

GENERAL AND DENTAL NUTRITION

Lamar Institute of
Technology

DHYG 1207

Course Syllabus

Spring

Taught by:
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LECTURE SCHEDULE

See Addendum

COURSE DESCRIPTION

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

PRE-REQUISITE

DHYG 1301, 1431, 1304, & 1227.

CO-REQUISITE

DHYG 1219, 1235, 1260, & 2301.

COURSE GOALS

The student will;

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.

CREDIT HOURS: 2 semester hours

CLASSROOM: 112 MPC

CLASS MEETING TIME: 10:30 – 11:20 am Tuesday

INSTRUCTOR

Debbie Brown, RDH, MS, Associate Professor

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Office Hours: Monday (9:30-12:00); Tuesday (9:00-11:00) (1:00-3:30); Wednesday (1:00-4:00); Thursday (1:00-3:30); Friday (9:00-12:00)

Students should discuss questions by appointment or as the instructor is available.

COURSE POLICIES

1. 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.** 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.

b. Summer Sessions:

Dental hygiene students will be allowed **one excused absence** 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:

1 absence = notification in Starfish

Beginning with the 2nd 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 absences.

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.

2. Disabilities Statement. The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities.

If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 839-2018 or visit the office in Student Services, Eagles' Nest Building. You may also visit the online resource at <https://www.lit.edu/student-success/special-populations>.

3. 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 or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

4. Technical Requirements (for Blackboard)

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at: https://help.blackboard.com/en-us/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy. A functional broadband

internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

5. Exam 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. 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.

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.

6. Late Work. Assignments will not be accepted if turned in late. Please refer to the student handbook for a comprehensive listing of the program policies. Faculty has the authority to modify the above policies if unusual circumstances mandate a change.

7. Electronic equipment/cell phones. Electronic devices are a part of many individual's lives today. Devices such as tape recorders, cell phones, smart watches, tablets/ipads and laptop computers, however, may be disturbing to faculty and classmates. Students, therefore, must receive the instructor's permission to operate all electronic devices in the classroom and clinic. Texting on cell phones, smart watches, ipads or computers will not be allowed during class or clinic.

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, laptop, tablet, electronic communication devices (including optical), and earphones connected to or used as electronic communication devices. 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.

8. Leaving Class during Lecture. You should be prepared to remain in class for the entire class period. Any personal business should be taken care of prior to or after class. If a medical problem exists or an emergency occurs please inform the instructor.

9. Remediation. Remediation is available by appointment with the instructor. Please advise the instructor if you feel you need remediation and every effort will be made to accommodate you. 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.

10. 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.



TEACHING METHODS

Class discussion, online chapter assignments, audiovisual, personal dietary assessment, reading assignments.

REQUIRED TEXTS

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

REFERENCE MATERIALS

Collene, A., Smith, A.M. & Wardlaw, G.M. (2015) Contemporary Nutrition, 10th edition, McGraw-Hill: New York, NY.
McIntosh, S.N. (2017) Williams' Basic Nutrition & Diet Therapy, 15th edition, Elsevier Mosby: St. Louis, Missouri.
Palmer, G.A., Boyd, L.D. (2016) Diet and Nutrition in Oral Health, 3rd edition, Prentice Hall: Upper Saddle River.
<http://www.choosemyplate.gov/>

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 assignments, and one Personal Food Diary 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 Food Diary 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. 26-31).
 - B. **Written Report.** The student will provide a written summary using the information from www.ChooseMyPlate.gov, 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.ChooseMyPlate.gov and www.myfitnesspal.com to complete the diet analysis. These sites can be accessed on any computer with internet capabilities.

EVALUATION CRITERIA

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

Exams (5)	65%
Personal Food Diary Project	20%
Online Chapter Assignments	15%

Grade Scale

A	92 - 100
B	83 - 91
C	75 - 82
D	60 - 74
F	Below 60

CONTENT 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. flavinoid sweeteners

3. saccharin
4. aspartame
5. acesulfame K
6. cyclamates
7. xyitol
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

- e. Lipid Metabolism
- f. Alcohol Metabolism
- g. Metabolic Interrelationships
- h. Metabolic energy
- i. Basal Metabolic Rate (BMR)
 - 1. Factors affecting BMR
- j. Total Energy Requirements
 - 1. Basal energy expenditure (BEE)
 - a. Factors affecting BEE
- k. 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. Metabolism

3. Function
4. RDA
5. Sources
6. Therapy
7. 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. Macrominerals
 - 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
- h. 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. Megablastic 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

o. 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. 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 cariogenicity 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.
10. Describe a diet which would be considered non-cariogenic.

Nutritional Aspects of Gingivitis and Periodontal Disease

1. Identify the means by which nutritional deficiencies can contribute to periodontal disease.
2. Discuss the conclusions about the local effects of the physical consistency of food on periodontal health.
3. Identify the etiology of ANUG and describe the recommended dietary prescription.
4. Identify and describe each step for giving nutritional guidance to a patient with chronic periodontitis.
5. Describe the goal for prescribing a diet before periodontal surgery.
6. List three benefits from good nutrition in regard to periodontal tissues.
7. Discuss the use of firm, fibrous foods to a) remove plaque, b) stimulate saliva, and c) provide for food removal or oral clearance.
8. Discuss the need for high protein food supplements before and after periodontal surgery.
9. Describe a recommended post-operative dietary management for office periodontal patients.

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.

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

Grade Computation Sheet

Nutrition Grade Computation Sheet

Test Grades:

1. _____
2. _____
3. _____
4. _____
5. _____

Test average: _____

Test Average:	_____	X .65	_____
Personal Dietary Analysis Project	_____	X .20	_____
Online Chapter Assignments	_____	X .15	_____
	Sum of above:		_____
Final Grade			_____

Note: The test grade average and the online chapter assignments are calculated in Blackboard gradebook.

APPENDIX II

PERSONAL DIETARY ASSESSMENT INFORMATION

PERSONAL DIETARY ASSESSMENT PROJECT

Objectives

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

1. Objectively assess their personal dietary patterns using the www.ChooseMyPlate.gov/myplateplan and www.myfitnesspal.com.
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 (All required forms may be found on Blackboard, www.ChooseMyPlate.gov, or www.myfitnesspal.com)

- Fill out the LIT Caries Risk Assessment, Nutrition Risk Assessment, and Nutrition Case History
- Go to www.myfitnesspal.com and enter the food you consume for 3 days.
- Print a food diary for each day and a nutrient report for Vitamin A & C, and for Calcium and Iron.
- Go to www.choosemyplate.gov/myplateplan and obtain a food plan for you and print it.
- Complete the Carbohydrate Intake Analysis, and Nutrient Dietary Assessment Form
- Complete an ideal menu
- Type Written Report (at least two pages)
- All forms and reports should be placed in a binder

1. www.myfitnesspal.com

A. Enter data into www.myfitnesspal.com

- Register or login
- Click Food tab
- Click on add food
- Record everything you eat and drink for 3 consecutive days. *Do not choose days when you are dieting, fasting, or ill. You will not be graded on what you eat.* Be very accurate in determining the amounts eaten. Ex. ½ cup, 1 cup. 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.
- Adding food is easy. You can type in the food, put in a restaurant and get the menu, you can add a recipe, or copy a food from a date.
- Click view full report and print one food diary per day.
- Click on Reports tab.
- Choose Vitamin A, Vitamin C, Calcium, or Iron
- Choose the 7 day report
- Take a screen shot of this report and print it.
- Note: only paid subscriptions are able to print the report.

2. Fermentable Carbohydrate (CHO) Analysis Worksheet

- A. Transfer the food items that are fermentable CHO only from the Food Diary to this CHO worksheet. There should be one fermentable CHO form per day. Type in each beverage and food consumed. A list of fermentable CHO may be found in Chapter 18 of the required text (pages 355).
- B. For each food, comment on why it is cariogenic or not cariogenic. An example of a format is in your textbook, p. 363 (Fig.18.10).
- C. 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. 2 hours/day is considered high.
- D. The Fermentable Carb Analysis Worksheet is to be typed and placed directly with each Day of Food Diary that it corresponds to. Ex. Day 1 of Food Diary has a corresponding Ferm CHO Worksheet, Day 2 has a corresponding Ferm CHO, & Day 3. Label BOTH forms as Day 1, Day 2, Day 3.

Provide 3-day average of acid exposure.

3. Reports from www.ChooseMyPlate.gov/myplateplan –

- Click start
- Fill in your information
- Click calculate Food Plan
- Click on the total Calories you wish to use
- Click view as pdf
- Print this report

4. Dietary Assessment Form

- A. Record your intake of only the nutrients on this form (Total calories, CHO, Protein, Fiber, Total Fat, Vitamin A, Vitamin C, Calcium, Iron, and Sodium).
- B. Average them and compare to the Daily Allowance
- C. Determine as adequate, inadequate or high
- D. Daily allowances are at the bottom of your food diaries from www.myfitnesspal.com.

5. Nutrition Case History

- A. Include relationship of medication, alcohol, or smoking to your nutritional status.
- B. Periodontal health.

6. LIT Caries Risk Assessment & Nutritional Risk Assessment

Fill out these assessments

7. Menu Planning Form

Plan a menu that would include all the food groups in the amounts for you and make sure all fermentable carbohydrates are neutralized.

Written Summary: (Last in binder) **2 -3 typed pages.** Double spaced, Arial Font size 12. Using the information from www.ChooseMyplate.gov/myplateplan, www.myfitnesspal.com, Dietary Guidelines, Nutrient Report, compare your intake of basic food groups AND the nutrients highlighted on Dietary Assessment form.

MAIN Body of paper consists of:

A. Comparing your intake with the recommended food groups from My Plate Plan

- Where can you improve? What food groups did you do well in?
- 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.
- What specific foods or beverages did you consume that helped to meet the recommendations
- What nutrients were affected by your diet?
- What specific foods or beverages can you modify? What dietary guidelines did you follow?
- What health issues could potentially occur from your diet?
- What oral health issues could be affected by your diet?
- Explain items from your medical or dental history which requires modification in your intake.
- Explain findings from the carbohydrate analysis and what they mean.
- Comment on the possibility of adding the foods to your diet from the ideal menu.

B. Conclusions and expected success of the program:

- Conclude with statements addressing what was learned from the personal assessment project and how you will improve your dietary intake by including nutrient dense foods
- Discuss what you anticipate changing in your diet while in school.
- What realistic 3 goals can you set for yourself to improve your diet?

7. Professionalism

Edit your paper.

- Grammar/spelling
- Completeness—did you turn in all parts of the assignment?

- 1.) Nutrition Case History form
 - 2.) Caries Risk Assessment and Dietary Assessment Form
 - 3.) Food Diaries in daily order
 - 4.) CHO Analysis Worksheets behind each corresponding day
 - 5.) Food group reports, nutrient screen shots
 - 6.) Nutrient Dietary Assessment Form
 - 7.) Ideal Menu Planning Form
 - 8.) Written report
 - 9.) Personal Dietary Assessment Project Evaluation Form
-
- 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 report in a binder in the following order:
 - The nutrition case history
 - The assessment documents (Caries Risk and Nutritional Risk)
 - Food diaries in a daily order
 - Carbohydrate intake analysis behind each corresponding day
 - Food group reports
 - Nutrient Dietary Assessment Form
 - Ideal menu
 - Written report
 - Personal Dietary Assessment Project Evaluation Form

Evaluation:

Place the completed project in a small binder or folder in a daily order with Nutrition Case History first and Personal Dietary Assessment Project Evaluation Form last.

Be sure you look at the evaluation form so that you understand what criteria that will be used for grading this project.

For more details and examples, see the PowerPoint in Blackboard.

Plagiarism will not be tolerated

You will be graded according to the Personal Assessment Project Evaluation Rubric on pages 32-33.

NUTRITION CASE HISTORY

Personal Assessment

Date	_____	Age	_____
Name	_____	Height	_____
Occupation	_____	Weight	_____
Marital Status	_____	Desirable Weight	_____
Nationality	_____	Food Allergies	_____
Religion	_____		

Personal and Social History

If working or student? Number of hours/week? i.e. 8:00 to 5:00? _____

Activities that foster between meal snacks (TV, reading, studying, etc.) _____

Number of meals/ Snacks per day _____

Exercise? _____

How often to you eat away from home? _____

Who does the cooking and/or shopping? _____

Who lives at home? _____

Medical History related to dental health

Mouth Breather no yes _____

Food Allergies no yes _____

Medications/Supplements no yes, identify _____

Smoking no yes, identify _____

Other Conditions that relate to dental health _____

Clinical Observations

General Appearance: (Alertness, Gait, Posture, Muscular and Skeletal Development, Overweight or Underweight, etc.) normal not healthy, explain _____

Skin changes normal not healthy, explain _____

Lips, tongue and oral mucous membrane changes normal not healthy, explain _____

Periodontal health healthy not healthy, explain _____

Determine the BMI BMI: _____ Classification: _____

Other Comments

Lamar Institute of Technology Dental Hygiene Oral Health Risk Assessment and Profile

Student Name: _____

Risk assessment provides information regarding factors influencing an individual's susceptibility or potential risk for the onset or progression of certain oral diseases beyond those noted during traditional clinical assessment. A thorough annual assessment of an individual's risk factors significantly influences formulation of individualized, patient-specific treatment preventive self-care strategies as well as patient management and expected outcome.

<u>RESTORATIVE RISK FACTORS</u> (Caries, Trauma/Structural Breakdown)	Date	Date	Date	Recommended Preventive Care and Treatment (Date Entry)
*Demineralization				
Infrequent dental exams				
Prior caries experience /5or more restorations				
Poor/faulty restoration margins				
Exposed root surfaces/erosion/abrasion				
Missing teeth				
Malocclusion				
Poor oral hygiene				
*Cariogenic diet (Frequent daily exposure to sugars and simple carbohydrates, 5 or more)				
*Decreased salivary flow				
Mentally challenged				
Large amalgams involving cusps				
Chronic TMJ problems				
Functional oral habits/bruxing				
Contact sports (without use of mouth guard)				
Physical disorders (e.g. seizures)				
Fixed orthodontic appliances				
*Generally = High Risk				
SUMMARY OF RISK LEVEL (Circle one) Relative to individuals without the risk factor	Low	Low	Low	
	Mod	Mod	Mod	
	High	High	High	

Risk Level is determined by the number, type and /or combination of existing risk factors related to **the patient's responses during the interview process** concerning beliefs, reported severity of conditions/chief complaints, as well as clinical findings. The factors listed have the potential to be any of the 3 levels; low, if only 1 or 2 factors present (i.e. age); moderate, if at least 3-4 factors are present; high, if 5 or more factors or if the factor exists in combination with other factors that may increase the patient's risk. (★ = High Risk).

Determine Your Nutritional Health

The Warning Signs of poor nutritional health are often overlooked. Use this checklist to find out if you or someone you know is at nutritional risk.

Read the Statements below. Circle the number in the yes column for those that apply to you or someone you know. For each yes answer, score the number in the box. Total your Nutrition Score.

	YES
I have an illness or condition that made me change the kind and/or amount of food I eat.	2
I eat fewer than 2 meals per day.	3
I eat few fruits or vegetables, or milk products.	2
I have 3 or more drinks of beer, liquor or wine almost every day.	2
I have tooth or mouth problems that make it hard for me to eat.	2
I don't always have enough money to buy the food I need.	4
I eat alone most of the time	1
I take 3 or more different prescribed or over-the-counter drugs a day.	1
Without warning to, I have lost or gained 10 pounds in the last 6 months	2
I am not physically able to shop, cook, and/or feed myself	2
TOTAL	

Total Your Nutritional Score. If it's –

- 0-2 **Good!** Recheck your nutritional score in 6 months.

- 3-5 **You are at moderate nutritional risk.** See what can be done to improve your eating habits and lifestyle.
Your office on aging, senior nutrition program, senior citizens center, or health department can help.
Recheck your nutritional score in 6 months.

- 6 or more **You are at high nutritional risk.** Bring this checklist the next time you see your doctor, dietician, or other qualified health or social service professional. Talk with them about any problems you may have. Ask for help to improve you nutritional health.

Remember that warning signs suggest risk, but do not represent diagnosis of any condition.

(The Dental Hygienist's Guide to Nutritional Care, 2nd Edition, page 319)

Stegeman: The Dental Hygienist's Guide to Nutritional Care

Dietary Analysis Form

Nutrient	<u>Dietary Assessment</u>					<u>Comparison</u>		
	Day 1	Day 2	Day 3	Avg of 3 days	Daily Allowance	Adequate/Inadequate/High		
Total Calories								
CHO* (45-65% of total Kcal)								
Protein* (10-35% of total Kcal)								
Fiber								
Total Fat* (20-35% of total Kcal)								
Vitamins								
Vitamin A								
Vitamin C								
Minerals								
Calcium								
Sodium								
Iron								

*Calculations are based on your average Kcal intake for the 3 days.

Stegeman: The Dental Hygienist's Guide to Nutritional Care

Menu Planning Record

Menu Planning Record	
Instructions: Create a realistic menu for 1 day. Make sure all fermentable CHO's are neutralized.	
Time	Meal
	Breakfast
	Morning Snack
	Lunch
	Afternoon Snack
	Dinner
	Evening Snack
<p>Totals/Day: List the total number of servings for each food group.</p> <p>Fruit: Vegetable: Starch/Bread: Milk: Fat: Protein/Meat: Others:</p>	

Personal Dietary Assessment Project Evaluation Form

LIT Competency Statement	P3. Continuously perform self-assessment for lifelong learning and professional growth. HP6. Evaluate and utilize methods to ensure the health and safety of the patient and the dental hygienist in the delivery of dental hygiene.
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Student Name _____
Date _____ Grade _____

The following criteria will be used to determine a competency of 75% or higher on the Personal Dietary Assessment Project

1= Meets all requirements 1/2= Needs improvement 0= Requirements not met

	Points earned	
Forms/Reports		
1		Correctly filled out the Nutritional Case History
2		Correctly filled out the LIT Caries Risk Assessment and Nutritional Risk Assessment Form
3		Correctly filled out the food diaries from www.myfitnesspal.com
4		Correctly filled out Carbohydrate Intake Analysis Worksheet.
5		Correctly filled out Nutrient Dietary Assessment form and ideal menu form
6		Obtained Food Group report and nutrient screen shots
Dietary Assessment		
7		Commented on each item on the Dietary Assessment form
8		Provided foods/beverages consumed for each nutrient
9		Correct calculations for Daily Allowances were included
10		Correctly determined whether the nutrients were Adequate or not.
Carbohydrate Analysis		
11		Correctly identified all fermentable CHO's
12		Correctly identified cariogenic state
13		Correctly and adequately stated reason
14		Correctly determined number of minutes of acid exposure
15		Provided 3-day average of acid exposure
Written Report		
16		Discussed ways the diet could be improved and where the diet was good.
17		Discussed specific foods or beverages that helped meet the recommendations
18		Discussed which nutrients were affected by the present diet
19		Listed the foods in the diet that provided nutrients and which foods could have prevented a deficiency.
20		Discussed specific foods or beverages that can be modified and what dietary

	Points earned	
		guideline were followed
21		Discussed what health issues could potentially occur from the present diet
22		Discussed what oral health issues could be affected by the present diet
23		Explained items from the medical or dental history which require modification in dietary intake
24		Adequately and accurately commented on findings from the Carbohydrate analysis form
25		Provided specific recommendations from the Carbohydrate analysis form
26		Correctly and adequately provided a relationship to the health of the oral cavity and the result of the Carbohydrate analysis form
Conclusions		
27		Included expected success of program
28		Included 3 specific, measurable, and realistic goals
29		Included changes made or anticipated making
30		Listed foods consumed in excess
31		Adequately commented on the possibility of reducing these foods
32		Included what was learned from the personal assessment project.
Professionalism		
33		No spelling or grammatical errors
34		Completed project was place in a binder or folder in daily order with Nutrition Case History first and Written Summary last
35		All forms and written summary were turned in on the day they were due