



Biochemistry and Nutrition

DHY 104 and section

Fall 2019

Number of Credits: 2 credits

Days Class Meets: Tuesdays

Meeting Times: 1:10-3:00 PM

Location: JW 101

Instructor: Patricia Robinson RDH, MA

Office: Justin Whiting Hall

Contact Phone:  [Virtual Office hours](#)

Contact Email: robinsopatricia03@jccmi.edu

Office Hours: M & F (11:00 a.m. - noon)

Online: No online course

Course Description

This course provides dental hygiene students with an overview of nutrition biochemistry, nutritional guidelines, diet analysis and planning. The role of nutrition in dental health and systemic diseases are emphasized along with the clinical application of nutritional counseling strategies.

Prerequisite(s)

Acceptance to the Dental Hygiene Program.

Co-requisites: DHY 101, DHY 102, DHY 103, and DHY 105

Course Goals

The direction of this course is to introduce the importance of understanding the vital role dental hygienists play as valued members of the health care team. Importantly, being able to apply nutrition and oral health competency as it relates to providing comprehensive patient care. Moreover, knowing how to apply nutritional care as part of their oral health education. The dental hygiene student will participate in various in-class activities, quizzes, homework assignments that will challenge their developing skills.

Course Objectives

- Examine and explain the role of nutritional biochemistry in the formulation of a diet analysis, energy expenditure and nutritional counseling.
- Create a personal nutritional assessment of diet and use it for recommending appropriate changes for a healthier mouth and body.
- Examine the role of food source nutrients in human growth and development.

- This class will fulfil degree requirements for the Biochemistry and Nutrition course in the Dental hygiene program.

Associated Program competencies with evaluation methods

3.2: for clients with special needs and those from diverse cultural backgrounds. (Exam, Role Playing)

5.1: Use critical decision making skills to analyze and interpret the assessment data to formulate an accurate dental hygiene diagnosis. (Personal Assessment project, Role Playing).

Textbook

- The Dental Hygienist’s Guide to Nutritional Care (2019) 5th ed., Stegeman, Cynthia A., Davis, Judi R., Elsevier/Saunders. ISBN: 978-0-323-497275
- Digital format ISBN: 978-0-323-569477
- **Text Book Zero** - The textbook is available in a digital format and may be purchased in the bookstore.
- Diet and Nutrition in oral health. (2007). 3rd ed., Palmer, C.A, Boyd, L.D. Pearson. ISBN: 9780134296722. Optional but not required for the course.

Extras

[Sharpies](#) of varies colors and [highlighters](#).

Grading Procedure

Unit Quizzes (13 @ 15 points each)	195 points
Weekly Homework Assignments (14 @ 10 points each)	140 points
In Class Assignments/Projects (14 @ 5 points each)	70 points
Personal Assessment Project	110 points
Role playing assignment	40 points
Total	555 points

Grading Scale

GPA	GRADE RANGE
4.0	94-100%
3.5	89-93%
3.0	84-88%

2.5	78-83%
2.0	72-77%
1.5	66-71%
1.0	60-65%
0.5	55-59%
0.0	0-54%

Course Requirements

Unit Quizzes: (13 @) 15 points each = 195 points)

This course will include 13 quizzes. Each quiz will include only course information covered prior to the assessment. This quiz will be on JETNET. The quiz will be accessible once you submit your homework assignment into the course drop box. Access to the quiz will be shutdown prior to class meeting time. Failure to take a weekly quiz by the beginning of class will result in a zero for that assessment. Further instructions are available on JetNet course site.

Weekly Homework assignments (14 @) 10 points each = 140 points)

This course will consist of 14 class modules. Each module will have instructions detailing activities that will take place for the particular week. Homework assignments need to be completed and submitted to the course site drop box prior to class time. Directions for each module are on Jet Net.

In Class Assignments/Projects (14 @ 5 points each = 70 points)

Each class time will consist of various types of in class assignments and projects. Instructions will be presented at the beginning of each class.

Personal Assessment Project: (110 points)

Due: Week 14

For this project, students will objectively assess one's own personal dietary patterns using the *Dietary Guidelines for Americans, 2010* and ChooseMyPlate.gov. The purpose of this project is for students to practice the process of recording and analyzing food intake for its nutritive and cariogenic value. This will enable the student to use one's nutritional and dental knowledge in contributing to better general and oral health for self and patients. Grading rubric will be posted on Jet Net.

Role playing project (40 points)

Due: Week 15

Students will work in pairs and complete a role playing project that they will present to the class during week 15. Students will be given a case scenario that will require one student to be a patient and one student to be the clinician. The purpose of this assignment is to gain experience in counseling patients that have problems similar to those presented in the case scenarios that you will likely encounter in clinic and in a dental practice after you graduate. The grading rubric will be posted on Jet Net.

Attendance/Professionalism Policy

You are preparing for a career where punctuality, professionalism and dependability are expected. Therefore, your attendance and participation in all courses are required and necessary for preparing you for future employment. Attendance will be taken at the beginning of each class. If a student is not present, seated, and ready to begin at each class session, 5 points will be deducted from the final total points achieved for the course. Any discrepancies or questions about this policy should be addressed with your

instructor as soon as possible. Infractions related to the professionalism rules and regulations will result in a 2-point deduction. Professionalism deductions include but are not limited to the rules and regulations listed under course policies. All professionalism guidelines are listed in the Jackson College Dental Hygiene Program Manual.

It is the student's responsibility to officially withdraw from any class that she/he ceases to attend – see the College Calendar for official withdrawal and refund dates. Failure to withdraw will result in the recording of a "0" grade for that course.

Course Policies

Rules and Regulations:

1. Turn off your cell phone when you come to class. Cell phones, pagers and iPods must be turned off during this class. You will be asked to leave class for the remainder of the day if you answer a cell phone or reply to a text message during class.
2. If a cell phone goes off during class it will be confiscated by the instructor for the remainder of the class.
3. Laptops, tablets and notebooks may ONLY be used for learning purposes during class. Do not e-mail, surf or do work from other classes in this class.
4. Be in class, seated, and ready to participate at the beginning of class time. A tardy is defined as missing over 5 minutes of a class period once the instructor has begun the class.
5. It is the student's responsibility to notify instructor of an absence.
6. Talking between students during class is prohibited. The instructor reserves the right to assign seating for the benefit of the learning experience for the entire class.
7. Plan to spend the entire period in class unless you have cleared an exception with the instructor beforehand.
8. Expect to attend to bathroom and other needs before class. Students must request permission from the instructor for emergency needs.
9. Expect to contribute your share of work toward any teamwork projects and put forth measurable effort to make the teamwork experience a positive one. Teamwork will be evaluated as a part of project grading.
10. Should a "pop" quiz be administered during class time, all backpacks, phones, etc. shall be brought to the front of the classroom.
11. The student will be responsible for attaining a 75% or higher on exams, case studies, literature review and PowerPoint® presentations.
12. The student will be responsible for reading the assigned chapters and other resources BEFORE class each week.
13. The student is expected to demonstrate responsible behavior towards peers and faculty.

Student email and Jet Net

It is the student's responsibility to utilize and check his/her JC email account and JetNet on a DAILY basis.

Late work and Missed Deadlines

Absence for any reason, including illness or late registration, in no way relieves the student of the responsibility for completing all work in the course. All assignments and projects are due on the dates and times given in the course schedule and syllabus. They are subject to change at the discretion of the course instructor. Each missed due date for class assignments will result in a 5-point deduction, per day, for every day the project is late. Missing a deadline could substantially lower your grade.

****If you foresee difficulty in meeting a deadline for an assignment please meet with your instructor immediately to determine a plan of action to complete your assignment. Assignment completions may be handled on a case by case basis at the discretion of the lead faculty. ****

Incomplete Grade Policy

In order to receive a grade in a Dental Hygiene course, all course learning experiences must be completed by the student. An Incomplete grade may be given by the Lead Faculty when the student has not completed all requirements for the course grade. The Lead Faculty will determine if there is proper cause for giving an "I" rather than a grade. An I/Incomplete grade will be accompanied with a Performance Notice prepared by the Lead Faculty. This form stipulates the reason for the "I" grade and describes the following for changing the "I" to a grade:

- The activities/requirements the student must complete
- The date the requirements must be completed
- The final grade that will be granted if the requirements are completed as stated.
- If the requirements are not fulfilled by the student as stipulated, the student will receive a 0.0/fail grade.

Please refer to Jackson College "Incomplete Grade Policy" for more information:

<https://www.jccmi.edu/registration-records/grading-system/>

Mandatory Tutoring

Students enrolled in the Dental Hygiene Program at Jackson College must attain a 75% or higher to proceed each semester and graduate from the program. If the student's grade falls below a 75% in any aspect of the course, or if the instructor feels that the student would benefit from additional tutoring, the student will be required to coordinate and attend mandatory tutoring with one of the course instructors. Mandatory tutoring sessions are designed to provide appropriate remediation in courses where the student is earning less than a 75%.

- Mandatory tutoring will continue until the student's cumulative course grade is above 75%, or at the discretion of the lead instructor.
- Failure to attend the mandatory tutoring sessions will result in a 2 point deduction from the attendance/professionalism portion of a student's grade.
- Students must bring and use classroom study materials related to the course(s) in which they are being tutored.

Changes to course requirements or schedule

The instructor reserves the right to modify course content and/or the evaluation procedures as deemed necessary.

Failure

Any circumstances under which a student could be dismissed from or failed in the course that is not covered in other college publications. In pass/fail courses, a listing of minimal competencies.

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism is defined as the failure to give credit for the use of material from outside sources.

Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating is defined as obtaining answers/material from an outside source without authorization.

Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

Course Management

Ways that students can manage their enrollment in a course for special circumstances. Includes withdrawal, and audit and incomplete grading procedures.

Makeup Policy

Ways that students can manage their enrollment in a course for special circumstances. Includes withdrawal, and audit and incomplete grading procedures.

Help

Available learning services or opportunities for students seeking help with their course work. May include information about tutors, learning centers, reserved library materials, open labs, counseling services.

It is important to contact a Center for Student Success professional prior to the start of the semester in order to receive accommodations in a timely manner. While we will make every effort to coordinate accommodations in a timely manner, failure to self-identify prior to the start of the semester may delay notification to instructors and timeliness of acquiring accommodations. Accommodations do not automatically carry over to the next semester.

<https://www.jccmi.edu/center-for-student-success/accommodations-for-students-with-disabilities/>

Student Grievance Procedure, Due Process, and Appeals

A student who has a problem with the course or the course instructor should make every attempt to resolve the problem with the course instructor *first*. If the issue remains unresolved, the student should then discuss their concerns with the Dental Hygiene Program Director. If the response is not adequate to the student, the student should then follow the outlined JC policy for student grievances which can be found at the college website: <https://www.jccmi.edu/ombudsman/student-complaint-process/>

Calendar

A partial or complete list of dates or class periods for the course. Within the calendar on specific days are: Assignments, readings, homework, exercised, performances, quizzes, topics, subject matter, skills, chapter titles, discussion topics, tests, comprehensive exams, due dates for major papers or performances. Add or remove columns as necessary to suit your course.

**Also include a statement that calendar timelines and assignments are an approximation and could be changed.*

DHY 104 Biochemistry and Nutrition Class Schedule

Week	Lecture Topic (2 hrs/wk) Tuesday 1:10 – 3:00 PM	Assignment (**Instructions for each learning module is posted on JETNET)
1 9/3	Review of syllabus and requirements; Overview of Healthy Eating Habits;	Ch 1
2 9/10	Concepts in Biochemistry in Nutrition; The Alimentary Canal: Digestion and Absorption	Ch 2, 3
9/17	COLLEGE CLOSED	NONE
3 9/24	Class in Session: Video Presentation on Dietary Guidelines, and MyPlate	Class in session
4 10/1	Carbohydrates: The Efficient Fuel; Explanation of Diet Analysis & Energy Expenditure Projects Protein: The Cellular Foundation;	Ch 4, 5

5 10/8	Class in Session: Case Presentations and Special Speaker	Class in session
6 10/15	Lipids: The Condensed Energy Use of Energy Nutrients: Metabolism and Balance; Vitamins Required for	Ch 6, 7
7 10/22	Vitamins required for Calcified Structures; Minerals Essential for Calcified Structures;	Ch 8, 9
8 10/29	Nutrients Present in Calcified Structures Vitamins Required for Oral Soft Tissues and Salivary Glands	Ch 10, 11
9 11/5	Fluids and Minerals Required for Oral Soft Tissues and Salivary Glands Nutritional Requirements Affecting Oral Health of Women; Nutritional EXPLAIN DIET ANALYSIS PROJECT (DUE 12/11)	Ch 12, 13
10 11/12	Nutritional Requirements during Growth and Development and Eating Habits Affecting Oral Health Nutritional Requirements for Older Adults and Eating Habits Affecting Oral Health	Ch 14, 15
11 11/19	Food Factors Affecting Health EXPLAIN ROLE PLAYING EXERCISE (DUE 12/18)	Ch 16
12 11/26	Effects of Systemic Disease on Nutritional Status and Oral Health (SECOND HOUR – TIME TO WORK ON PROJECTS)- Class in Session  HAPPY THANKSGIVING BREAK!! Nov. 27 – Dec 1, 2019	Ch 17
13 12/3	Nutritional Aspects of Dental Caries: Causes, Prevention and Treatment; Nutritional Aspects of Gingivitis and Periodontal Disease	Ch 18,19

14 12/10	Nutritional Aspects of Alterations in the Oral Cavity; Nutritional Assessment and Counseling for Dental Hygiene Patients.	Ch 20, 21 <u>Diet Analysis Project Due</u>
15 12/17	Role playing presentations	

Important Dates: Fall 2019

DATE	EVENT
SEPT. 3, 2019	DAY AND EVENING CLASSES BEGIN
AUG. 28-30, 2019	LEARNING DAYS
SEPT. 3 – DEC. 19, 2019	SEMESTER DATES
SEPT. 17, 2019	IN-SERVICE DAY. NO CLASSES
OCT. 4, 2019	PATHWAY SHOWCASES DAY. NO CLASSES
NOV. 27 – DEC 1, 2019	THANKSGIVING BREAK. NO CLASSES
DEC. 19, 2019	END OF FALL SEMESTER
DEC. 21, 2019	GRADES DUE

Student Responsibilities

Requirements beyond scheduled classes or laboratories, e.g., clinicals, extra credit assignments, TBA sessions, field placement, special project instructions, contract learning conditions, study hours required outside class, unscheduled class meetings, attendance at concerts or other required events.

Attendance Policy

In compliance with Federal Title IV funding requirements, as well as college initiatives, reporting of student participation in classes will occur at three designated times each semester. Instructors will assign one of three non-transcripted letter symbols to each student during each reporting period (see below).

Students identified as no longer participating will be dropped or administratively withdrawn from the class, and students identified as needing academic assistance will be contacted.

Participation/Progress Symbols

- H – The student is not doing acceptable work and needs **H**elp to be successful.
- Q – The student has not participated and the instructor believes they have unofficially withdrawn (**Q**uit). These students will be dropped/withdrawn from the class.
- V – The instructor **V**erifies that the student is participating and doing acceptable work.

Caveat

A statement that advises students that some revisions may be necessary during the course. School closing policies, instructor illness and other procedural improbabilities are described for students.

Instructional Objectives for DHY 104

Biochemistry and Nutrition

Upon completion of the reading material and lecture experiences, the student will be able to:

Chapter 1: Overview of Healthy Eating Habits

1. Discuss why dental hygienists, registered dietitians, and nutritionists need to be competent in assessing and providing basic nutritional education to patients.
2. List and describe the general physiologic functions of the six nutrient classifications of foods. Also, describe factors that influence patients' food habits.
3. Discuss government concerns with nutrition, as well as the purpose and objectives of *Healthy People 2020*.
4. Discuss Dietary Reference Intakes (DRIs).
5. Describe the purpose of the *2015-2020 Dietary Guidelines for Americans*, and determine the number of food equivalents needed from each food group and subgroup based on the Healthy U.S.-Style Eating Pattern for various calorie levels.
6. Describe healthy eating patterns, and discuss the importance of vegetables, fruits, dairy, protein foods, and oils.
7. Discuss nutrients to limit, as well as other dietary components such as alcohol and caffeine.
8. Describe how physical activity and physical fitness are important factors for an individual's overall health, and how healthful choices should be supported by all systems.
9. Assess the dietary intake of a patient using the *MyPlate* system. Also, discuss other food guides and how they compare to the *MyPlate* system.
10. Master how to read a nutritional label.

Chapter 2: Concepts in Biochemistry in Nutrition

1. Explain the role of biochemistry in dental hygiene and nutrition.
2. Discuss the fundamentals of biochemistry, including assigning biomolecules according to functional group.
3. Discuss concepts related to principle biomolecules in nutrition:
 - Compare and contrast the structure, function, and properties of the four major classes of biomolecules (carbohydrates, proteins, nucleic acids, and lipids).
 - Outline the structure, function, and properties of monosaccharides, disaccharides, and polysaccharides.
 - Outline the structure, function, and properties of amino acids and proteins.
 - Compare and contrast the roles of enzymes, coenzymes, and vitamins in nutrition.
 - Outline the structure, function, and property of nucleotides and nucleic acids.
 - Outline the structure, function, and property of fatty acids, triglycerides, and steroids.
4. Summarize metabolism, as well as differentiate catabolism from anabolism. In addition, explain connections between metabolic pathways in carbohydrate, protein, and lipid metabolism.

Chapter 3: The Alimentary Canal: Digestion and Absorption

1. Discuss the physiology of the gastrointestinal tract, including the two basic types of actions on food.
2. Discuss the following related to the oral cavity:
 - Identify oral factors that influence food intake.
 - Explain to patients why saliva flow is important for oral health and overall well-being.
 - Describe the role that teeth play in digestion.
3. Discuss the following related to the esophagus and gastric digestion:
 - Describe how the esophagus works.
 - Discuss gastric digestion, as well as list the two major enzymes found in gastric juice.
4. Discuss the following related to the small intestine:
 - Recognize the nutrients requiring digestion and the absorbable products.
 - Explain the process of osmosis.
 - Discuss with patients how digestion and absorption may affect nutritional status and oral health.
5. Discuss the following related to the large intestine:
 - Describe the function of the large intestine.
 - Discuss the side effects of undigested residue.
 - Define the purpose of microflora.
 - Explain the role of gastrointestinal motility in digestion and absorption.
 - State the purpose of peristalsis.

Chapter 4: Carbohydrates: The Efficient Fuel

1. Discuss various concepts related to the classification of carbohydrates, including:
 - Identify major carbohydrates in foods and in the body.
 - Differentiate among monosaccharides, disaccharides, and polysaccharides.
 - Describe ways glucose can be used by the body.
 - Summarize the functions of dietary carbohydrates.
 - Explain the importance of dietary carbohydrates.
 - Recognize dietary sources of lactose, other sugars, and starches.
 - Summarize the role and sources of dietary fiber.
2. Discuss the physiologic role of carbohydrates.
3. Discuss the acceptable macronutrient distribution range (AMDR) as related to carbohydrates, as well as sources of various types of carbohydrates.
4. Compare and contrast concepts related to hyperstates and hypostates, such as carbohydrate excess, obesity, cardiovascular disease (CVD), carbohydrate deficiency, and dental caries. In addition, formulate recommendations for patients concerning carbohydrate consumption to reduce risk for dental caries.
5. Discuss the use of nonnutritive sweeteners and sugar substitutes.

Chapter 5: The Cellular Foundation

1. Explain the possible fates of amino acids.
2. Categorize amino acids as indispensable or dispensable; categorize foods as sources of high-quality or low-quality proteins.
3. List and describe the seven categories of the physiologic functions of proteins.
4. Discuss protein requirements for health, and plan individualized menus to meet the recommended protein level for a diet containing animal foods, a vegetarian diet, and a vegan diet containing only plant proteins.
5. Discuss the following related to under consumption and overconsumption of protein:
 - List the problems associated with protein deficiency or excess.
 - Appraise a patient's protein consumption to determine protein deficiency or excess.
 - Explain how protein foods can be used to complement one another.
 - Discuss how protein energy malnutrition affects oral health in children.
 - Identify and explain nutrition principles regarding food intake to prevent a patient consuming too much or inadequate amounts of protein.

Chapter 6: Lipids: The Condensed Energy

1. Related to the classification, chemical structure, and characteristics of lipids:
 - Describe how fatty acids affect the properties of fat.
 - Explain the function of fat in the body.
 - Discuss the chemical structure of lipids.
 - Describe the characteristics of lipids.
2. Describe the function of various compound lipids, and identify foods that contain each. Also, discuss the function and sources of cholesterol.
3. List and describe the physiologic roles of lipids in the body.
4. Discuss the effects of dietary fats on oral health.
5. Related to dietary requirements of lipids:
 - Calculate the recommendation for a person's consumption of dietary fat.
 - Evaluate a patient's food intake for appropriate amounts of saturated fats.
 - Suggest appropriate foods when dietary modification of fat intake has been recommended to a patient.
 - Compare the types of fatty acids in various fats and oils.
6. Discuss nutritional directions for various patient issues related to the overconsumption and under consumption of fat.

Chapter 7: Use of Energy Nutrients: Metabolism and Balance

1. Discuss the roles of the liver and the kidneys in metabolism. In addition, describe carbohydrate metabolism.
2. Discuss protein metabolism.
3. Discuss lipid metabolism, alcohol metabolism, metabolic relationships, and metabolic energy.
4. Identify factors affecting the basal metabolic rate.
5. Calculate energy needs according to a patient's weight and activities.
6. Assess factors affecting energy balance; explain physiologic and psychologic sources of energy.
7. Discuss the following related to inadequate energy intake:
 - Summarize the effects of inadequate energy intake.
 - Explain the principles for and importance of regulating energy balance to a patient.
 - Individualize dental hygiene considerations to patients regarding energy metabolism.
 - Relate nutritional directions to meet patients' needs regarding energy metabolism.

Chapter 8: Vitamins Required for Calcified Structures

1. List the fat-soluble vitamins.
2. Compare the characteristics of water-soluble vitamins with those of fat-soluble vitamins.
3. Identify functions, deficiencies, surpluses, and toxicities, and oral symptoms for vitamins A, D, E, K, and C.
4. Select food sources for vitamins A, D, E, K, and C.
5. Individualize dental hygiene considerations for patients regarding vitamins A, D, E, K, and C.
6. Relate nutritional directions to meet patients' needs regarding vitamins A, D, E, K, and C.

Chapter 9: Minerals Essential for Calcified Structures

1. List the minerals found in collagen, bones, and teeth, and describe their main physiological roles and sources.
2. Describe causes and symptoms of mineral excesses or deficits.
3. Discuss the role of water fluoridation in the prevention of dental caries.
4. Describe advantages and disadvantages of mineral supplementation.
5. Individualize dental hygiene considerations to patients regarding calcium, phosphorus, magnesium, and fluoride.
6. Utilize nutritional directions to provide patient education regarding calcium, phosphorus, magnesium, and fluoride.

Chapter 10: Nutrients Present in Calcified Structures

1. Describe the physiological roles of specific minerals and how these apply to oral health, along with sources of copper, selenium, chromium, and manganese.
2. List ultratrace elements present in the body.
3. Identify reasons why large amounts of one mineral may cause nutritional deficiencies of another.
4. Apply dental hygiene considerations for trace elements present in calcified structures.
5. Discuss nutritional directions for patients regarding the role of trace elements present in calcified structures.

Chapter 11: Vitamins Required for Oral and Salivary Glands

1. Educate the patient on oral soft tissue changes that occur in a B-complex deficiency.
2. Differentiate between scientifically-based evidence versus food fads concerning vitamins.
3. Explain to a patient who is a vegan why vitamin B12 is important and identify appropriate sources.
4. Compare and contrast the functions and sources of vitamins and minerals important for healthy oral soft tissues, as well as deficiencies, toxicities, and associated symptoms.
5. Identify dental considerations for vitamins closely involved in maintaining healthy oral soft tissues.
6. Discuss nutritional directions for vitamins closely involved in maintaining healthy oral soft tissues.
7. Describe the association between beriberi and alcoholism.

Chapter 12: Fluids and Minerals Required for Oral and Salivary Glands

1. Describe the process of osmosis.
2. Explain how electrolytes affect hydration status.
3. List normal fluid requirements and identify factors that may affect these requirements.
4. Discuss the roles, imbalances, and sources of water, sodium, potassium, iron, zinc, and iodine.
5. Discuss with patients how to decrease dietary sources of sodium and increase potassium intake and state why these are important.
6. Identify oral signs and symptoms of fluid and electrolyte imbalances.
7. Discuss areas of nutritional concern with patients who have fluid and electrolyte imbalances. Determine which diseases and medications may require patients to restrict sodium intake. Identify the most prominent oral symptoms or signs of iron, zinc, and iodine deficiency.

Chapter 13: Nutritional Requirements Affecting Oral Health of Women

1. Assess nutrients commonly supplemented during pregnancy and lactation.
2. Use recommended guidelines to assess food intake of pregnant and lactating women for adequate nutrients.
3. Discuss each factor affecting fetal development.
4. Implement nutrition and oral health considerations for patients who are pregnant or breastfeeding.
5. Apply nutritional directions for patients who are pregnant or breastfeeding.

Chapter 14: Nutritional Requirements during Growth and Development and Eating Habits Affecting Oral Health

1. Describe the procedure for introducing solid foods after the initial stage of feeding by bottle or breast.
2. Discuss ways to handle typical nutritional problems that occur in infants, young children, school-age children, and adolescents.
3. Apply dental aspects related to nutritional needs during infancy, early childhood, elementary school years, and adolescence to patient care.
4. Assess nutrition education needs for patients during infancy, early childhood, elementary school years, and adolescence.
5. Discuss physiological changes that alter the nutritional status of infants and adolescents.

Chapter 15: Nutritional Requirements for Older Adults and Eating Habits Affecting Oral Health

1. Discuss ways to handle typical nutritional problems occurring in older adults.
2. Examine dental considerations of nutritional needs that occur in older patients.
3. Identify nutrition education needs for older patients.
4. Discuss physiological changes altering an older individual's nutritional status.
5. Discuss differences in amounts of nutrients needed by older patients compared with younger patients.
6. Describe factors influencing food intake of older patients.
7. Suggest dietary changes that could be implemented to provide optimum nutrient intake for older patients.

Chapter 16: Food Factors Affecting Health

1. Explain how a patient can obtain adequate nutrients from different cultural food patterns.
2. Identify reasons for food patterns.
3. Respect cultural and religious food patterns while providing nutritional recommendations for patients.
4. Explain to a patient how to prepare and store food to retain nutrient value.
5. Provide referrals for nutritional resources.
6. Inform patients of ways to make economical food purchases.
7. Explain to a patient how food processing, convenience foods, and fast foods affect overall intake.
8. Discuss reasons why food additives are used.
9. List reasons why health quackery can be dangerous.
10. Identify common themes of health quackery and why they are contrary to evidence-based research.

Chapter 17: Effects of Systemic Disease on Nutritional Status and Oral Health

1. Discuss the various diseases, conditions, and treatments that commonly have oral signs and symptoms.
2. Discuss disease states, conditions, and accompanying treatments likely to affect nutritional intake.
3. Critically assess the implications of a patient's systemic diseases or conditions for optimal oral health.
4. Plan appropriate dental interventions for patients with systemic diseases or conditions with oral manifestations based on dietary guidelines.

Chapter 18: Nutritional Aspects of Dental Caries: Causes, Prevention and Treatment

1. Explain the role each of the following play in the caries process: tooth, saliva, food, and plaque biofilm.
2. Identify foods that stimulate salivary flow.
3. Suggest food and beverage choices and their timing to reduce the cariogenicity of a patient's diet.
4. Describe characteristics of foods having non-cariogenic or cariostatic properties.
5. Provide nutrition education to a patient at risk for dental caries.

Chapter 19: Nutritional Aspects of Gingivitis and Periodontal Disease

1. Describe the role nutrition plays in periodontal health and disease to a patient.
2. List the effects of food consistency and composition in periodontal disease.
3. Describe nutritional factors associated with gingivitis and periodontitis.
4. Discuss components of nutritional education for a periodontal patient.
5. List major differences between full liquid, mechanically altered, bland, and regular diets.

Chapter 20: Nutritional Aspects of Alterations in the Oral Cavity

1. Describe the common signs and symptoms of xerostomia and glossitis.
2. Synthesize appropriate dietary and oral hygiene recommendations for a patient with orthodontics, xerostomia, root caries, dentin hypersensitivity, glossitis, temporomandibular disorder, or removable prosthetic appliances.
3. Identify dietary guidelines appropriate for a patient undergoing oral surgery and a patient with a new denture, before and after insertion.

Chapter 21: Nutritional Assessment and counseling for Dental Hygiene Patients

1. Discuss the importance of a thorough health, social, and dental history in relation to assessment of nutrition status.
2. Describe the components needed to assess the nutrition status of a patient.
3. Explain the types of diet histories, and determine situations in which each is used effectively.
4. Formulate a dietary treatment plan for a dental problem influenced by nutrition.
5. Identify steps and considerations in implementing a dietary treatment plan.
6. Assimilate the steps of a nutrition education session.
7. Practice several communication skills the dental professional should employ when educating a patient.
8. Integrate EXPLORE-GUIDE-CHOOSE techniques of motivational interviewing into a clinical setting.

Nutrition for Dental Hygiene

Personal Assessment Project

Objectives

Upon completion of this project, student will be able to:

1. Objectively assess one's own personal dietary patterns using the *Dietary Guidelines for Americans, 2010* and ChooseMyPlate.gov.
2. Practice the process of recording and analyzing food intake for its nutritive and cariogenic value.
3. Use one's nutritional and dental knowledge in contributing to better general and oral health for self and patients.

Procedure

- Complete forms (either hard copy with pencil or electronically)
- Type report

1. Food Record/Dietary Analysis (20 points)

- A. Record everything you eat for 3 consecutive days. A Food Diary Form (shown in your textbook, p. 375 [Figure 18-9]) is available for download from Evolve (Student Resources/Analysis Forms). Use two weekdays and one weekend day (Thursday, Friday, Saturday or Sunday, Monday, Tuesday).

- Do not choose days when you are dieting, fasting, or ill.
- Be accurate in determining the amounts eaten.
- Remember to include extras such as mayonnaise on your sandwich, butter on your toast, salad dressing, chewing gum, and fluids (e.g., water, alcohol).
- Use brand names whenever possible (e.g., Cheerios, McDonald's).
- Record food preparation methods, when applicable (e.g., baked, fried, grilled).
- Do not include supplements.

B. Enter data into analysis programs:

Create a Personal Profile:

- Go to choosemyplate.gov/
- From the top-page links, select SuperTracker & Other Tools/SuperTracker
- Click the SuperTracker application to launch
- Click *Create Your Profile* to enter personal information and set up a user name and password

Food Recording

- From the top-page links, select Track Food & Activity/Food Tracker
- Use the calendar and search functions within the Food Tracker to enter food intake for 3 days (*Hint: If you eat the same items for any meal day to day, save them to the My Favorite Foods List and/or use the Copy Meals button for faster and easier data entry.*)

Food Group Report

- Once the 3 days have been entered, use the top-page links to select My Reports/Food Groups & Calories.
- Select the 3-day date range and click Create Report.
- Save the *Food Groups & Calories* report to print or to annotate electronically. Note the following:
 - How do your average total daily kilocalories compare to the recommended amount?
 - In which food groups has your intake been inadequate?
 - In which food groups has your intake exceeded the recommendations?
 Think of some ways in which you could ensure that your total average daily kilocalories and food group intake more closely align with recommended amounts. This information will be used in your Written Assessment and Analysis (Section 3 below).

Nutrients Report

- Again, use the top-page links to select My Reports/Nutrient Reports.
- Select the first day of the 3-day food intake and run a report on that day. For example, if you entered food intake for March 24-26, select View Report from (choose 24 March from calendar) thru (choose again 24 March from calendar) and click Create Report. Do this three times for each of the 3 days and save each day's *Nutrients Report* to print or annotate electronically.

Dietary Analysis

- Using the *Nutrients Report* for each day, transfer the values for each listed nutrient onto the Dietary Assessment Form (available for download on the Evolve site – Student Resources/Analysis Forms).

- Average the values for each row and enter those amounts in the *Average of 3 days* column.
- Use the Dietary Reference Intake tables on pages ii-v in the front of your textbook to find the recommended amount of each nutrient for your gender and age group. Mark these in the *Daily Allowance* column.
- Complete the *Comparison* section on the far right of the form to indicate whether your intake for each particular nutrient is adequate, inadequate, or high.

2. Carbohydrate Analysis (20 points)

- On each of the three Food Diary Forms completed from Section 1, circle each fermentable CHO in red or highlight.
- For each food circled/highlighted, comment on why it is cariogenic or not cariogenic. A sample Carbohydrate Intake Analysis Worksheet is in your textbook, p. 376 (Figure 18-10). This form is available for download on the Evolve site (Student Resources/Analysis Forms.)
- Total the number of minutes of acid exposure each day. Consider that one exposure may include several fermentable CHOs, and that not every meal is cariogenic. Average the 3 days; 2 hours/day is considered high.
- Comment on findings; give specific and realistic recommendations for modifications. Comment on your findings in relation to dental health.
- The CHO Analysis is to be typed.

3. Written Assessment and Analysis (65 points)

- Obtain and include a copy of your medical and dental history, intraoral and extraoral examinations, dental chart, and periodontal assessment. Highlight pertinent information on all clinic forms.
 - Summarize all of your information in a typed report following this guide. Add other pertinent comments.
- Social history (5 points): Discuss reasons why you choose the foods you consume. Use classroom notes and the textbook to get other ideas for food choices. Examples:
 - Exercise?
 - How often eat away from home?
 - Who does cooking/shopping?
 - Who lives at home?
 - Number meal/snacks per day?
 - Working? Number of hours/week? Regular hours?
 - Number of credit hours?
 - Medical history (5 points): List all pertinent information as it appears on your medical history form from the clinic, including family history of disease, any surgeries, medications, smoking, supplements, and OTC and prescription drugs. Determine your BMI. Comment on findings. Include relationship of medication, alcohol, or smoking to your nutritional status. Which nutrients are affected? What are some suggestions for improvement?

- C. Dental history (5 points):** List all pertinent information from your dental/oral history form from the clinic, including:
- Oral hygiene status (i.e., amount of plaque)
 - Periodontal problems—includes description of gingival condition
 - Orthodontics
 - Number of restorations
 - Does your dental health affect nutritional intake? Does your nutritional intake have an impact on your oral health?
- D. Special dietary considerations (5 points)** (e.g., cultural, lactose intolerant, low fat, low calorie, allergies, intolerances, vegetarian, religious, or do you follow no special guidelines): Include foods you like and foods you dislike.
- E. Compare your intake with the *Dietary Guidelines for Americans, 2010* (10 points)**
<http://www.health.gov/dietaryguidelines/2010.asp>:
- What dietary guidelines do you follow?
 - Where can you improve?
 - Provide specific and realistic recommendations.
 - Comment on the comparison of your intake with the ChooseMyPlate.gov recommendations. (*Hint: The recommendations are available on the Nutrient Reports you have already run.*)
- F. Dietary assessment (10 points):** Using the information recorded on the Dietary Assessment Form, comment on the following for each nutrient:
- How do you compare with the recommendation?
 - How can you improve?
 - What specific foods or beverages did you consume that helped you meet the recommendations?
 - What specific foods or beverages can you modify?
 - Explain items from your medical or dental history that require modification in your intake.
- G. From the findings in your report, construct a list of foods you could add to meet all or most nutrient needs. Comment on the possibility of adding these foods to your diet. Identify foods from your diet that are in excess. Comment on the possibility of reducing these foods. (10 points)**
- H. Conclusions and expected success of the program (15 points):** What have you started to change, or what do you anticipate changing in your diet while in school? List at least three specific and measurable goals/objectives you plan to make this year. What did you do well? Summarize all of your comments on improving our dietary intake. Create a realistic menu for 1 day.

4. Professionalism (5 points)

Edit your paper.

- Grammar/spelling
- Completeness—did you turn in all parts of the assignment? Food Diary Forms, Nutrient Analysis Forms, Average Day Intake Form, Fermentable CHO Analysis, and written evaluation
- Neatness
- Accuracy—correct values and calculations, information presented, appropriate dental terms

- Logic of conclusions and appropriateness of recommendations—your conclusions must be consistent with the evidence, and your recommendations must be in line with current nutrition knowledge
- Place the completed project in a binder or folder

Evaluation

All of the forms and your written summary should be compiled and submitted to your instructor by or before the date specified. Include the evaluation sheet. *Two percent will be deducted from the total grade of the project for each day (except weekends) that it is late.*

If you are having trouble with the assignment, call me before the assignment is due.

Grading will be based on:

Recording of Food Record/Dietary Analysis	20 points
Carbohydrate Intake Analysis Worksheet	20 points
Written Assessment and Analysis	65 points
Professionalism	5 points
	<i>110 possible points</i>

Plagiarism will not be tolerated.

**DHY 104 – Nutrition and Biochemistry in Dentistry:
Syllabus Agreement Statement
Fall 2019**

By signing this form, I am indicating that I have read the entire syllabus for **DHY 104 – Nutrition and Biochemistry in Dentistry** course for the Fall 2019 semester. I am aware of the course requirements, professional expectations, policies and procedures, the course schedule and the assignment deadlines. I have asked any questions I have regarding the information contained in the syllabus and my questions have been answered. I understand that I will be expected to follow the policies and procedures outlined in the syllabus and uphold my personal and professional integrity as a dental hygiene student.

Signed: _____ Date: _____

Print Name: _____