that exam to formal charges of violation with the WLAC standards of Student Conduct.

Standard of Student Conduct
Faculty members are charged with responsibility for building and maintaining a classroom atmosphere conducive to learning. Disruptive, disrespectful, or obstructive behavior will be dealt with in terms specific to this syllabus and in accordance with the LACCD Standard of Student Conduct. Select forms of disciplinary action appropriate to the misconduct may be taken by an instructor when there is evidence that the student’s behavior interferes with classroom instruction.

The following types of disciplinary action may be taken by an instructor:
1. Warning - A verbal or written notice, given to the student by an instructor. Continuation or repetition of the specified conduct may be cause for further disciplinary action.
2. Removal by Instructor - An instructor may remove (suspend) a student from his or her class for the day of the incident and the next class meeting. During this period of removal, the student shall not return to the class from which he or she was removed without the permission of the instructor of the class.

Students may refer to the College Catalog or the online student orientation at www.wlac.edu; select the “Counseling, Assessment and Orientation” tab, then scroll down to “Orientation” for complete details regarding the aforementioned policies.

Cell Phone and Other Communication Devices
If you bring your cell-phone to class, laboratory, or clinical rotation, be sure to have it in a mode where it will not ring and disturb others. If you have to answer an emergency phone call, please step out of the classroom/clinic. Devices of this type should be placed on vibrate and never visible during class time.

Texting in class IS STRICTLY PROHIBITED. In addition, during lecture presentation DO NOT SURF THE INTERNET, ACCESS SOCIAL MEDIA, EMAIL, WATCH VIDEOS, or PLAY MUSIC. If a Student is involved on ANY of the activities mentioned before, the student will be asked to leave the classroom, and directed to the Program Director and/or to the Dean of Academic Affairs.

Use of Social Media
- Confidential information of patients, patient family members, visitors, dentist, dental students, facility staff, faculty, college staff, fellow students, and class or clinical situations should never be discussed in any form online.
- The Health Insurance Portability and Accountability Act (HIPPA) guidelines are to be upheld at all times.
- Personal information and photos with students, faculty, staff, and clinical sites may only be posted with verbal and/or written permission from all individuals involved.
- Students should avoid using names and never post photographs of patients or staff without authorization.
- The posting of unauthorized pictures, videos, course materials, quizzes/tests or plagiarizing online information is prohibited.
- Harassing, threatening, belittling photos, e-mails, or videos that are demeaning, insulting or discriminating against anyone are not to be posted – any of these actions must be reported with a screen-shot to the Program and/or Course Director.
• Display of language or photographs that imply disrespect for any individual or group because of age, race, gender, ethnicity, or sexual identity is prohibited.
• Texting, e-mail, and social networking, are not to be performed during class or clinical hours.
• On-campus computers or Wi-Fi network must not be used for illegal purposes
• Students may not use social media to communicate information to faculty. To contact faculty member, student MUST use communication method specified by faculty member
• Maintain professional boundaries in the use of electronic media.

Classroom and Campus Cleanliness
Please help us keep the classroom and campus grounds clean. No food or beverages, except for water, is permitted inside instructional classrooms /labs. Please use the receptacles to dispose of trash.
Term: Spring 2016
Course Title: Biochemistry Nutrition
Course Number: DH 256
Instructor: Lisa Kamibayashi

Student Acknowledgment

(Please return this sheet to the instructor by February 17, 2016)

“I ______________________________________, have completely read this syllabus and understand and agree to the course requirements.”

Please indicate below, any special needs or circumstances that may have some impact on your work in this class, and for which you may require special accommodations, including but not limited to physical or mental disabilities, inability to arrive in class on time or need to leave class early, observance of religious holidays, etc.

Student Signature: ________________________________  Date: ____________________