

Essentials of Dental Science (2024)

Demonstrate employability skills required by business and industry. [HS-EDS-1](#)

- 1 Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.** [HS-EDS-1.1](#)
- 2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.** [HS-EDS-1.2](#)
- 3 Exhibit critical thinking and problem-solving skills to locate, analyze and apply information in career planning and employment situations.** [HS-EDS-1.3](#)
- 4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.** [HS-EDS-1.4](#)
- 5 Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply teamwork skills.** [HS-EDS-1.5](#)
- 6 Present a professional image through appearance, behavior, and language.** [HS-EDS-1.6](#)

Explore the foundational concepts, principles, and careers in the field of dentistry. [HS-EDS-2](#)

- 1 Research the history of dental pioneers, their contributions to the field of dentistry, and how the dental field has evolved into modern dentistry today.** [HS-EDS-2.1](#)
- 2 Explore the various employment opportunities and career growth potential in dentistry, including practices in large corporate, local corporate, group, private, and specialty sectors.** [HS-EDS-2.2](#)
- 3 Differentiate the credentialing, licensing, roles, functions, and responsibilities of team members within the field of dentistry.** [HS-EDS-2.3](#)
- 4 Research the functions of the professional organizations in the field of dentistry.** [HS-EDS-2.4](#)
- 5 Investigate the qualities of a leader and how those qualities are needed in the dental field.** [HS-EDS-2.5](#)

6 Analyze and discuss the roles and responsibilities of different members of a dental team. HS-EDS-2.6

Classify the basic structural and functional organization of the human body and identify body planes, cavities, regions, directional terms, tissues, organs, and parts of the cell. HS-

EDS-3

1 Define, list, and explain the body systems, planes, and directions, and cavities of the body, and describe the structure and function of the cell. HS-EDS-3.1

2 Explain the functions, divisions, parts, and structures of the body system. HS-EDS-3.2

3 Explain and identify the effects of each body system relating to the oral cavity. HS-EDS-3.3

Analyze the anatomy, physiology and basic pathophysiology of the head and neck. HS-EDS-

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1 Describe the body planes, directions, major cavities, and structural units of the head and neck. HS-EDS-4.1

2 Identify, label, and explain the functions and anatomical characteristics of the facial and cranial bones. HS-EDS-4.2

3 Identify, label, and explain the functions and anatomical characteristics of the muscles of the head and neck. HS-EDS-4.3

4 Identify and explain the functions of the major muscles of mastication, facial expression, floor of the mouth, extrinsic muscles of the tongue, and major posterior muscles of the mouth. HS-EDS-4.4

5 Identify, label, and explain the functions and anatomical characteristics of the nerves and blood vessels found in the head and neck. HS-EDS-4.5

- a Explain how oral health can be affected by conditions that exist systematically through the entire vascular and nervous systems (atherosclerotic heart disease, rheumatoid arthritis, diabetes, organ/body system failures, etc.) HS-EDS-4.5.A
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6 Identify, label, and explain the structure and functions of the temporomandibular joint. HS-EDS-4.6

- a Describe problems related to the temporomandibular joint. HS-EDS-4.6.A

7 Identify, label, and explain the function, location, and ducts of the major salivary glands and related structures. HS-EDS-4.7

- a hard palate structures HS-EDS-4.7.A
- b soft palate structures HS-EDS-4.7.B
- c cheek HS-EDS-4.7.C
- d tongue HS-EDS-4.7.D
- e frenum HS-EDS-4.7.E
- f retromolar pad HS-EDS-4.7.F
- g maxillary area HS-EDS-4.7.G
- h tuberosity HS-EDS-4.7.H
- i lips HS-EDS-4.7.I
- j vestibule HS-EDS-4.7.J
- k tori HS-EDS-4.7.K
- l paranasal sinuses HS-EDS-4.7.L

Investigate the development of oral embryology and tooth morphology. HS-EDS-5

1 Explain the structure and embryonic development of the face, including the palate, lips, and other supportive oral cavity structures. HS-EDS-5.1

2 Explain the embryonic development of human dentition. HS-EDS-5.2

- a Differentiate between the bud, cap, and bell stages. HS-EDS-5.2.A
- b Differentiate between dental papilla and dental sac. HS-EDS-5.2.B

3 Identify and explain the histology of the human dentition and periodontal tissue: HS-EDS-5.3

- a enamel HS-EDS-5.3.A
- b dentin HS-EDS-5.3.B
- c cementum HS-EDS-5.3.C
- d pulp HS-EDS-5.3.D
- e periodontal ligament and fiber groups HS-EDS-5.3.E
- f layers of the alveolar bone HS-EDS-5.3.F

4 Explain the morphology of teeth and points of reference for communication. HS-EDS-5.4

5 Classify and distinguish between primary (deciduous) and permanent teeth and describe the eruption sequence of each tooth. HS-EDS-5.5

6 Identify surfaces and anatomical landmarks of teeth. HS-EDS-5.6

7 Identify teeth according to their dentition, arch, and tooth number. HS-EDS-5.7

8 Describe the process of bone resorption. HS-EDS-5.8

9 Discuss anomalies that affect tooth and tooth formation and the entire dentition. HS-EDS-5.9

Analyze the dietary considerations that affect oral and dental health. HS-EDS-6

1 Identify well balanced diets and nutrients that promote health and wellness. HS-EDS-6.1

2 Describe the clinical signs and symptoms of a patient in compliance with the daily recommended nutritional guidelines. HS-EDS-6.2

3 Differentiate between the functions, sources, RDA, and classifications of carbohydrates. HS-EDS-6.3

4 Differentiate between the functions, sources, RDA, and classifications of fats. HS-EDS-6.4

5 Differentiate between the functions, sources, RDA, and classifications of proteins. HS-EDS-6.5

6 Differentiate between the functions, sources, RDA, and classifications of fat and soluble vitamins. HS-EDS-6.6

7 Explain the role, requirements, movement, and distribution of water in the body. HS-EDS-6.7

8 Explain the role, requirements, and food sources of fiber. HS-EDS-6.8

9 Compare and contrast the difference between mechanical and chemical digestion. HS-EDS-6.9

10 Trace the pathway of nutrients and the digestive process that occurs in the mouth, stomach, small intestines, and large intestines. HS-EDS-6.10

11 Analyze the components of plaque and the effect it has on carbohydrates and dental caries. HS-EDS-6.11

12 Explain the role of fluoride and the effect it has in controlling dental caries. HS-EDS-6.12

Analyze and describe common oral pathogenic and non-pathogenic microorganisms, including their various modes of transmission. HS-EDS-7

1 Differentiate between pathogenic and non-pathogenic microorganisms and describe the different classification of microorganisms. HS-EDS-7.1

2 Describe and identify the structure of each classification of microorganisms. HS-EDS-7.2

3 Research and describe blood and airborne pathogens. HS-EDS-7.3

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- 4 Identify different modes of disease transmission found in a dental office.** HS-EDS-7.4

 - 5 Explain the relationship between disease and host resistance, including common internal defense mechanisms.** HS-EDS-7.5

 - 6 Discuss the concept of normal flora and portions of the body supporting a normal flora.** HS-EDS-7.6

 - 7 Explain the conditions and process of inflammation and healing.** HS-EDS-7.7

 - 8 Identify and describe degenerative diseases of oral tissues, including dental hygiene related problems.** HS-EDS-7.8

 - 9 Differentiate between innate and acquired immunity.** HS-EDS-7.9

 - 10 Describe the allergic immune response.** HS-EDS-7.10

 - 11 Identify the role of S. mutants and Lactobacilli in dental caries.** HS-EDS-7.11

 - 12 Describe the clinical presentation of acute necrotizing ulcerative gingivitis (ANUG) and the microorganisms in periodontal disease.** HS-EDS-7.12

 - 13 Explain the correlation between oral bacterial systemic disease with tuberculosis, syphilis gonorrhoea, and candidiasis.** HS-EDS-7.13

 - 14 Differentiate between viral systemic diseases to include herpes viruses, hepatitis, and AIDS.** HS-EDS-7.14
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Distinguish between common oral diseases, treatment options, and pharmacological considerations by demonstrating a comprehensive understanding of oral health in dentistry. HS-EDS-8

- 1 Research common developmental disturbances in oral tissues.** HS-EDS-8.1

- 2 Describe the signs and symptoms of oral diseases and how they can be observed.** HS-EDS-8.2

- 3 Describe systemic diseases that may affect oral health.** HS-EDS-8.3

- 4 Discuss basic principles of pharmacology and the results of use.** HS-EDS-8.4

- 5 Identify and explain common treatment plans that include major drugs used and prescribed by the dental profession.** HS-EDS-8.5

- 6 Analyze medications that may alter the health of a dental patient.** HS-EDS-8.6

- 7 Recognize potential emergencies that could occur from medication use or abuse.** HS-EDS-8.7

- 8 Distinguish between various classifications and administration routes of common drugs.** HS-EDS-8.8

9 Examine the laws and regulations that govern the use and dispensing of drugs. HS-EDS-8.9

Adhere to and demonstrate infection control procedures in accordance with the guidelines of the Centers for Disease and Prevention (CDC), American Dental Association (ADA), and Occupational Safety and Health Administration (OSHA). HS-EDS-9

1 Research the CDC, ADA, and OSHA guidelines for infection control that are used to prevent and/or minimize the transmission of disease in a dental setting. HS-EDS-9.1

2 Explain the use of a vaccination for the prevention of Hepatitis B. HS-EDS-9.2

3 Explore the importance of participating in OSHA-10 and Bloodborne Pathogen training. HS-EDS-9.3

4 Demonstrate infection control procedures established by OSHA and the CDC for patient management: HS-EDS-9.4

a universal and standard precautions HS-EDS-9.4.A

b hand washing and surgical scrub performance techniques HS-EDS-9.4.B

c proper use of PPE HS-EDS-9.4.C

d proper disposal using a sharps container HS-EDS-9.4.D

5 Identify bio-hazardous materials/waste and explain how to properly label and dispose of such items per OSHA guidelines HS-EDS-9.5

6 Review safety data sheets prior to preparing antiseptic, disinfectant, and germicidal agents. HS-EDS-9.6

7 Utilize the HMIS (Hazardous Materials Identification System) and safety data sheets. HS-EDS-9.7

8 Differentiate between sanitization, disinfection, and sterilization. HS-EDS-9.8

9 Demonstrate aseptic conditions in a dental office, including operatory areas, equipment, and storage areas. HS-EDS-9.9

10 Demonstrate standard precautions utilized to prevent cross contamination in a dental operatory, including hand and body awareness (avoid touching things while gloved or in contaminated field). HS-EDS-9.10

11 Demonstrate a precise skill set in preparing treatment rooms, ensuring aseptic technique, applying protective barriers and minimizing disease transmission. HS-EDS-9.11

12 Demonstrate utilization of the ultrasonic cleaner and identify those items that may be processed in the ultrasonic cleaner. HS-EDS-9.12

13 Demonstrate appropriate methods of sanitization, disinfection, and sterilization of dental instruments, equipment, and supplies. HS-EDS-9.13

14 Process and sterilize instruments to specifications of the dental setting and in accordance to OSHA and ADA regulations. HS-EDS-9.14

15 Label and package instruments for sterilization using paper, cloth, plastic, and nylon tubing and maintain equipment asepsis. HS-EDS-9.15

16 Demonstrate the proper procedure for conducting biological monitoring testing to ensure the efficacy of autoclave sterilizers. HS-EDS-9.16

Utilize medical terminology as it relates to the oral cavity and dental procedures. HS-EDS-10

1 Identify and define prefixes, suffixes, and roots of commonly used dental terms. HS-EDS-10.1

2 Identify and define basic terminology as it relates to the oral cavity. HS-EDS-10.2

3 Demonstrate proficient knowledge of terminology to describe dental procedures. HS-EDS-10.3

Perform appropriate dental charting utilizing recognized symbols, abbreviations, charts, and classifications. HS-EDS-11

1 Demonstrate utilizing the universal notation system. HS-EDS-11.1

2 Identify and explain the symbols commonly used in charting oral conditions. HS-EDS-11.2

3 Analyze charts that use symbols to represent conditions present in the oral cavity. HS-EDS-11.3

4 Demonstrate adhering to the systems used for charting permanent and deciduous dentitions. HS-EDS-11.4

5 Classify common abbreviations used to identify simple, compound, and complex cavities. HS-EDS-11.5

6 Define the G.V. Black six classifications of cavity preparations. HS-EDS-11.6

7 Perform adequate dental charting and record assessments of existing oral conditions and conditions diagnosed by the dentist. HS-EDS-11.7

a Demonstrate charting/recording correct anatomical descriptions (right, left, occlusal, lingual, buccal, etc.) HS-EDS-11.7.A

b Demonstrate charting/recording correct tooth numbers. HS-EDS-11.7.B

8 Demonstrate maintaining confidentiality when handling patient dental records and following the HIPAA guidelines. HS-EDS-11.8

Explore how related student organizations are integral parts of career and technology education courses through leadership

1 Research the history of the state supported healthcare science CTSO (Career Technical Student Organization – HOSA and/or SkillsUSA). HS-EDS-12.1

development, school, and community service projects, entrepreneurship development, and competitive events. HS-

EDS-12

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- 2 Discuss the mission, purpose, motto, colors, official dress, and other distinguishing characteristics of the state supported healthcare science CTSO. HS-EDS-12.2

 - 3 Explain how participation in the state supported healthcare science CTSO can promote lifelong responsibility for community service and professional growth and development. HS-EDS-12.3

 - 4 Create a personal leadership plan to participate in programs, conferences, community service and competitive events on the local, state, and national level that align with the competencies, skills, and knowledge of this course. HS-EDS-12.4