

# General and Dental Nutrition DHYG 1207.1A1

## CREDIT

2 Semester Credit Hours (2 hours lecture)

## MODE OF INSTRUCTION

This course will be taught in Hybrid format

## PREREQUISITE/CO-REQUISITE:

Pre-Requisite: DHYG 1301, 1431, 1304, & 1227.

Co-Requisite: DHYG 1219, 1235, 1260, & 2301.



**LAMAR INSTITUTE  
OF TECHNOLOGY**

## COURSE DESCRIPTION

A study of general nutrition and nutritional biochemistry emphasizing the effect nutrition has on oral health.

## COURSE OBJECTIVES

Upon completion of this course, the student will be able to

1. Demonstrate knowledge of basic concepts in nutritional biochemistry,
2. Understand the concept of RDA's, nutrient density, choosemyplate.gov, and food labeling.
3. Demonstrate competency in utilizing a table of the nutrient value of common foods.
4. Identify and explain the six classes of nutrients.
5. Demonstrate the digestion, transport and absorption of nutrients in the human.
6. Recognize the nutritional variations during the life cycle and state their importance in the prevention of disease.
7. Apply dental nutrition concepts through the preparation and presentation of a nutrition counseling session for the management of diet related dental problems.

## INSTRUCTOR CONTACT INFORMATION

Instructor: Renee Sandusky

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Office Phone: 409-247-7519

Office Location: MPC 211

Office Hours: MONDAY: 7:30-8:00, 1:00-3:00, TUESDAY: 8:00-11:00, 12:00-1:00, WEDNESDAY: 7:30-8:00, 12:00- 12:30, THURSDAY: 8:00-12:00, FRIDAY: 8:00-9:00

## REQUIRED TEXTBOOK AND MATERIALS

Davis, J. & Stegeman, C. (2019) The Dental Hygienist's Guide to Nutritional Care, 5<sup>th</sup> edition, Elsevier Saunders: St. Louis, Missouri. ISBN: 978-0-323-49727-5.

## REFERENCE MATERIALS

Collene, A., Smith, A.M. & Spees, C. (2022) Wardlaw's Contemporary Nutrition, 12<sup>th</sup> edition, McGraw-Hill: New York, NY.  
 McIntosh, S.N. (2022) Williams' Basic Nutrition & Diet Therapy, 16<sup>th</sup> edition, Elsevier Mosby: St. Louis, Missouri. Palmer, G.A., Boyd, L.D. (2017) Diet and Nutrition in Oral Health, 3rd edition, Pearson: New York, NY. <http://www.choosemyplate.gov/>

## COURSE CALENDAR

DATE	TOPIC	READINGS (Due on this Date)	ASSIGNMENTS (Due on this Date)
Week 1	Introduction of Hybrid course. Introduction of Dietary Project. Chapter 1	Syllabus	
	Chapter 1	Online	
Week 2	<b>Lecture 9:30- 11:50</b>	Chapter 2	<b>Guest Lecture Mrs. Daleo</b>
Week 2		Online	
1/26			Online Assignment Chapter 1 &2 Chapter 3 &19
Week 3	Chapter 3 Chapter 19	Chapter 3 & 19	
<b>2/2 - 2/4</b>	<b>EXAM 1</b>		<b>BLACKBOARD CHAPTERS 1,2,3,19</b>
Week 4	Chapter 4	Chapter 4	
	Chapter 4	Online	
2/9			Online Assignment Due Chapter 4 & 18
Week 5	Chapter 18	Chapter 18	
		Online	
2/16			Online Assignment Chapters 5 & 20
Week 6	Chapter 5 Chapter 20	Chapter 5 Chapter 20	
2/22/2024	Online		

<b>2/23 - 2/25</b>	<b>EXAM 2</b>		<b>BLACKBOARD CHAPTERS 4,5,18,20</b>
Week 7	Chapter 6	Chapter 6	
	Chapter 6	Online	
3/1		Chapter 17	Online Assignment Due Chapters 6 & 17
Week 8	Chapter 17	Chapter 17	
	Chapter 8	Online	
3/8			Online Assignment Chapter 7 Chapter 8
<b>3/11 - 3/15</b>	<b>Spring Breaks</b>	<b>Take a nap</b>	<b>Stay safe</b>
Week 9	Chapter 7		
	Chapter 7	Online	
<b>3/22 - 3/24</b>	<b>EXAM 3</b>		<b>BLACKBOARD CHAPTERS 6,7,8,17</b>
3 Week 10	Chapter 9 Chapter 13		
		Online	
3/29			Online assignment Chapter 9 & 13 due
Week 11	Chapter 10	Chapter 10	
4/4		Online	
4/5			Online Assignment Chapter 10 & 11 due
Week 12	Chapter 11	Chapter 11	
	Chapter 11	Online	
<b>4/12/ - 4/14</b>	<b>Exam 4</b>		<b>Blackboard Chapters 9,10,11,13</b>
Week 12	Chapter 12 Chapter 14	Chapter 12 Chapter 14	
Week 13	Chapter 12 Chapter 14	Online	
4/19			Online Assignment due Chapters 12,14,15,21

4/23/2024 Week 14	Chapter 23 Chapter 21	Chapter 23 Chapter 21	Online Assignment Chapter 12 and 14
4/25/2024	Chapter 23 Chapter 21	Online	Online Assignment Chapter 21 Chapter 23
<b>4/26/2024- 4/28.2024</b>	<b>Exam 5</b>		<b>Blackboard Chapters 12,15,23,21</b>
5/30/2024 Week 14	Review for Final		
<b>5/2/2024</b>	<b>Final Exam TBA</b>		

## ATTENDANCE POLICY

### ***Absenteeism***

In order to ensure the students in the dental hygiene program achieve the necessary didactic and clinical competencies outlined in the curriculum, it is necessary that the student complete all assigned lecture classes, clinical and laboratory hours. It is the responsibility of the student to attend class, clinic or lab. The instructor expects each student to be present at each session.

It is expected that students will appear to take their exams at the regularly scheduled examination time. Make-up examinations will be given **only** if the absence is due to illness (confirmed by a physicians' excuse), a death in the immediate family, or at the discretion of the instructor.

If students are unable to attend lecture class, clinic or lab, it is **mandatory that you call the appropriate instructor prior to the scheduled class, clinic or lab time. An absence will be considered unexcused if the student fails to notify the course faculty prior to the start of class, clinic, or lab. Attendance through Blackboard Collaborate is considered an absence. The course instructor must be notified at least one hour prior to the beginning of class/lab if the student plans to attend through Blackboard Collaborate.** The student is responsible for all material missed at the time of absence. Extenuating circumstances will be taken into account to determine if the absence is excused. Extenuating circumstances might include but are not limited to funeral of immediate family member, maternity, hospitalization, etc. If the student has surgery, a debilitating injury, or an extended illness, a doctor's release will be required before returning to clinic.

#### a. **Fall/Spring Semesters:**

Dental hygiene students will be allowed **two excused absences** in any lecture, clinic or lab. Absences must be accompanied by a written excuse on the next class day. In the event that a student misses class, clinic or lab beyond the allowed absences, the following policy will be enforced:

2 absences = notification in Starfish

Beginning with the third absence, **2 points** will be deducted from the final course grade for each absence thereafter.

**Two (2) points** will be deducted from the final course grade for each unexcused absence.

### ***Tardiness***

Tardiness is disruptive to the instructor and the students in the classroom. A student is considered tardy if not present at the start of class, clinic or lab. It is expected that students will arrive on time for class, clinic or lab, and remain until dismissed by the instructor. If tardiness becomes an issue, the following policy will be enforced:

Tardy 1 time = notification in Starfish

Tardy 2 times = is considered an unexcused absence. (See the definition of an unexcused absence)

If a student is more than 15 minutes late to any class period, it will be considered an unexcused absence.

**Students should plan on attending classes, labs and clinic sessions as assigned throughout the semester. Family outings, vacations and personal business should be scheduled when school is not in session and will not be considered excuses for missing assignments, examinations, classes, labs or clinic time.**

### **DROP POLICY**

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the [Academic Calendar](#). If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

### **STUDENT EXPECTED TIME REQUIREMENT**

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16- week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

### **COURSE REQUIREMENTS**

1. Students complete this course as a hybrid course (partially online). Class meets only once per week.
2. Requirements for this course include five (5) tests, 11 Blackboard assignments, class discussion of assignments, and one Personal Dietary Assessment Project. The student must pass the course with a 75% or higher in order to receive credit for DHYG 1207.
3. No credit will be given for late Blackboard Assignments. All assignments should be completed individually. They are not meant to be a group assignment.
4. **Personal Dietary Assessment Project.** The purpose of the counseling project is to afford the dental hygiene student the opportunity to apply the learned nutritional principles on themselves before applying them to a patient. Complete instructions can be found on page 23-25.
  - A. **Documentation.** Each student must complete all clinical forms (pg. 26-32).
  - B. **Written Report.** The student will provide a written summary using the information from [www.MyPlate.gov](http://www.MyPlate.gov), [www.myfitnesspal.com](http://www.myfitnesspal.com), and Dietary

Guidelines. The student will compare food intake to the nutrients on the dietary assessment form. The student will discuss oral health issues that could affect their diet. For more details, see pages 23-25.

C. **Computer Usage.** Students must be familiar with current computer programs utilized in contemporary dental office settings. Therefore, students must utilize the on-line site of [www.MyPlate.gov](http://www.MyPlate.gov) and [www.myfitnesspal.com](http://www.myfitnesspal.com) to complete the diet analysis. These sites can be accessed on any computer with internet capabilities.

## **COURSE EVALUATION**

Final grades will be calculated according to the following criteria:

Student must earn a grade of “C” or better to progress in the curriculum.

EXAMS (6)	50%
VITAMIN PROJECT PART1	10%
VITAMIN PROJECT PART 2	10%
PERSONAL DIETARY ASSESSMENT PROJECT	15%
ONLINE CHAPTER ASSIGNMENT	15%
WEEBLY	<u>COMPLETION</u>

## **GRADING SCALE**

A	=	92 - 100
B	=	83 - 91
C	=	75 – 82
D	=	60 - 74
F	=	59 and below

LIT does not use +/- grading scales

## **ACADEMIC DISHONESTY**

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution’s Academic Dishonesty Policy available in the Student Catalog & Handbook at <http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty>.

## **TECHNICAL REQUIREMENTS**

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

## **DISABILITIES STATEMENT**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act

of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email [specialpopulations@lit.edu](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](http://SpecialPopulations-LamarInstituteofTechnology(lit.edu)).

## **STUDENT CODE OF CONDUCT STATEMENT**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu). Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

## **STARFISH**

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

## **ADDITIONAL COURSE POLICIES/INFORMATION**

### ***Examination and Quiz Policy***

Examinations will be based on objectives, lecture notes, handouts, assigned readings, audiovisual material and class discussions. Major examinations will consist of multiple choice, true/false, matching, short answer, and case study questions. No questions will be allowed during exams.

Students are expected to complete examinations as scheduled. Make-up examinations will be given ONLY if the absence is due to illness (confirmed by a physicians' excuse), a death in the immediate family, or at the discretion of the Instructor. All make-up examinations must be taken within two (2) weeks from the scheduled exam date. All examinations will be kept on file by the Instructor. Students may have access to the examination by appointment during the Instructor's office hours. Exams may be reviewed up to two (2) weeks following the exam date. **You may not copy, reproduce, distribute or publish any exam questions.** This action

may result to dismissal from the program. A grade of "0" will be recorded for all assignments due on the day of absences unless prior arrangements have been made with the Instructor.

Students must use their person equipment, such as computer, MacBook, laptop, iPad, to take their exams and must not use their classmates. School computers may be used if personal equipment is not available. Respondus Lockdown Browser and Respondus Monitor will be used for examination therefore, a webcam is required to take the exam. The student is required to show the testing environment at the beginning of the exam to assure the instructor that it is clear of any study materials. Failure to do so will result in a 10-point exam grade deduction If you need online assistance while taking the test, please call Online Support Desk at 409-955701 or send an email to [lit-bbsupport@lit.edu](mailto:lit-bbsupport@lit.edu)

Respondus Lockdown Browser and Respondus Monitor will be used for examinations therefore, a webcam is required to take the test. The student is required to show the testing environment at the beginning of the exam to assure the instructor that it is clear of any study materials. Failure to do so will result in a 10-point exam grade deduction. If you need online assistance while taking the test, please call Online Support Desk at 409-951-5701 or send an email to [lit-bbsupport@lit.edu](mailto:lit-bbsupport@lit.edu).

It shall be considered a breach of academic integrity (cheating) to use or possess on your body any of the following devices during any examination unless it is required for that examination and approved by the instructor: cell phone, smart watch/watch phone, electronic communication devices (including optical), and earphones connected to or used as electronic communication devices. It may also include the following: plagiarism, falsification and fabrication, abuse of academic materials, complicity in academic dishonesty, and personal misrepresentation.

Use of such devices during an examination will be considered academic dishonesty. The examination will be considered over, and the student will receive a zero for the exam. Students with special needs and/or medical emergencies or situations should communicate with their instructor regarding individual exceptions/provisions. It is the student's responsibility to communicate such needs to the instructor.

### ***Mandatory Tutoring***

If a student receives a failing grade on any major exam, the student will be required to meet with course instructor within 2 weeks of the failed exam. One on one concept review by appointment with the course instructor will be provided and/or written academic warning when a student is failing to meet minimal requirements in the classroom setting.

### ***Electronic Devices***

Electronic devices are a part of many individual's lives today. Students must receive the instructor's permission to operate electronic devices in the classroom and lab. Texting on cell phones will not be allowed during class or clinic.

### ***Late coursework***

Assignments, Quizzes and Tests must be completed by the due date. Late submissions or completion will not be accepted and will result in a zero for that assignment/quiz/test.

### **Remediation**

Remediation is available by appointment.

See Student Handbook for more information about remediation policies.

**\* Faculty has the authority to modify the above policies if unusual circumstances mandate a change. Please refer to the Student Handbook for a c**

## **COURSE OUTLINE**

### **Overview of Healthy Eating Habits**

- a. Nutrients
  - 1. essential nutrients
  - 2. function
  - 3. energy value (Kcalorie)
- b. Energy Needs of the Body
  - 1. basal metabolism
  - 2. basal metabolic rate
  - 3. energy expenditure factors
- c. Food Choice Guidance
- d. Dietary Standards
- e. Food Labeling
  - 1. Daily Reference Values
  - 2. Reference Daily Intakes

### **Concepts in Biochemistry**

- a. Fundamentals of biochemistry
- b. Principles of biomolecules in nutrition

### **The Alimentary Canal: Digestion and Absorption**

- a. Functions of each digestive organ
- b. Chemical secretions necessary for digestion of nutrients
- c. Where the chemical secretions are secreted
- d. How digestion and absorption affect nutritional status

### **Carbohydrates**

- a. Introduction
- b. Classification
  - 1. Monosaccharides
    - a. glucose
    - b. fructose
    - c. galactose
  - 2. Disaccharides
    - a. sucrose
    - b. lactose
    - c. maltose
  - 3. Polysaccharides
    - a. starch
    - b. glycogen
    - c. dietary fiber

- 1. soluble
- 2. insoluble
- 3. Relationship between dietary fiber and health
- c. Physiologic Role
- d. Requirements
- e. Sources
- f. Hyper and Hypo States
  - 1. Carbohydrate excess
  - 2. Carbohydrate deficiency
  - 3. Dental caries
  - 4. Obesity
- g. Sugar Substitutes
  - 1. sugar alcohols
  - 2. flavonoid sweeteners
  - 3. saccharin
  - 4. aspartame
  - 5. acesulfame K
  - 6. cyclamates
  - 7. xylitol
  - 8. stevia plant

## Protein

- a. Classification
  - 1. Essential
  - 2. Nonessential
  - 3. Conditionally essential
- b. Measures of Protein Quality
  - 1. Complete and incomplete
  - 2. Biologic Value
  - 3. Nitrogen Balance
- c. Physiologic Roles
- d. Requirements
- e. Digestion and Metabolism
- f. Sources
  - 1. Bioavailability
- g. Under-consumption and Health-Related Problems
  - 1. Marasmus
  - 2. Kwashikor
- h. Over-consumption and Health-Related Problems

## Lipids

- a. Overview
- b. Functions
- c. Types
  - 1. triglycerides
  - 2. other dietary lipids
    - a. phospholipids
    - b. sterols
    - c. essential fatty acids
    - d. other
- d. Digestion and absorption
- e. Metabolism and storage
- f. Current Patterns of Consumption
- g. Dietary Requirements
- h. Sources
- i. Role in health
  - 1. Obesity
  - 2. Fats and coronary Heart Disease

- 3. Cancer
- 4. Hyperlipidemia
- j. Fats and Oral Health
  - 1. Dental caries
  - 2. Parotid enlargement

### **Use of Energy Nutrients: Metabolism and Balance**

- a. Metabolism
  - 1. Catabolism
  - 2. Anabolism
- b. Krebs Cycle
- c. Carbohydrate Metabolism
- d. Protein Metabolism
- a. Alcohol Metabolism
- b. Metabolic Interrelationships
- c. Metabolic energy
- d. Basal Metabolic Rate (BMR)
  - 1. Factors affecting BMR
- e. Total Energy Requirements
  - 1. Basal energy expenditure (BEE)
    - a. Factors affecting BEE
- f. Energy Balance
  - 1. Factors affecting energy balance

### **Vitamins Required for Calcified Structures (A,D,E,K,C)**

- a. Vitamin A
  - 1. Functions
    - a. Visual purple
    - b. Relationship between vitamin A deficiency and cancer
    - c. Maintenance of epithelial cells and tissues
    - d. Promotion of bone remodeling
    - e. Activation of cell membranes
  - 2. Function in oral structures
    - a. Periodontium
    - b. Teeth
    - c. Salivary glands
    - d. Oral mucous membranes
    - e. Cleft lip and palate
  - 3. RDA
  - 4. Sources
  - 5. Therapy
  - 6. Toxicity
- b. Vitamin D
  - 1. Absorption, transport, and storage
  - 2. Metabolism
  - 3. Function
  - 4. RDA
  - 5. Sources
  - 6. Therapy
  - 7. Deficiency
- c. Vitamin E
  - 1. Absorption and metabolism
  - 2. Function
  - 3. Therapy
  - 4. RDA
  - 5. Sources
  - 6. Myths and facts
  - 7. Toxicity

- d. Vitamin K
  1. Absorption
  2. Function
  3. Deficiency
  4. Vitamin K and Periodontal disease
  5. Therapy
  6. RDA
  7. Sources
- e. Vitamin C
  1. Absorption, transport, and storage
  2. Function
  3. RDA
  4. Sources
  5. Therapy
  6. Deficiency

### **Vitamins Required for Oral Soft Tissues and Salivary Glands**

- a. The B Vitamins
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency
  5. Toxicity
  6. Effect on general and oral health
- b. Folic Acid
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency
  5. Toxicity
  6. Effect on general and oral health
- c. Vitamin B12 (Cobalamin)
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency
  5. Toxicity
  6. Effect on general and oral health
- d. Vitamin B6 (Pyridoxine)
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency
  5. Toxicity
  6. Effect on general and oral health
- e. Vitamin B1 (Thiamin)
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency
  5. Toxicity
  6. Effect on general and oral health
- f. Vitamin B2 (Riboflavin)
  1. Function
  2. Sources
  3. Requirements
  4. Deficiency

- 5. Toxicity
- 6. Effect on general and oral health
- g. Vitamin B3 (Niacin)
  - 1. Function
  - 2. Sources
  - 3. Requirements
  - 4. Deficiency
  - 5. Toxicity
  - 6. Effect on general and oral health
- h. Pantothenic Acid
  - 1. Function
  - 2. Sources
  - 3. Requirements
  - 4. Deficiency
  - 5. Toxicity
  - 6. Effect on general and oral health
- i. Biotin
  - 1. Function
  - 2. Sources
  - 3. Requirements
  - 4. Deficiency
  - 5. Toxicity
  - 6. Effect on general and oral health
- j. Vitamin-like Substance and Other Claimed Nutrients

### **Minerals Essential for Calcified Structures & Nutrients Present in Calcified Structures**

- a. Macro minerals
  - 1. Distribution
  - 2. Function
  - 3. Absorptions
  - 4. Storage
  - 5. Excretion
  - 6. Fluid & electrolyte balance
  - 7. Acid-base balance
  - 8. Dietary sources
  - 9. RDA
  - 10. Deficiency
  - 11. Toxicity
  - 12. Hypertension
  - 13. Effect on general and oral health
- b. Trace Minerals
  - 1. Activators of enzyme systems
  - 2. Function
  - 3. RDA
  - 4. Dietary sources
  - 5. Deficiency
  - 6. Toxicity
  - 7. Effect on general and oral health

### **Water and Minerals Required for Oral Soft Tissues and Salivary Glands**

- a. Distribution
  - 1. Factors which affect distribution
- b. Functions
- c. Sources
- d. Requirements
- e. Regulation

- 1. Disturbances in water balance
- f. Sodium
  - 1. Function
  - 2. Daily requirements
  - 3. Sources
  - 4. Deficiency
  - 5. Dietary restriction
- g. Acid-base balance

### **Hypertension Nutritional Requirements Affecting Oral Health in Women, During Growth & Development, in Older Adults**

- a. Terms
- b. Growth
- c. Newborns
  - 1. Requirements
  - 2. Feeding Practices
  - 3. Oral Problems in infants
- d. Toddler & Preschool Children
  - 1. Toddlers
  - 2. Preschool Children
  - 3. Oral Problems of Toddlers and Preschool Children
- e. Adolescents
  - 1. Requirements
  - 2. Influential Factors on Eating Habits
  - 3. Counseling
- f. Maturity in the Life Cycle
  - 1. Physiologic Factors Influencing Nutritional Needs and Status
  - 2. Physiologic Changes in the Oral Cavity
  - 3. Socioeconomic and Psychological Factors
  - 4. Other Factors
  - 5. Nutrient Requirements

### **Other Considerations Affecting Nutrient Intake**

- a. Food patterns
- b. Cultural Influences
- c. Working with patients of different cultures
- d. Factors affecting nutrient intake
  - 1. Budget
  - 2. Food preparation
  - 3. Food fads and misinformation

### **Effects of Systemic Disease on Nutritional Status**

- a. Effects of chronic disease
- b. Mental health problems
  - 1. anorexia
  - 2. bulimia
    - a. Symptoms
    - b. Medical complications
    - c. Oral manifestations
    - d. Nutritional requirements
- c. Gustatory and olfactory functions
- d. Xerostomia
- e. The anemias
  - 1. Iron deficient anemia
  - 2. Plummer-Vinson Syndrome
  - 3. Megablatic anemia
  - 4. Folic acid deficiency

- 5.      Thalassemia
- 6.      Aplastic anemia
- h.     Gastrointestinal Problems
- i.     Cardiovascular Conditions
- j.     Cerebrovascular Accidents
- k.     Skeletal System
- l.     Metabolic Problems
- m.     Neuromuscular Problems
- n.     Neoplasia
- h.     AIDS

**Nutritional Aspects of Periodontal Disease**

- a.     Physical effects of food on periodontal health
- b.     Nutrient composition
- c.     Food consistency
- d.     Nutritional considerations for periodontal patients
- e.     NUG
- f.     Gingivitis
- g.     Periodontitis
- h.     Nutritional management
- i.     Dietary recommendations
- j.     Periodontal surgery
- k.     Post operative care

**Nutritional Aspects of Alterations in the Oral Cavity**

- a.     Conditions that interfere with food intake
- b.     Xerostomia
- c.     Root caries
- d.     Dentition status
- e.     Alveolar osteoporosis
- f.     Glossitis

**Nutritional Assessment and Counseling for Dental Hygiene Patients**

- a.     Diet counseling
- b.     Evaluation of the Patient
- c.     Assessment of Nutritional Status
- d.     Formation of Nutrition Treatment Plan
- e.     Facilitative Communication Skills
- f.     General Principles for Caries Prevention
- g.     Food Diaries
- h.     Evaluation of Food Diaries

## **Learner Objectives**

### **Overview of Healthy Eating Habits**

1. Define the terms: nutrition, nutrients, metabolism, essential and non-essential nutrients.
2. Explain the energy value, kcal, of food.
3. List the general physiologic functions of the six nutrient classifications of foods.
4. Identify factors that influence food habits
5. Name the food groups on MyPlate.
6. Determine the amounts needed from each of the food groups on MyPlate for a well-balanced 2000 kilocalorie diet.
7. Identify significant nutrient contributions of each food group.
8. State the Dietary Guidelines for Americans and their purpose.
9. Identify dietary selections in each food group that significantly affect intake of calories, fats, salt, and sugar.
10. Assess dietary intake of a patient, using the Dietary Guidelines for Americans and MyPlate.
11. Diagram and explain a food label. Explain the requirements of both ingredient labeling and nutritional labeling.
12. Explain the term, Daily Value (DV), Daily Reference Value (DRV), and Reference Daily Intake (RDI). Compare the DV, DRV, and RDI to the RDA.

### **Concepts in Biochemistry**

1. Explain the role of biochemistry in dental hygiene and nutrition.
2. Compare and contrast the structure, function, and properties of the four major classes of biomolecules (carbohydrates, proteins, nucleic acids, and lipids).
3. Outline the structure, function, and property of monosaccharides, disaccharides, and polysaccharides.
4. Outline the structure, function, and property of amino acids and proteins.
5. Compare and contrast the roles of enzymes, coenzymes, and vitamins in nutrition.
6. Outline the structure, function, and property of fatty acids, triglycerides, and steroids.
7. Differentiate catabolism from anabolism. Explain connections between metabolic pathways in carbohydrate, protein, and lipid metabolism.

### **The Alimentary Canal: Digestion and Absorption**

1. Describe general functions of each digestive organ.
2. Identify chemical secretions necessary for digestion of energy-containing nutrients and in what parts of the gastrointestinal tract they are secreted.
3. Describe how digestion and absorption may affect nutritional status and oral health.

### **Carbohydrate: The Efficient Fuel**

1. Define carbohydrates and the three most common classifications of carbohydrates.
2. Differentiate among monosaccharides, disaccharides, and polysaccharides.
3. Describe the health benefits of fiber, including difference effects of soluble versus insoluble fiber.
4. Identify and describe the physiologic role of carbohydrates.

5. Identify sources of carbohydrates.
6. Discuss the complications that result from carbohydrate excess and deficiency.
7. Describe the role of carbohydrates in the caries process.
8. Discuss the sugar substitutes and their assets, limitations and applications.

### **Protein: The Cellular Foundation**

1. Describe the structure of an amino acid and the variations that exist.
2. Compare and contrast the terms essential and nonessential amino acids.
3. List the 9 essential amino acids and the 11 nonessential amino acids.
4. Discuss the measures of protein quality.
5. Explain the physiologic roles of protein.
6. Identify the protein requirements for adults. Given a body weight, calculate the protein requirement.
7. Identify the factors which may impact the protein requirement for an individual.
8. Identify protein sources within the basic food groups. Discuss the bioavailability of animal and plant sources of protein.
9. Identify protein sources for individuals with various dietary restrictions.
- 10.
10. State the problems associated with protein deficiency and excess.
11. Describe the PEM diseases of Kwashiorkor and Marasmus. Identify symptoms typical of the disease.
12. Outline the dental problems associated with protein deficiency.

### **Lipids: The Condensed Energy**

1. Explain the justification for the descriptive term "condensed energy" when referring to lipids.
2. Discuss the characteristics of a triglyceride lipid. Explain the effect of structure in solution.
3. Explain the term saturated, unsaturated, and polyunsaturated lipids. List sources of each and the impact on health.
4. Explain the terms trans and cis as related to the overall appearance of the fatty acid chain.
5. Identify the impact of the configuration on health.
6. What impact do Omega - 3 fatty acids have on the health of the individual when compared to Omega - 6 fatty acids?
7. Describe the appearance of true fats at room temperature. Identify factors that affect the consistency of fats.
8. List two compound lipid structures and their role in human physiology.
9. Discuss the lipoprotein, cholesterol. Identify the function, types, and physiology of cholesterol formation.
10. Identify and explain the physiologic role of lipids.
11. Discuss dietary fats and dental health.
12. Identify the requirements and sources for fat and fatty acids.
13. Identify the health concerns associated with over and under-consumption of fat.
14. List the advantages and disadvantages of fat replacers.

### **Utilization of The Energy Nutrients: Metabolism and Balance**

1. Calculate energy needs according to the patient's weight and activities.
2. Explain physiological sources of energy.
3. Explain Basal Metabolic Rate (BMR) and the factors that affect the BMR.
4. Discuss the calculations made to determine Total Energy Requirements.
5. Identify the factors that affect energy balance.

### **Vitamins Required for Calcified Structures**

1. Identify the four 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.

### **Minerals Essential for Calcified Structures**

1. List the minerals found in collagen, bones, and teeth.
2. Describe how the body uses minerals to help maintain fluid and electrolyte balance and acid-base balance.
3. Describe the mineral regulation in the body.
4. Identify the dietary sources, RDA, and any toxicity that may result in the human diet.
5. Discuss the effect of the mineral deficiency or oversupply in the oral cavity and human body.

### **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.

### **Vitamins Required for Oral Soft Tissues and Salivary Glands**

1. Describe the classification of the B complex vitamins.
2. Identify the function, and absorption for each of the B complex vitamins and vitamin-like compounds (thiamin, riboflavin, niacin, pantothenic acid, biotin, B6, and B12).
3. Identify the diagnosis of deficiency, and toxicity for each of the B complex vitamins.
4. Identify the food sources and Recommended Dietary Allowance for each of the B complex vitamins.

### **Fluids and Minerals Required For Oral Soft Tissues and Salivary Glands**

1. Describe the process of osmosis.
2. Discuss the electrolytes. Include the physiological role, requirements, sources, deficiency state, toxicity state, and regulation for each.
3. List normal fluid requirements and identify factors that may affect these requirements.
4. Discuss sodium, potassium, zinc, iodine and iron. Include the physiological role, requirements, sources, deficiency state, toxicity state, and regulation for each.
5. Identify oral signs and symptoms of fluid and electrolyte imbalances.
6. Discuss areas of nutritional concern with patients who have fluid and electrolyte imbalances.
7. Determine which diseases and medications may require patients to restrict sodium intake.

### **Nutritional Requirements Affecting Oral Health in 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. Implement nutrition and oral health considerations for patients who are pregnant or breastfeeding.
4. Describe each factor affecting fetal development.

### **Nutritional Requirements during Growth and Development and Eating Habits Affecting Oral Health**

1. Describe the major dietary life cycles and the nutritional requirements specific to each cycle.
2. Identify the nutritional requirements specific to the adolescent female.
3. Discuss ways to handle typical nutritional problems that occur in infants, young children, school-age children, and adolescents.
4. Apply dental aspects related to nutritional needs during infancy, early childhood, elementary school years and adolescence to patient care.

### **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.

### **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. Distinguish between primary and secondary nutritional deficiencies.
3. Discuss disease states, conditions, and accompanying treatments likely to affect nutritional intake.
4. Critically assess the implications of a patient's systemic diseases or conditions for optimal oral health.
5. Describe the procedure to assess a patient's nutritional status.
6. Identify three major changes that occur in the oral cavity as a result of nutritional deficiencies.
7. Describe the role of nutritional deficiencies in cheilosis, angular stomatitis, glossitis, gingivitis, oral mucosa inflammation.
8. Describe the nutritional management of acute problems of the oral mucosa.
9. Identify the situations when vitamin supplementation is appropriate.

### **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. Explain the relationship of sugar alcohols, starches, and sugars to dental caries.
3. Explain the relationship between the texture of food and dental caries.
4. Discuss the comparative carcinogenicity of starch and sugar in humans.
5. Explain the significance of the Stephan Curve.
6. Know the instrument used to assess diet in relation to caries.
7. Know the groups of foods which are high caries risks.
8. Discuss the evidence for the relationship of caries to bacteria and carbohydrates.
9. List the bacteria that play a significant role in caries development.

### **Describe a diet which would be considered non-cariogenic. Nutritional Assessment and Education for Dental Patients**

1. Describe the two effects of nutrition on dentition.
2. Identify the food choices and eating habits which merit attention during a diet counseling session.
3. Explain Shaw's statement, "The frequency of eating, the amount of food retained in the mouth particularly on tooth surfaces, and the length of time that food residues are retained in critical areas are more important than the total amount of sugars consumed."

4. What the diet counselor should incorporate into the diet prescription whenever possible.
5. Discuss the basic prerequisite for accomplishing dietary change and the minimal requirements for a successful dietary counseling service.
6. Describe the type of patient that would most likely benefit from a diet counseling service.
7. List the communication techniques that will have a beneficial effect on effective communication.
8. Explain the first and basic goal in interviewing. Discuss the characteristics of the physical setting, diet interviewer, and the interview techniques that will result in a successful interview.
9. Explain the four rules that should be adopted when making dietary modifications.
10. Describe the instructions given to a patient keeping a 5 Day Food Intake Diary.
11. Summarize the guidelines and the dietary counseling for caries prevention and control.

## **APPENDIX I**

### **PERSONAL DIETARY ASSESSMENT INFORMATION**

