



INSTRUCTIONAL PACKAGE

DHG 125

Tooth Morphology and Histology

Effective Term

Fall 2023/Spring 2024/Summer 2024

INSTRUCTIONAL PACKAGE

Part I: Course Information

Effective Term: Fall 2023

COURSE PREFIX: DHG 125

COURSE TITLE: Tooth Morphology and Histology

CONTACT HOURS: 2

CREDIT HOURS: 2

RATIONALE FOR THE COURSE:

DHG 125 is a foundation course for the Dental Hygiene program. As dental hygienists utilize instruments on teeth, it is essential that they know the definitive anatomy of each individual tooth to successfully practice in their profession. Students will learn the anatomy of each individual tooth, tooth numbering systems to identify teeth, and eruption dates for both primary and permanent teeth. Students will also learn how the tooth develops and the histological structures of the teeth and the surrounding supporting structures. This knowledge will enable students to effectively communicate with their patients regarding various dental conditions.

COURSE DESCRIPTION:

This course covers the embryogenesis and histology of the head and neck structures with primary emphasis on the oral cavity. The formation, eruption patterns, and morphology of primary and permanent dentitions are studied.

PREREQUISITES/CO-REQUISITES:

Admittance into the Dental Hygiene Program

CO-REQUISITES:

AHS 113 Head & Neck Anatomy

BIO 211 Anatomy & Physiology II

BIO 225 General Microbiology

DHG 151 Principles of Dental Hygiene

REQUIRED MATERIALS:

Please visit the Bookstore online site for most current textbook information. Use the direct link below to find textbooks.

[BOOKSTORE](#).

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's learning management system (LMS) used for course materials.
Access to myHGTC portal for student self-services.

College email access – this is the college's primary official form of communication.

CLASSROOM ETIQUETTE:

As a matter of courtesy to other students and your professor, please turn off cell phones and other communication/entertainment devices before class begins. If you are monitoring for an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

*Refer to the HGTC Dental Sciences Program Manual for additional policies on classroom etiquette

Part II: Student Learning Outcomes

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

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

1. Name and identify the basic anatomical structures of the face and neck, oral cavity and pharynx.
2. Identify the various embryological structures leading to the development of the head and oral cavity.
3. Describe the embryonic development of the human face and the pathologic conditions arising from improper development.
4. Describe the embryonic development of the oral cavity and the pathologic conditions arising from improper development.
5. Describe the basic histologic tissues and their characteristics.
6. Describe the process of tooth development and tooth eruption.
7. Describe the processes involved in the resorption of the roots and shedding of primary teeth and their replacement by permanent teeth.
8. Describe the development and basic histologic characteristics of enamel, dentin, dental pulp, cementum, periodontal ligament, alveolar bone
9. State the names, function, and eruption sequence for deciduous and permanent teeth.
10. Name and identify the divisions, surfaces, and tissues of the teeth.
11. Name and identify the structures that form the periodontium.
12. Discuss the Universal, Palmer, and FDI systems of numbering the teeth and be able to identify a tooth by its number or give the identification number for a given tooth.
13. List the anatomical characteristics of both the crown and the root for the following teeth. Be able to identify them from a drawing, photograph or model, maxillary and mandibular permanent incisors, maxillary and mandibular permanent canines, maxillary and

mandibular permanent premolars, maxillary and mandibular permanent molars, deciduous maxillary and mandibular incisors, deciduous maxillary and mandibular canines, deciduous maxillary and mandibular molars

14. Differentiate between permanent and deciduous teeth on the basis of their anatomical differences.
15. Describe the ideal occlusion.
16. Describe and identify the different types of malocclusion using Angle's classification and be able to identify various malocclusion models.
17. Describe the proximal contact areas, embrasures, and interproximal spaces of the teeth and describe their functional importance.

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

Module 1

Materials Covered: *Brand/Isselhard*, Chapt. 1 Oral Cavity

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To describe the boundaries and subboundaries of the oral cavity and the structures in each area
2. To define the terms vestibule, oral cavity proper, mucobuccal fold, frenum alveolar mucosa, gingiva exostoses, torus palatinus, and torus mandibularis
3. To define the landmarks in the floor of the mouth and the hard and soft palate and the structures that form them
4. To differentiate normal from abnormal anatomy in the oral cavity and to ensure a follow-up examination

Module 2

Materials Covered: *Brand/Isselhard*, Ch. 2 The Tooth: Functions and Terms

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To identify the different functions of the teeth
2. To identify the different tissues that compose the teeth
3. To differentiate between clinical and anatomic crowns and roots
4. To define single, bifurcated, and trifurcated roots
5. To understand the significance of the crown/root ratio
6. To recognize how the functions of teeth determine their shape and size
7. To understand the individual functions and therefore the individual differences that exist among incisors, canines, premolars, and molars
8. To name and identify the location of the various tooth surfaces
9. To name and identify the line angles of the teeth
10. To name and identify the point angles of the teeth

11. To define the terminology used in naming the landmarks of the teeth

Module 3

Materials Covered: *Brand/Isselhard*, Ch. 3 Fundamental and Preventative Curvatures

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To identify the successful characteristics of tooth shape and alignment in protecting the periodontium
2. To understand that the teeth are shaped to align next to each other to preserve the dentition
3. To identify the proximal contact areas
4. To identify contact points

Module 4

Materials Covered: *Brand/Isselhard*, Ch. 4 Dentition

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand the difference between primary dentition, secondary dentition, and mixed dentition
2. To understand the arrangement of the teeth into dentitions, arches, and quadrants
3. To name and code any individual tooth
4. To code teeth using the Universal system, the Palmer notation system, and the Federation Dentaire Internationale system
5. To identify a tooth when given a code from one of the three systems

Module 5

Materials Covered: *Brand/Isselhard*, Ch. 5 Development, Form, and Eruption

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand how the tooth germs develop within the crypts
2. To understand how the growth centers or lobes fuse and form a tooth
3. To understand that this fusion can take variety of forms, which result in different types of teeth such as incisors, premolars, and molars
4. To know how many lobes form each type of tooth and where the lobes are located
5. To understand the eruption schedule of the deciduous and permanent teeth
6. To understand general rules about the eruption of teeth to understand the phenomena of mesial drift, root resorption, and exfoliation
7. To understand the implications of the terms impacted teeth, congenitally missing teeth, attrition, occlusal plane, and curve of Spee
8. To understand the periods of primary, mixed, and permanent dentition

Module 6

Materials Covered: *Brand/Isselhard*, Ch. 6 Occlusion

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand how the eruption schedule, growth, and ultimate alignment of the teeth are related
2. To understand how muscle forces affect the alignment of the teeth
3. To understand how the mesial step, flush terminal plane, and distal step affect occlusal classification
4. To understand the maxillary to mandibular vertical and horizontal alignment of teeth and which molars play a key part in this
5. To define centric occlusion, centric relation, primate space, and leeway space
6. To define overjet, overbite, crossbite, and open bite and to understand how they occur
To identify the three occlusal classification
7. To understand the relationship that exists between the teeth during protrusive and lateral excursive movements

Module 7

Materials Covered: *Brand/Isselhard*, Ch. 7 Dental Anomalies

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To define dental anomaly
2. To discuss intrinsic factors
3. To discuss extrinsic factors
4. To discuss the difference between hereditary and congenital factors
5. To define the various anomalies listed in the chapter

Module 8

Materials Covered: *Brand/Isselhard*, Ch. 8 Supporting Structures

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand the relationships within the gingival unit, a supporting structure of the teeth
2. To understand the terminology of the gingival unit and to identify its various parts
3. To understand how the gingival unit functions
4. To understand how the attachment apparatus is related to the gingival unit
5. To understand the relationship of cementum, periodontal ligament, and alveolar bone
6. To identify the components of the alveolar process
7. To understand the clinical significance of the gingival sulcus
8. To understand how the fibers of the periodontal ligament function in tooth movement and shock absorption

Module 9

Materials Covered: *Brand/Isselhard*, Ch. 9 Clinical Considerations

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand how clinical experience is related to the theory and lecture portion of dental anatomy

2. To understand how preventive clinical situations are related to tooth form and supportive dental structures
3. To understand how occlusal trauma and the natural shape and contour of the teeth can contribute to dental disease
4. To understand how the placement of a restoration can contribute to disease of the supporting tissues
5. To evaluate the reliability of dental pain as a diagnostic aid
6. To understand how tooth migration can affect the success of treatment or necessitate different treatment

Module 10

Materials Covered: *Brand/Isselhard*, Ch. 10 Tooth Identification

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand how to use landmarks to identify the incisors
2. To understand how to use landmarks to identify the canines
3. To understand how to use landmarks to identify the premolars
4. To understand how to use landmarks to identify the molars
5. The permanent teeth only will be studied here. The deciduous teeth will be discussed in Chapter 16

Module 11

Materials Covered: *Brand/Isselhard*, Ch. 11 Root Morphology

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand the functions of the roots of teeth
2. To understand how the shape of the root affects the support of the tooth
3. To understand how orthodontic tooth movement is possible
4. To understand how root shape protects the health and hygiene of periodontal tissue
5. To understand the anatomic differences between root canals

Module 12

Materials Covered: *Brand/Isselhard*, Ch. 12 Incisors

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To identify the particular anatomic features of incisors
2. To compare maxillary central incisors with maxillary lateral incisors
3. To compare maxillary incisors with their mandibular counterparts
4. To identify an extracted incisor
5. To recognize the normal and deviated anatomic forms of incisors

Module 13

Materials Covered: *Brand/Isselhard*, Ch. 13 Canines

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand the function of a canine in relation to its shape
2. To understand the calcification and root completion schedules in relation to the eruption dates of canines
3. To understand how canines are different from other anterior teeth
4. To recognize how canines are similar to some premolar teeth
5. To recognize and identify the anatomic structure and landmarks of the canine
6. To compare maxillary and mandibular canines and identify each

Module 14

Materials Covered: *Brand/Isselhard*, Ch. 14 Premolars

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand how development occurs through the formation and fusion of lobes
2. To understand how the form of a tooth relates to its ultimate function
3. To recognize and name the pertinent dental anatomic form of each tooth, such as cusps, ridges, developmental grooves, triangular grooves, pits, and developmental depressions
4. To discuss the major differences and similarities between maxillary first and second premolars
5. To identify an extracted premolar as maxillary or mandibular first or second, right or left
6. To make comparisons between maxillary and mandibular premolars
7. To compare mandibular first premolars with mandibular second premolars (development, shape, and diversities of anatomic form)
8. To describe briefly the various occlusal forms possible for a mandibular second premolar

Module 15

Materials Covered: *Brand/Isselhard*, Ch. 15 Molars

Assessment: Exam, Homework Assignments, & Final

Objectives:

1. To understand the lobe formations of the crowns of molars
2. To compare the formations of first, second, and third molars
3. To understand the anchorage of the roots as resistance to forces of displacement
4. To describe the details of the various molars
5. To make comparisons among the various molars: maxillary and mandibular molars, as well as first, second, and third molars
6. To identify each molar

Module 16

Materials Covered: *Brand/Isselhard*, Ch. 16 Deciduous Dentition

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To identify various deciduous teeth
2. To recognize whether a tooth is primary or secondary
3. To know the eruption dates of primary and secondary teeth
4. To understand the essential differences between deciduous and permanent teeth

5. To understand the importance and functions of deciduous teeth
6. To compare the dental anatomic features of deciduous teeth with other deciduous teeth and with their permanent counterparts

Module 17

Materials Covered *Brand/Isselhard*, Ch. 17 Basic Tissues

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To describe a cell and the function of its components
2. To define the function of epithelium and name the various types and their locations
3. To describe the origin of glands and the ways in which they may be classified
4. To describe the component, function, and location of general connective tissues
5. To briefly describe the structure of bone and the two ways in which it is formed
6. To briefly describe the components and origin of blood cells, their functions, and normal numbers
7. To discuss the three types of muscles and their functions, shapes, locations
8. To discuss the neuron, its parts, and function

Module 18

Materials Covered *Brand/Isselhard*, Ch. 18 Development of Orofacial Complex

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To be aware of the development stages of the human from fertilization to birth
2. To list the embryonic structures that form the face and discuss the approximate age of formation
3. To discuss the mechanism involved in the development of the maxillary lip
4. To name the structures involved in the formation of the palate and the timing of its development
5. To describe the mechanism involved in the development of the palate
6. To describe the other structures arising from the pharyngeal arches
7. To discuss the embryonic structures involved in the development of the cleft lip and palate

Module 19

Materials Covered: *Brand/Isselhard*, Ch. 19 Dental Lamina and Enamel Organ

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To define the dental lamina and indicate in what embryonic week it is first seen
2. To describe the bud, cap, and bell stages and the various layers found in each
3. To define successional and vestibular laminae
4. To describe the dental papilla, the dental sac, and their functions

Module 20

Materials Covered: *Brand/Isselhard*, Ch. 20 Enamel, Dentin, and Pulp

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To discuss the changes in the cells of the inner enamel epithelium (IEE) allowing them to become enamel-forming cells
2. To discuss the interrelationship between enamel format and dentin formation
3. To describe their role of the dental papilla in their formation of the enamel organ and the shaping of the crown
4. To describe the properties of enamel and the makeup of the enamel rod
5. To understand the keyhole shape of the enamel rod and the direction of the hydroxyapatite crystals indifferent areas of the cross section of the rod
6. To define the following terms: Striae of Retzius, hypoplastic enamel, hypocalcified enamel, enamel lamellae, enamel tuft, and enamel spindle
7. To describe the properties and components of dentin
8. To differentiate between primary, secondary, and reparative dentin
9. To define the following terms: interglobular dentin, dead tracts, sclerotic dentin
10. To describe the components and age-related changes of pulp
11. To describe and classify pulp stones

Module 21

Materials Covered: *Brand/Isselhard*, Ch. 21 Root Formation and Attachment Apparatus

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To discuss the role of the epithelial root sheath in toot formation and dentin formation
2. To describe the fate of the epithelial root sheath
3. To describe the beginning of cementum formation, the two varieties, and where they are found
4. To define and diagram alveolar bone and its components
5. To define periodontal ligament and list its various groups and subgroups of fibers
6. To briefly describe bone's reaction to pressure and tension and how this affects tooth movement

Module 22

Materials Covered: *Brand/Isselhard*, Ch. 22 Eruption and Shedding of Teeth

Assessment: Exam, Lab Assignments, & Final

Objectives

1. To name the three stages of active tooth eruption and the points at which each stage begins
2. To discuss the fate of the epithelial layers covering the crown of the tooth
3. To name some of the forces in tooth eruption and which ones most likely have their greatest influence
4. To discuss briefly what causes the shedding of primary teeth

5. To diagram or describe the origin and position of permanent teeth compares with deciduous teeth
6. To list and describe the factors that lead to a retained primary tooth

Module 23

Materials Covered: *Brand/Isselhard*, Ch. 23 Oral Mucous Membrane

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To name the three categories of the oral mucosa and discuss where they are found
2. To name the three stages of keratinization of oral mucous membrane and discuss where these different types are found
3. To discuss the factors that affect the mobility of various types of the mucosa
4. To understand what the submucosa is and where it is found
5. To describe the four stages of passive eruption
6. To describe the typical clinical picture of normal gingiva
7. To describe some of the change seen in diseased gingiva

Module 24

Materials Covered: *Brand/Isselhard*, Ch. 24 The Tongue

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To describe the formation of the tongue as it relates to the germ layers and its pharyngeal arches of origin
2. To discuss the difference between the extrinsic and intrinsic muscles of the tongue
3. To describe briefly how the tongue movement is accomplished
4. To describe the papillae of the tongue

Module 25

Materials Covered: *Brand/Isselhard*, Ch. 25 Histology of the Salivary Glands

Assessment: Exam, Lab Assignments, & Final

Objectives:

1. To describe the components of a salivary gland
2. To describe the duct system of a salivary gland
3. To describe the arrangement of the cells of a mixed salivary gland
4. To describe how saliva is formed and modified before secretion
5. To describe the functions of saliva

****Students – please refer to the Instructor’s Course Information sheet for specific information on assessments and due dates.***

Part III: Grading and Assessment

EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS*

Students' performance will be assessed and the weight associated with the various measures/artifacts are listed below.

EVALUATION:

Tests-4	70%(17.5% each)
Quizzes-9	10%(1.11%each)
Professionalism	2%
Final Exam	15%
	100%

****Students, for the specific number and type of evaluations, please refer to the Instructor's Course Information Sheet.***

GRADING SYSTEM:

A=90-100

B=80-89

C=77-79

D=70-76

F=69 and below

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the academic calendar for deadlines for add/drop ([ACADEMIC CALENDAR](#)). You must attend at least one meeting of all of your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

Part IV: Attendance

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of 80 percent (80%) of their classes in order to receive credit for any course. Due to the varied nature of courses taught at the college, some faculty may require

up to 90 percent (90%) attendance. Pursuant to 34 Code of Federal Regulations 228.22 - Return to Title IV Funds, once a student has missed over 20% of the course or has missed two (2) consecutive weeks, the faculty is obligated to withdraw the student and a student may not be permitted to reenroll. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.** ***Refer to the HGTC Dental Sciences Program Manual for additional attendance policies.**

Part V: Student Resources



THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers to all students the following **free** resources:

1. **Academic tutors** for most subject areas, **Writing Center support**, and **college success skills**.
2. Online **tutoring** and academic support resources.
3. Professional and interpersonal communication **coaching** in the EPIC Labs.

Visit the [Student Success & Tutoring Center](#) website for more information. To schedule tutoring, contact the SSTC at sstc@hgtc.edu or self-schedule in the Penji iOS/Android app or at www.penjiapp.com. Email sstc@hgtc.edu or call SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455, or go to the [Online Resource Center](#) to access on-demand resources.



STUDENT INFORMATION CENTER: TECH Central

TECH Central offers to all students the following **free** resources:

1. **Getting around HGTC:** General information and guidance for enrollment, financial aid, registration, and payment plan support!
2. Use the [Online Resource Center \(ORC\)](#) including Office 365 support, password resets, and username information.
3. **In-person workshops, online tutorials and more services** are available in Desire2Learn, Student Portal, Degree Works, and Office 365.
4. **Chat with our staff on TECH Talk**, our live chat service. TECH Talk can be accessed on the student portal and on TECH Central's website, or by texting questions to (843) 375-8552.

Visit the [Tech Central](#) website for more information. Live Chat and Center locations are posted on the website. Or please call (843) 349 – TECH (8324), Option #1.



HGTC LIBRARY:

Each campus location has a library where HGTC students, faculty, and staff may check out materials with their HGTC ID. All three HGTC campus libraries are equipped with computers to support academic research and related school work; printing is available as well. Visit the [Library](#) website for more information or call (843) 349-5268.

STUDENT TESTING:

Testing in an **online/hybrid** course and in **make-up exam** situations may be accomplished in a variety of ways:

- Test administered within D2L
- Test administered in writing on paper
- Test administered through Publisher Platforms (which may have a fee associated with the usage)

Furthermore, tests may have time limits and/or require a proctor.

Proctoring can be accomplished either face-to-face at an approved site or online through our online proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

DISABILITY SERVICES:

HGTC is committed to providing an accessible environment for students with disabilities. Inquiries may be directed to HGTC's [Accessibility and Disability Service webpage](#). The Accessibility and Disability staff will review documentation of the student's disability and, in a confidential setting with the student, develop an educational accommodation plan.

Note: It is the student's responsibility to self-identify as needing accommodations and to provide acceptable documentation. After a student has self-identified and submitted documentation of a disability, accommodations may be determined, accepted, and provided.

STATEMENT OF EQUAL OPPORTUNITY/NON-DISCRIMINATION STATEMENT:

Horry-Georgetown Technical College prohibits discrimination and harassment, including sexual harassment and abuse, on the basis of race, color, sex, national or ethnic origin, age, religion, disability, marital or family status, veteran status, political ideas, sexual orientation, gender identity, or

pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation in educational programs and/or activities.

TITLE IX REQUIREMENTS:

All students (as well as other persons) at Horry-Georgetown Technical College are protected by Title IX—regardless of their sex, sexual orientation, gender identity, part- or full-time status, disability, race, or national origin—in all aspects of educational programs and activities. Any student, or other member of the college community, who believes that he/she is or has been a victim of sexual harassment or sexual violence may file a report with the college’s Chief Student Services Officer, campus law enforcement, or with the college’s Title IX Coordinator or designee.

*Faculty and Staff are required to report incidents to the Title IX Coordinators when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

INQUIRIES REGARDING THE NON-DISCRIMINATION/TITLE IX POLICIES:

Student and prospective student inquiries concerning Section 504, Title II, **Title VII**, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.

Dr. Melissa Batten, VP Student Affairs

Title IX, Section 504, and Title II Coordinator

Building 1100, Room 107A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5228

Melissa.Batten@hgtc.edu

Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.

Jacquelyne Snyder, VP Human Resources

Affirmative Action/Equal Opportunity Officer and Title IX Coordinator

Building 200, Room **205B**, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5212

Jacquelyne.Snyder@hgtc.edu