

GENERAL AND DENTAL NUTRITION

Lamar Institute of
Technology

DHYG 1307

Course Syllabus

Summer 2010

Taught by:
Deborah Lyon, RDH, MS
deborah.lyon@lit.edu
(409) 880-8867



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LECTURE SCHEDULE

July		
9	Introduction to course Selection of an Adequate Diet The Alimentary Canal	Chapter 1 Chapter 2 (assigned)
12	Carbohydrate: The Efficient Fuel	Chapter 3
13	Carbohydrates and Caries	Chapter 17
14	Test 1	
15	Protein: The Cellular Foundation Lipids: The Condensed Energy	Chapter 4 Chapter 5
19	Continued Utilization of the Energy Nutrients: Metabolism and Balance	Chapter 6
20	Fat Soluble Vitamins: A, D, E, K	Chapter 7
21	Test 2 Water Soluble Vitamins: C & B Complex	Chapters 7 & 10
22	Continued	Chapters 7 & 10
26	Macrominerals, Microminerals, & Trace Minerals	Chapters 8 & 9
27	Continued Water and Electrolytes	Chapter 11
28	Test 3	
29	Nutritional Assessment and Counseling for the Dental Hygiene Patient	Chapter 20
AUGUST		
2	Nutrition Throughout the Life Cycle Cultural Food Patterns and Concerns	Chapters 12 & 13 Chapters 14 & 15
3	Effects of Systemic Disease on Nutritional Status and Oral Health	Chapter 16
4	Nutritional Aspects of Gingivitis and Periodontal Disease Nutritional Aspects of Alterations in the Oral Cavity	Chapters 18 & 19
5,9,10,11	Nutritional Counseling Session	TIMES TO BE ANNOUNCED
12	Test 4	

General and Dental Nutrition

COURSE DESCRIPTION

A study of general nutrition and nutritional biochemistry with an emphasis placed on the effects of nutrition and dental health. The application of diet analysis consultation skills in influencing patient behavior change relative to diet and dental disease.

PREREQUISITE

DHYG 1401, 1431, 1304, 1235, 1103, 1319, 2301, 2133, & 1260.

COURSE GOALS

The student will;

1. Demonstrate knowledge of basic concepts in nutritional biochemistry. (F1.5, F4.4, F5.5, F6.4, F7.5, F8.4, F9.4, F10.4, F11.4, F12.4, C5.5, C6.4, C7.5, C8.4)*
2. Understand the concept of RDA's, nutrient density, food pyramid and food labeling. (F1.5, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3C8.8)*
3. Demonstrate competency in utilizing a table of the nutrient value of common foods. (F1.5, F4.3, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3)*
4. Identify and explain the six classes of nutrients. (F1.5, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3)*
5. Demonstrate the digestion, transport and absorption of nutrients in the human. (F1.5, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3)*
6. Recognize the nutritional variations during the life cycle and state their importance in the prevention of disease. (F1.5, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3)*
7. Apply dental nutrition concepts through the preparation and presentation of a nutrition counseling session for the management of diet related dental problems. . (F1.5, F5.4, F7.4, F8.4, F11.4, F12.4, F16.3, C5.3, C6.3, C7.3C8.8)*

SCANS SKILLS AND COMPETENCIES

*Beginning in the late 1980's, the U.S. Department of Labor Secretary's Commission on Achieving Necessary Skills (SCANS) conducted extensive research and interviews with business owners, union leaders, supervisors, and laborers in a wide variety of work settings to determine what knowledge workers needed in order to perform well on a job. In 1991 the Commission announced its findings in *What Work Requires in Schools*. In its research, the Commission determined that "workplace know-how" consists of two elements: foundation skills and workplace competencies. The three-part foundation skills and five-part workplace competencies are further defined in the student handbook.

CREDIT HOURS: **3 semester hours**

CLASSROOM: **112 MPC**

CLASS MEETING TIME: 9:50 – 11:40 MTWR

INSTRUCTOR

Deborah Lyon, RDH, MS, Associate Professor, Dental Hygiene Program
Phone: (409) 880-8867 (office)

COURSE POLICIES

1. **Attendance Policy.** In order to ensure that the student in the dental hygiene program acquires 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.

Summer Semesters. Dental hygiene students will be allowed one absence in any lecture or lab. Students will be allowed to make up lab only if there is available space and time.

In the event that a student misses a lecture class, lab or clinic session beyond the allowed absences, the faculty will review the student's academic record. When it becomes inadvisable for the student to continue in the program, the faculty will initiate an administrative drop from the course.

2. **Tardy Policy.** Students are expected to arrive and leave class according to the published schedule or as instructed by the faculty in charge. Students who arrive late for class not only miss important information but also disturb fellow classmates. Three tardies will be counted as an absence.

3. **Examination Policy.** 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 physician's excuse), a death in the immediate family or at the discretion of the instructor. All make-up examinations must be taken within one week following the original exam date. All examinations must be returned to the instructor to be kept on file. Students may have access to the examinations by appointment during the instructor's office hours. Exams may be reviewed up to two weeks following the exam date.

4. **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.

5. **Electronic equipment/cell phones.** Cell phones should be turned off during class time. No texting from cell phones or computers will be allowed during the posted hours for class.

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, Rebecca Cole, at 409-880-1737 or visit her office located in the Cecil Beeson Building, room 116B.

TEACHING METHODS

Lecture, class discussion, extensive audiovisual, reading assignments, counseling sessions.

REQUIRED TEXTS

Davis, Judi, C.A. Stegeman. (Latest edition). The Dental Hygienist's Guide to Nutritional Care. W.B. Saunders: Philadelphia.

REFERENCE MATERIALS

Katz, D.L. (2001) Nutrition in Clinical Practice, Lippincott: Philadelphia

Whitney, E.N., Cataldo, C.B., Rolfes, S.R. (2002) Understanding Normal and Clinical Nutrition, Wadsworth: Belmont.

INSTRUCTIONAL AIDS

Nutrition, Diet and Dental Health: Methods. ADHA self-study course on nutrition and relationship to caries and periodontal disease.

MyPyramid.gov

COURSE REQUIREMENTS

1. **Nutritional Counseling Project.** The purpose of the counseling project is to afford the dental hygiene student the opportunity to apply the learned nutritional principles in a practical setting.
 - A. **Patients.** Each student will identify a caries susceptible patient for nutritional counseling based on specific needs. In the event that a child is selected, the parent must be willing to participate with the child in the counseling efforts. Previous clinic patients are preferred. Relatives may NOT be used as the subject of the nutritional counseling session.
 - B. **Documentation.** Each student must complete all clinical forms (pg. 25-30) and counsel the patient using criteria identified in the Nutritional Counseling Performance Exam and guidelines found on page 24 of this syllabus. The student will make an appointment with the instructor and the patient for a one-to-one counseling session. Forms obtained from MyPyramid.gov will also be utilized during the session as visual aids for the patient. All completed clinical forms will be turned in at the time of the counseling session. This session will be evaluated by the criteria found on pages 31-33 of this syllabus.
 - C. **Written Report.** The student will summarize each counseling appointment according to the instructions on page 24. Written reports will be due the day after the counseling session.

2. **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 MyPyramid.gov to complete the diet analysis. This site may be accessed on any computer with internet capabilities.

Computer Usage is not optional

EVALUATION CRITERIA

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

Lecture Grade

Exams (4)	75%
Nutritional Counseling	25%

Grade Scale

A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69
F	Below 69

CONTENT OUTLINE

Selection of an Adequate Diet

- 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

Carbohydrates

- a. Introduction
- b. Chemistry and 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. truevia

Lipids

- a. Overview
- b. Functions
- c. Types and Chemical Structure
 - 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

Protein

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

Utilization 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

Fat Soluble Vitamins

- a. Vitamin A
 - 1. Chemistry
 - 2. Absorption, transport, and storage
 - 3. 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
 - 4. Function in oral structures
 - a. Periodontium
 - b. Teeth
 - c. Salivary glands
 - d. Oral mucous membranes
 - e. Cleft lip and palate
 - 5. RDA
 - 6. Sources
 - 7. Therapy
 - 8. Toxicity
- b. Vitamin D
 - 1. Chemistry
 - 2. Absorption, transport, and storage
 - 3. Metabolism
 - 4. Function
 - 5. RDA
 - 6. Sources
 - 7. Therapy
 - 8. Deficiency
- c. Vitamin E
 - 1. Chemistry
 - 2. Absorption and metabolism
 - 3. Function
 - 4. Therapy
 - 5. RDA
 - 6. Sources
 - 7. Myths and facts
 - 8. Toxicity
- d. Vitamin K
 - 1. Chemistry
 - 2. Absorption

3. Function
4. Deficiency
5. Vitamin K and Periodontal disease
6. Therapy
7. RDA
8. Sources

Water Soluble Vitamins: B, C, Folic Acid

- a. Vitamin B
 1. Chemistry
 2. Absorption and metabolism
 3. Function
 4. Deficiency
 5. Therapy
 6. RDA
 7. Sources
 8. Myths and facts
 9. Toxicity
- b. Vitamin C
 1. Chemistry
 2. Absorption and metabolism
 3. Function
 4. Deficiency
 5. Therapy
 6. RDA
 7. Sources
 8. Myths and facts
 9. Toxicity
- c. Folic Acid
 1. Chemistry
 2. Absorption and metabolism
 3. Function
 4. Deficiency
 5. Therapy
 6. RDA
 7. Sources
 8. Myths and facts
 9. Toxicity

Water and Electrolytes

- 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

Minerals

- 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 Soluble Vitamins

- 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. Thiamin
1. Function
 2. Sources
 3. Requirements
 4. Deficiency
 5. Toxicity
 6. Effect on general and oral health
- f. Riboflavin
1. Function
 2. Sources
 3. Requirements
 4. Deficiency
 5. Toxicity
 6. Effect on general and oral health
- g. 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

Water and Electrolytes

Nutrition Throughout the Life Cycle

- 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

General and Dental Nutrition (DHYG 1307)
Summer II

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

Cultural Food Patterns and Concerns

- 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 and Oral Health

- 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

General and Dental Nutrition (DHYG 1307)
Summer II

- 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

Learner Objectives

Overview of Healthy Eating Habits

1. Define the terms: nutrition, nutrients, 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 in the Food Guide Pyramid.
6. State the number of servings needed from each of the food groups in the Food Guide Pyramid.
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 the Food Guide Pyramid.
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.

CARBOHYDRATE: THE EFFICIENT FUEL

1. Define carbohydrates and the three most common classifications of carbohydrates.
2. Explain the chemical formula and classification of carbohydrates.
3. Differentiate among monosaccharides, disaccharides, and polysaccharides.
4. Describe the health benefits of fiber, including difference effects of soluble versus insoluble fiber.
5. Identify and describe the physiologic role of carbohydrates.
6. Identify sources of carbohydrates.
7. Discuss the complications that result from carbohydrate excess and deficiency.
8. Discuss the metabolism of carbohydrates. Include alterations in metabolism as a result of deficiency or excesses within the diet.
9. Discuss the lack of a dietary allowance for carbohydrates and the general guidelines for ingestion.
10. Discuss the sugar substitutes and their assets, limitations and applications.
11. Describe the relationship between carbohydrates and lactose intolerance.
12. Describe the patterns of usage of sugar in recent history.

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. Discuss the metabolism of protein. Include alterations in metabolism as a result of deficiency or excesses within the diet.
7. Identify the protein requirements for adults. Given a body weight, calculate the protein requirement.
8. Identify the factors which may impact the protein requirement for an individual.
9. Identify protein sources within the basic food groups. Discuss the bioavailability of animal and plant sources of protein.
10. Identify protein sources for individuals with various dietary restrictions.
11. State the problems associated with protein deficiency and excess.
12. Describe the PEM diseases of Kwashiorkor and Marasmus. Identify symptoms typical of the disease.
13. 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. Identify the basic structural unit of dietary lipids.
3. Diagram the structure of a triglyceride molecule.
4. Discuss the characteristics of a triglyceride lipid. Explain the effect of structure in solution.
5. Explain the term saturated, unsaturated, and polyunsaturated lipids. List sources of each and the impact on health.
6. Explain the terms trans and cis as related to the overall appearance of the fatty acid chain. Identify the impact of the configuration on health.
7. What impact do Omega - 3 fatty acids have on the health of the individual when compared to Omega - 6 fatty acids?
8. Describe the appearance of true fats at room temperature. Identify factors that affect

- the consistency of fats.
9. List two compound lipid structures and their role in human physiology.
 10. Discuss the lipoprotein, cholesterol. Identify the function, types, and physiology of cholesterol formation.
 11. Identify and explain the physiologic role of lipids.
 12. Discuss the metabolism of carbohydrates. Include alterations in metabolism as a result of deficiency or excesses within the diet..
 13. Discuss dietary fats and dental health.
 14. Identify the requirements and sources for fat and fatty acids.
 15. Identify the health concerns associated with over and under-consumption of fat.
 16. List the advantages and disadvantages of fat replacers.

UTILIZATION OF THE ENERGY NUTRIENTS: METABOLISM AND BALANCE

1. Define the terms catabolism, anabolism.
2. Explain the metabolism of carbohydrates, proteins, lipids and alcohol.
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.

THE FAT SOLUBLE VITAMINS: A, D, E, AND K

1. Identify the four fat-soluble vitamins and the chemistry and property of each.
2. Discuss the chemistry, absorption, and function for the fat-soluble vitamins, A, D, E, and K.
3. Discuss the deficiency state, RDA, source, and therapy for each fat-soluble vitamin.
4. Discuss the effect of a deficiency of vitamins A, D, E, and K on the oral structures and throughout the body.

VITAMIN C (ASCORBIC ACID)

1. Define the term vitamin.
2. Discuss the chemistry, general properties, functions, absorption and metabolism of vitamin C.
3. Identify the general and oral signs of vitamin C deficiency.
4. Describe the impact of vitamin C and wound healing.
5. List the RDA for vitamin C in specific individuals.
6. Identify the food sources of vitamin C.
7. Discuss toxicity of vitamin C.
8. Discuss additional proposed benefits of vitamin C intake.
9. Identify the chemistry, function, absorption and metabolism for folic acid.

THE B COMPLEX VITAMINS

1. Describe the classification of the B complex vitamins.
2. Identify the chemistry, function, and absorption and metabolism 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.

MINERALS

1. Identify the minerals and describe their distribution, function, manner of absorption, storage and excretion in the human body.

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.
6. Describe the relationship between dietary potassium and hypertension.
7. List the trace minerals and identify which are human requirements and which are activators of enzyme systems.
8. Discuss the functions, RDA, and food sources for trace minerals.
9. Discuss the trace mineral deficiencies and oversupplies, symptoms, and therapy for each mineral.

10. Discuss the effect of trace minerals (except fluoride) on dental caries.

WATER AND MINERALS REQUIRED FOR ORAL SOFT TISSUES AND SALIVARY GLANDS

1. Describe the functions of water in the body.
2. Define water balance.
3. Discuss the electrolytes. Include the physiological role, requirements, sources, deficiency state, toxicity state, and regulation for each.
4. Discuss iodine and iron. Include the physiological role, requirements, sources, deficiency state, toxicity state, and regulation for each.

NUTRITIONAL REQUIREMENTS THROUGHOUT THE LIFE CYCLE

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. Identify and discuss social, psychological, and oral environmental factors that contribute to malnutrition in the elderly.
4. List the physiological conditions that impact nutrition for the elderly.
5. Discuss problems dealing with food intake, digestion and utilization.
6. Describe three sites at which medications and food may interact.
7. Discuss the impact of drugs on the metabolism and absorption of nutrients.
8. Identify dental problems which may be nutritionally related.
9. Discuss dietary suggestions for the elderly.
10. Discuss dietary suggestions for denture wearers.

NUTRITIONAL MANAGEMENT OF DIET-RELATED PROBLEMS OF THE ORAL MUCOSA AND TOOTH ENAMEL

1. Identify two reasons for sensitivity of the oral mucosa to physiological changes from nutrition.
2. Distinguish between primary and secondary nutritional deficiencies.
3. Identify reasons individuals do not select nutritional food.
4. List and discuss the progressive stages in the development of nutritional deficiencies.
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.
10. Suggest appropriate supportive dietary therapy for patients with prosthodontics, oral cancer and eating disorders.

NUTRITIONAL ASPECTS OF DENTAL CARIES: CAUSES, PREVENTION, AND TREATMENT

1. List and explain the five causative agents concerned with the initiation and extension of dental caries.
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. Discuss the evidence for the relationship of caries to bacteria and carbohydrates.
7. List the bacteria that play a significant role in caries development.
8. Describe a diet which would be considered non-cariogenic.

DIETARY COUNSELING FOR THE PREVENTION AND CONTROL OF DENTAL CARIES

1. Describe the two effects of nutrition on teeth.
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. Discuss the significance of the sequencing of food during a meal.
5. What should the diet counselor incorporate into the diet prescription whenever possible.
9. Discuss the basic prerequisite for accomplishing dietary change and the minimal requirements for a successful dietary counseling service.
7. Describe the type of patient that would most likely benefit from a diet counseling service.
8. List the communication techniques that will have a beneficial effect on effective communication.
9. 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.
10. Compare and contrast a directive versus a non-directive approach to counseling.
11. List and explain the guidelines for counseling described by Nizel.
12. What are the basic factors that motivate people according to Garn.
13. Explain the four rules that should be adopted when making dietary modifications.
14. Describe the instructions given to a patient keeping a 5 Day Food Intake Diary.
15. Summarize the guidelines and the dietary counseling for caries prevention and control.

THE ROLE OF NUTRITION IN PREVENTION AND MANAGEMENT OF 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.

APPENDIX I

Grade Computation Sheet

Nutrition Grade Computation Sheet

Test Grades:

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

Test average: _____

Test average: _____ X .75= _____

Nutritional
Counseling _____ X .25= _____

Total of above: _____

Final Grade: _____

APPENDIX II

NUTRITIONAL COUNSELING INFORMATION

NUTRITIONAL COUNSELING GUIDELINES

Include the following information in your clinical counseling session.

1. Facts obtained from the interview affecting diet. Include such information as:
 - a. where meals are eaten
 - b. when meals are eaten
 - c. activities while eating
 - d. snacking patterns
 - e. factors that influence food selection
 - f. anything else that affects diet
2. Summary of the diet diary data.
 - a. did the patient eat three meals a day
 - b. between meal snacking
 - c. type of sugar consumed
 - d. good food choices
 - e. deficiencies in nutrients
 - f. total acid production time
 - g. anything else pertinent to diet analysis
3. Identify the patient's knowledge of diet related dental concepts.
4. Detail substitutions patient decided on for diet in the future.
5. Recall interval and follow-up appointment objectives include concepts you plan to cover in next appointment.

WRITTEN SUMMARY

A brief written summary of the counseling session will be due to the instructor the day after the counseling session is completed. The summary should include information from the session that identifies eating habits and nutritional choices which impact the patient's oral health. It should also include healthy options given to the patient to improve their nutritional intake and oral health. The summary should conclude with statements addressing what was learned from the nutritional counseling session. One statement should include what the patient learned and one should include what the student learned.

SECOND APPOINTMENT REPORT

The second session must be recorded on a tape recorder and submitted with all clinical forms for evaluation session to the instructor. Students must furnish the tape and tape recorder to the instructor.

1. Identify any changes made by the patient since last appointment. Include changes in eating habits, patterns, food selection and anything else that might affect the diet.
2. Compare acid production; form of sugar eaten, when eaten; nutritional adequacy of diet etc., with the first diet analysis.
3. Evaluate or assess the overall impact of the nutrition counseling on the patient's attitudes, values, etc. concerning diet and dental health.
4. Outline any distinct changes made by the patient.

<p style="text-align: center;">Second Nutritional Counseling Session and Report Due on September 18, 2009.</p>

5. Evaluate your effectiveness as a nutrition counselor. Where are your strengths and weaknesses?

NUTRITION CASE HISTORY

Caries Susceptible Patient

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

Personal and Social History

Highest Level of Education _____

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

Emotional Status _____

Father or male spouse's occupation _____

Mother or female spouse's occupation _____

Number of siblings or children _____

Who is responsible for child care _____

Medical History related to dental health

Medications (such as banthine, digitalis, sleeping pills, antihistamine, etc.) _____

Mouth Breather	9 no	9 yes	_____
Food Allergies	9 no	9 yes	_____
Food Preferences	9 no	9 yes, identify	_____
Food Dislikes	9 no	9 yes, identify	_____

Other Conditions that relate to dental health _____

Clinical Observations

General Appearance: (Alertness, Gait, Posture, Muscular and Skeletal Development, Overweight or Underweight, etc.)	9 normal	9 not healthy, explain	_____
Skin changes	9 normal	9 not healthy, explain	_____
Lips, tongue and oral mucous membrane changes	9 normal	9 not healthy, explain	_____
Periodontal health	9 healthy	9 not healthy, explain	_____
Amount of dental plaque	9 light	9 moderate	9 heavy
Dental caries (number, location, distribution, etc.)			
Salivary flow	9 adequate	9 not adequate, explain	

Other observations impacted by nutrition _____

Diet History

Appetite?	9 good	9 fair	9 poor
Person responsible for food preparation?	<hr/>		
Religious or ethnic dietary practices?	<hr/>		
Eating pattern?	9 with others	9 alone	
Is there a candy dish or cookie jar at home?	9 yes	9 no	
Is there a craving for sweets?	9 yes	9 no	9 occasionally
Are bedtime snacks typical?	9 yes	9 no	9 occasionally
Is food diary typical of patient's usual food habits?	9 yes	9 no	
If not, what circumstances altered usual pattern?	<hr/>		
Fluorides?	9 water supply	9 supplements	9 oral hygiene aids

Diet Evaluation

Adequacy in type and amount of 'Five Food Groups' (nutritionally balanced diet)?	9 good	9 fair	9 poor
Balance of meals?	9 good	9 fair	9 poor
Frequency of eating, including snacks?	<hr/>		
How many plaque forming sweets?	<hr/>		
How many non-plaque forming foods at each meal?	<hr/>		
Dental caries incidence?	9 rampant	9 high	9 moderate 9 low
Food deficiencies or excesses?	<hr/>		
Reasons for food selection?	<hr/>		

Other Comments

FIVE DAY FOOD INTAKE DIARY

NAME: _____
DATE: _____

INSTRUCTIONS

Please record in detail everything you eat or drink in the order in which it is eaten.

The frequency of eating is an important consideration; therefore, include not only meals but between meal snacks, candies, gum, etc.

It is very important to include the amount of food eaten (size of serving) and the way in which the food is prepared (baked, grilled, etc.) It is also important to include the addition of sugar, syrup or milk to cereal, beverages or other foods.

EXAMPLE:

Wrong	Right
Juice	½ C tomato juice
Sandwich	1 chicken breast sandwich with lettuce
Dessert	1 slice chocolate cake
Coffee	1 C coffee with 1 Tbl milk and 2tsp sugar

FIRST DAY

BREAKFAST:

AM SNACK:

LUNCH:

PM SNACK:

DINNER:

SECOND DAY

BREAKFAST

AM SNACK:

LUNCH:

PM SNACK:

DINNER:

FIVE DAY FOOD INTAKE DIARY (Continued)

THIRD DAY	FOURTH DAY	FIFTH DAY
BREAKFAST:	BREAKFAST:	BREAKFAST
AM SNACK:	AM SNACK:	AM SNACK:
LUNCH:	LUNCH:	LUNCH:
PM SNACK:	PM SNACK:	PM SNACK:
DINNER:	DINNER:	DINNER:

Plaque Forming Sweets							
Form of Sugar When Eaten	1st Day	2nd Day	3rd Day	4th Day	5th Day	Total	
Liquid (non-dairy creamer, flavored yogurt, pudding, popsicles, cereal w/milk, soda, sugar in coffee, etc.)							
with meals							
between meals							x 20 =
Solid & Sticky (honey, jelly, cookie, gum, chocolates, dried fruit, marshmallows, caramels, jelly beans, etc.)							
with meals							
between meals							x 40 =
Slowly Dissolving (hard candies, mints, antacid tablets, cough drops, etc.)							
with meals							
between meals							x 60 =
Acid Exposure							
Total Minutes of Acid Exposure							
Average Acid Exposure per Day (Total exposure / 5)							
Number of Exposures With Meals							
Number of Exposures Between Meals							

Conclusion	

FOUNDATION FOODS

FOOD GROUPS	PORTION SIZE (one serving)	Servings Consumed Per Day					Avg.	RDA	
		1 st Day	2 nd Day	3 rd Day	4 th Day	5 th Day		Patient's RDA	Difference
Milk, Yogurt & Cheese	8oz (1C)milk or yogurt 1 1/2 oz natural cheese 2 oz processed cheese 1C ice cream								
Meat, Poultry, Fish, Dry Beans, Eggs & Nuts	2 1/2-3 oz lean cooked meat, poultry, or fish 2 eggs 4T peanut butter 1C cooked dried beans or lentils								
Fruit	1 medium raw fruit 1 slice melon 1/2C canned fruit 1/2C dried fruit 6oz (3/4C) fruit juice								
Vegetable	1/2C cooked 1/2C chopped raw 1C leafy raw veg.								
Bread & Cereal	1 slice bread 1/2C cooked rice or pasta 1/2 C cooked cereal 1oz ready to eat cereal 4 saltine crackers								
<p>Sources: U.S. Department of Agriculture U.S. Department of Health and Human Services</p>									

Nutritional Counseling Skill Evaluation

Student Name _____	Patient Name _____
Date (1 st Session) _____	Grade _____
_____	Competency: _____
_____	75% _____

The following criteria will be used to determine a competency of 75% or higher on the Nutritional Counseling Skill Evaluation

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

Initial	Follow-up	
Preparation		
1		Defends patient selection
2		Assess patient (review health history, diet history and other available data)
3		All forms are completed and handed in to instructor after session
	3	Place tape recorder and all supporting documents in a large envelope
Organization		
4	4	Student is organized and follows step by step procedure.
Counselor Characteristics		
5	5	Student exhibits professional/ethical behavior throughout counseling sessions (see professional conduct guidelines).
6	6	Student utilizes principles to encourage learning and patient participation. Use of "ask before you tell" methodology to determine patient's level of knowledge prior to each concept. Student also asks questions following each concept to determine learning.
7	7	Student encourages patient participation
8	8	Rapport is developed with the patient by pleasant attitude, serious counselor.
Counseling Session		
9	9	Introduction includes the reason for the counseling session as it relates to dental disease.
10		The "Why" of the diet is assessed by asking the patient to describe a typical day's routine and/or typical weekend routine. Counselor determines oral hygiene as it relates to eating habits.
	10	Follow-up: determines if there has been a change in the daily routine if

Initial	Follow-up	
		necessary.
11	11	Patient records a 5 day food intake diary which includes a weekend. The 5 day food intake is obtained by the student prior to the counseling session.
12		CONCEPT I: interaction of tooth, plaque, and sugar is discussed.
	12	CONCEPT I Follow Up: asks patient to verbalize interaction of sugar, plaque, and tooth and re-teaches misunderstood concepts.
13		CONCEPT II: mealtime exposure, limiting frequency of sweet exposure (eating sweets all at one time) is discussed.
	13	CONCEPT II Follow Up: Asks patient to verbalize this concept and re-teach misunderstood concepts.
14		CONCEPT III: need to include at least one firm food with each meal (to stimulate saliva).
	14	CONCEPT III Follow Up: questions patient to determine knowledge of concept; re-teach if necessary.
15	15	Counselor asks patient to circle in red all exposures sweetened with sugar.
16		CONCEPT IV: the effects of the different forms of sugar on the oral environment are discussed.
	16	CONCEPT IV Follow Up: asks patient to verbalize this concept and re-teach misunderstood areas.
17	17	Patient correctly tallies circled exposures on "Plaque-Forming Sweets" form according to liquid, solid and sticky, or slowly dissolving and whether with meals or between meals.
18		Counselor explains the reaction of bacterial enzymes in plaque on sugar to change it to acid within 20 seconds and for the duration of the exposure and beyond.
	18	Follow Up: questions patient to determine what he remembers and re-teach if necessary.
19	19	Patient calculates exposures of sweets per 5 days and multiplies by appropriate number of minutes to find total minutes exposure to acid per day for the week.
20	20	Patient makes a conclusion based on the results concerning its relation to his caries rate or other disease problem (compares between meals and mealtime, relates total acid time to norm, etc.)
21		CONCEPT V: the Five Basic Food groups and the need to have all for a balanced diet is explained.
	21	CONCEPT V Follow Up: questions patient to determine knowledge of this concept and re-teaches if necessary.
22	22	Patient determines adequacy of the diet by evaluating information from MyPyramid.gov.

Initial	Follow-up	
23	23	Counselor identifies the nutritious foods from the non-nutritious as they are noted by the patient. Commends patient on good food selection, habit patterns, etc.
	24	Follow Up: compares diet adequacy of 1st appointment to 2nd appointment.
24		Patient determines adequacy of diet by comparing patient daily intake with (RDA) recommended daily allowance.
25	25	Counselor asks patient if there are foods in the deficient groups that are liked which the patient would realistically substitute for the poor selections.
	26	Follow Up: evaluates successfulness of diet prescription by examining new diet diary and making modifications as needed.
26		Counselor assists patient (if necessary) by suggesting diet recommendations personalized according to patient established habit patterns and verbal communication in counseling session.
27	27	Counselor asks the patient to summarize in his own words "what have you learned today?"
28		Counselor explains the follow-up counseling session and its purpose.
29		Counselor writes a summary in narrative style which includes the findings, diagnosis and recommendations from patient responses.
	28	Follow Up: Same written summary emphasizing behavior change.
30		Student states goals for the follow up visit based on concepts not stressed this appointment (if any).