Introduction to Dental Science

PEIMS Code: N1302101
Abbreviation: DNTSCI
Grade Level(s): 9–11
Award of Credit: 1.0

Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to TAC §74.13 for guidance on endorsements.

Course Description:

Introduction to Dental Science is a introductory health science course designed to initiate secondary students to the field of dentistry and related topics. At the end of the course, students will be able to discuss the history of dentistry; identify dental related career pathways; explain dental legal and ethical responsibilities; recognize professional healthcare behavior and demeanor; and perform basic routine dental office procedures. The purpose of this course is to establish a foundation for future coursework in dental science and prepare secondary students for a future career in dentistry.

Essential Knowledge and Skills:

(a) General Requirements. This course is recommended for students in Grades 9, 10, and 11. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provide content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education in therapeutic services and succeed in the dental profession.

(2) The Health Science Career Cluster focuses on planning, managing, and providing therapeutic services, diagnostics services, health informatics, support services, and biotechnology research and development.

(3) Introduction to Dental Science is a introductory health science course designed to initiate secondary students to the field of dentistry and related topics. At the end of the course, students will be able to discuss the history of dentistry; identify dental related career pathways; explain dental legal and ethical responsibilities; recognize professional healthcare behavior and demeanor; and perform basic routine dental office procedures. The purpose

of this course is to establish a foundation for future coursework in dental science and prepare secondary students for a future career in dentistry.

(4) To pursue a career in the health science industry, students should learn to reason, think critically, make decisions, solve problems, and communicate effectively. Students should recognize that quality health care depends on the ability to work well with others.

(5) The health science industry is comprised of diagnostic, therapeutic, health informatics, support services, and biotechnology research and development systems that function individually and collaboratively to provide comprehensive health care. Students should identify the employment opportunities, technology, and safety requirements of each system. Students are expected to learn the knowledge and skills necessary to pursue a health science career through further education and employment.

(6) Professional integrity in the health science industry is dependent on acceptance of ethical and legal responsibilities. Students are expected to employ their ethical and legal responsibilities, recognize limitations, and understand the implications of their actions.

(7) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

(8) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

(1) The student demonstrates professional standards/employability skills as required by the dental industry. The student is expected to:

(A) communicate ideas in a clear, concise, and effective manner;

(B) cooperate, contribute, and collaborate as a member of the dental team;

(C) illustrate employer expectations such as professionalism, attention to detail, compassionate care, and problem-solving skills; and

(D) discuss professional demeanor such as dressing appropriately and speaking politely.

(2) The student applies mathematics, science, English language arts, and social studies in dental science. The student is expected to:

(A) Identify and document basic vital signs such as temperature, pulse, respirations, and blood pressure;

(B) distinguish between normal and abnormal vital signs;

(C) interpret numerical data from patient vital signs to identify potential medical emergencies in the dental setting;

(D) analyze data from patient medical/dental histories and dental charts to make general assumptions regarding a patient’s health;

(E) describe common oral diseases and how they relate to overall health;

(F) plan, prepare, and present effective oral presentations related to the dental field;

(G) summarize responses verbally and in writing to communicate thoughts and ideas;

(H) discuss historical dental events and the resulting contributions to dentistry; and

(I) research key pioneers in dentistry and their significance to the dental profession.

(3) The student assesses career options and identifies academic preparation and skills necessary for employment in the dental industry. The student is expected to:

(A) investigate career pathways related to dentistry;

(B) research and identify emerging dental careers;

(C) review academic requirements for professional advancement such as certification, licensure, registration, continuing education, and advanced degrees; and

(D) model industry expectations of professional conduct.

(4) The student explores leadership roles and being a part of a multidisciplinary dental health care team in providing optimum oral health care. The student is expected to:

(A) construct a dental healthcare team and identify member's roles;

(B) identify individual characteristics of a leader such as initiative, integrity, and perseverance;

(C) describe leadership skills of the dental health professional; and

(D) assess group dynamics in the dental health care team.

(5) The student interprets ethical behavior standards and legal responsibilities encountered in dentistry. The student is expected to:

(A) define and discuss relevant dental terminology;

(B) analyze studies regarding ethical and legal implications of unprofessional behavior;

(C) explain the importance of HIPPA and patient privacy/confidentiality;

(D) evaluate dental professional organizations designed uphold the practice of dentistry, such as the American Dental Association;

(E) identify laws governing the dental industry;

(F) interpret duties delegated to dental professionals under the Texas Dental Practice Act; and

(G) explain the characteristics of a good work ethic.

(6) The student recognizes the importance of maintaining a safe environment and eliminating hazardous situations. The student is expected to:

(A) summarize governmental guidelines and regulations from regulatory and non-regulatory entities such as the Occupational

Safety and Health Administration, the Centers for Disease Control and Prevention, United States Food and Drug Administration, National Institute of Health, and National Institute of Dental and Craniofacial Research;

(B) discuss the protocol for handling hazardous materials and chemicals including the use of Safety Data Sheets;

(C) compare and contrast unsafe and safe working conditions;

(D) outline the steps for recycling and proper waste management in dentistry; and

(E) discuss local, state, and national standards required to maintain a safe dental environment.

(7) The student identifies dental terminology, dental abbreviations, and translates dental science industry terms. The student is expected to:

(A) identify and document common dental terms and dental procedures;

(B) interpret dental terminology and abbreviations;

(C) identify directional terms including mesial, distal, buccal, lingual; and

(D) translate dental vocabulary from informal conversation to technical dental science industry communication.

(8) The student examines the relationships between microorganisms and oral health and overall health and wellness in the human body. The student is expected to:

(A) examine the discipline of microbiology and its relation to an individual's health;

(B) name roles, functions, and responsibilities of regulatory agencies in governing infection control in the dental setting; and

(C) illustrate the infection process, including the links in the chain of infection.

(9) The student demonstrates the knowledge and skills required of a dental professional to provide optimum patient care. The student it expected to:

(A) prioritize tasks and follow schedules in a timely manner that optimizes efficiency and results;

(B) evaluate patients for potential emergency situations, respond to medical emergencies, and perform emergency medical treatment such as first aid and cardiopulmonary resuscitation;

(C) role play basic procedures and techniques performed in the dental office on a daily basis; and

(D) select appropriate technology and software commonly used for patient documentation.

(10) The student uses verbal and nonverbal communication skills in the dental setting. The student is expected to:

(A) demonstrate effective oral communication to express ideas and active listening;

(B) construct written instructions and messages using proper grammar and composition;

(C) demonstrate effective communication skills for responding to the needs of patients in a diverse society; and

(D) differentiate effective and ineffective communication.

Recommended Resources and Materials:

Bartolomucci-Boyd, L. R. (2012). Dental instruments a pocket guide (4th ed). Boston, MA: Cengage Learning.

Bird, D. L. & Robinson D. S. (2020). Modern dental assisting (12th ed.). St. Louis, MO: Elsevier Saunders.

Dentsply. (n.d.). Intraoral radiography with rinn xcp/xcp-ds instruments. Retrieved from https://www.google.com/search?q=dentsply+rinn+XPC+manual&rlz=1C1GCEU_enUS867US867&oq=dentsply+rinn+XPC+manual&aqs=chrome..69i57.8639j0j8&sourceid=chrome&ie=UTF-8

Phinney, D. J. & Halstead J. H. (2018). Dental assisting a comprehensive approach (5th ed.) Boston, MA: Cengage Learning.

Phinney, D. J. & Halstead J. H. (2010). Dental assisting coloring book. Boston, MA: Cengage Learning.

Texas Academy of General Dentistry. DA course handouts. Retrieved from https://s3.amazonaws.com/membercentralcdn/sitedocuments/tagd/tagd/0001/704001.pdf?AWSAccessKeyId=AKIAIHKD6NT2OL2HNPMQ&Expires=1576609268&Signature=aNOGfWXFD%2BcMDsBWOfkkiw1VcTA%3D&response-content-disposition=inline%3B%20filename%3D%22DA%20Course%20Handouts%2Epdf%22%3B%20filename%2A%3DUTF%2D8%27%27DA%2520Course%2520Handouts%252Epdf

Texas State Board of Dental Examiners. (n.d.). TSBDE Home Page. Retrieved from http://tsbde.texas.gov/

University of Texas Health Science Center Houston (n.d.). Dental X-Ray Safety Training. Retrieved from https://www.google.com/search?safe=strict&authuser=1&ei=_if5XaShFJu5tAaIna_YCw&q=UTHSCSA+dental+X-ray+safety+training+powerpoint&oq=UTHSCSA+dental+X-ray+safety+training+powerpoint&gs_l=psy-ab.3..33i299.4646.10824..11047...7.0..0.166.1724.8j8.....0....1..gws-wiz.....33i160.pTberlZE4EY&ved=0ahUKEwikmlKUsb3mAhWbHM0KHYjOC7sQ4dUDCAs&uact=5.

Recommended Course Activities:

- Students should consider joining CTSOs (Career and Technical Student Organization) such as HOSA (Health Occupation Students of America), Future Healthcare Professionals, or SkillsUSA.

- Students should consider volunteering at a dental clinic in order to gain knowledge while observing.
- Dental Science students would benefit from attendance at the Texas Dental Association annual conference by registering as a student and enrolling in workshops.
- Complete a tour of dental history museums and dental schools in the area (i.e. Baylor School of Dentistry, UT Health Science Center in San Antonio, UT Health Science Center in Houston).
- Students are encouraged to join the Texas Dental Assistants' Association as a student member.

Suggested methods for evaluating student outcomes:

- Dental terminology quizzes (weekly)
- Dental anatomy charting/drawings (to demonstrate knowledge of dentition and surrounding structures)
- Unit exams (summative chapter assessments)
- Laboratory exercises (procedural and outcomes-based assessment)
- Oral presentations demonstrating knowledge and technology use
- Semester exams

Teacher qualifications:

An assignment for Introduction to Dental Science is allowed with one of the following certificates.

- Health Science: Grades 6-12.
- Health Science Technology Education (Grades 8-12).
- Vocational Health Occupations.
- Vocational Health Science Technology.
- Recommended: United States Licensed Dentist, Dental Hygienist, Dental Assistant, or Dental Laboratory Technician.

Additional information:

The following are additional required training for this course:

- American Heart Association, CPR Basic Life Support Instructor- $60-80