

## **SYLLABUS**

COURSE: DENF 1601 Dental Anatomy:  
Form and Function of the Human Dentitions  
SEMESTER: Fall  
CREDIT HOURS: 2.0

REVISED: 2005  
REPRINTED: 2009

COURSE DIRECTOR: Gary N. Frey, D.D.S.

## GOAL

Knowledge of dental anatomy and occlusion is fundamental in the study and practice of all the disciplines of dentistry. It is essential in diagnosis, treatment planning and treatment.

When you have successfully completed this course, you will know the anatomical and morphological characteristics of the teeth and their supporting structures, inter-arch and intra-arch relationships and eruption. The course also provides preparation for the National Board Part I Examination's section on Dental Anatomy and Occlusion.

When you have successfully completed this course and its complementary laboratory courses, you will be able to fabricate dental restorations that meet anatomical, morphological and functional requirements.

## OBJECTIVES

### I. INTRODUCTION AND NOMENCLATURE

1. The objectives at the beginning of Unit #1 of the *Concise* textbook are the objectives for this section of the course.

### II. TERMINOLOGY OF LINE ANGLES; MICROFICHE KEYS

1. Given an illustration of an anatomic structure or space, name it with the appropriate dentition term.
2. State the dental formula for the primary (deciduous) dentition and the permanent dentition.

### III. ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS OF FORM AND FUNCTION

1. The objectives at the beginning of Unit #2 of the *Concise* textbook are the objectives for this section of the course.

### IV. AXIAL INCLINATIONS OF TEETH

1. Describe the various inclinations of the permanent teeth and their functional significance.

### V. PROXIMAL CONTACT AND FACIO-LINGUAL TAPER

1. Define proximal ridge, proximal concavity and contact area.
2. Describe the various sizes, shapes and locations of the contact areas of all permanent teeth.
3. Describe facio-lingual taper and its effect on proximal contours.
4. List the two permanent teeth that may exhibit reverse faciolingual taper.
5. Describe the role of faciolingual taper.

### VI. THE PERMANENT INCISORS

1. The objectives of the beginning of Unit #3 of the *Concise* textbook are the objectives for this section of the course.

### VII. THE PERMANENT CANINES

1. The objectives of the beginning of Unit #4 of the *Concise* textbook are the objectives for this section of the course.

### VIII. FUNCTIONS OF PERMANENT ANTERIOR TEETH

1. List the determinants of occlusion.

2. Describe overbite and overjet.
3. Describe anterior guidance.
4. Describe the relationship of anterior guidance to posterior disclusion.
5. Describe the relationship of overjet to cusp height.
6. Describe the relationship of overbite to cusp height.
7. Describe the relationship between anterior guidance and condylar guidance.
8. Describe the relationship between the angle of the eminentia and the lingual concavity of the maxillary anterior teeth.
9. Describe the relationship between the angle of the eminentia and cusp height.
10. Describe protrusive and lateral movements of the mandible.
11. Define group function, cuspid rise and mutually protected occlusion.

IX. GUIDELINES FOR TOOTH IDENTIFICATION

1. Given a set of extracted teeth, identify each tooth with the correct Universal number.

X. THE PERMANENT PREMOLARS

1. The objectives at the beginning of Units #5 and 6 of the *Concise* textbook are the objectives for this section of the course.

XI. SHAPE ENTITIES OF POSTERIOR TEETH AND THEIR FUNCTIONS

1. Describe the width and shape of marginal ridges of posterior teeth.
2. Describe the functions of marginal ridges of posterior teeth.
3. Describe the functions of developmental and secondary grooves.
4. Name the contours that participate in deflection of food.
5. Describe the location of the axial heights of contour of posterior permanent teeth.
6. Name the components responsible for reduced loading during masticatory function.

XII. INTRODUCTION TO OCCLUSION

1. Describe the following terms and concepts of occlusion:
  - 1.1 anterior guidance
  - 1.2 articulator
  - 1.3 centric occlusion
  - 1.4 centric relation
  - 1.5 condylar guidance
  - 1.6 cuspid rise

- 1.7 deglutition
- 1.8 diagnostic coats
- 1.9 dynamic occlusion
- 1.10 facebow
- 1.11 freeway space
- 1.12 group function
- 1.13 hinge opening
- 1.14 intercuspation
- 1.15 interdigitation
- 1.16 malocclusion
- 1.17 occlusal adjustment or equilibration
- 1.18 occlusal interference
- 1.19 occlusal prematurity
- 1.20 occlusal splint
- 1.21 physiological rest position
- 1.22 static occlusion
- 1.23 translatory opening

2. For each permanent tooth, name the two opposing teeth it interdigitates with.
3. Name the two types of permanent teeth that typically interdigitate with only one opposing tooth.
4. Name the cusp categories and state that cusps belong to each category.
5. List the four ways that the line of the central groove can be used as a landmark.
6. State the centric stops for each centric cusp.
7. Describe the relationship of non-centric cusps to the opposing teeth.
8. Describe the following classifications of occlusion and malocclusion:
  - 8.1 Class I ideal occlusion
  - 8.2 Class I malocclusion
  - 8.3 Class II, Division 1 malocclusion
  - 8.4 Class II, Division 2 malocclusion
  - 8.5 Class III malocclusion
9. List seven requirements for a Class I ideal occlusion.
10. List three malocclusions or occlusal relationships that lack or are deficient in anterior guidance.
11. Identify the components of the Whip Mix articulator.
12. The student shall be able to set the condylar guidance and incisal guide table of the Whip Mix articulator.
13. Describe the following mandibular movements and occlusal relationships:
  - 13.1 centric occlusion
  - 13.2 protrusive movement
  - 13.3 incisal edge position

- 13.4 rotating condyle
- 13.5 orbiting condyle
- 13.6 lateral excursion
- 13.7 working position
- 13.8 non-working position
- 13.9 lateral protrusive movement

- 14. Given an illustration of border movements in the horizontal, frontal or mid-sagittal plane, name the various points and movements depicted.
- 15. Describe the purpose and uses of the incisal guide table.

XIII. THE PERMANENT MAXILLARY AND MANDIBULAR MOLARS

- 1. The objectives at the beginning of Units #7 and 8 of the *Concise* textbook are the objectives for this section of the course.

XIV. MANDIBULAR MOVEMENTS

- 1. Identify from a drawing the correct cusp(s) and mandibular movement indicated by the arrow(s)."

XV. TOOTH MICROSTRUCTURE

- 1. Know the clinical significance of tooth microstructure.
- 2. Describe the physical properties of enamel, dentin, and cementum.
- 3. Describe thermal expansion and contraction as related to tooth structure and how they affect dentistry.
- 4. Describe thermal conductivity, tensile strength, hardness and translucency and the relationship of each to dentin, enamel, and cementum.

XVI. PULP MORPHOLOGY

- 1. The objectives at the beginning of Unit #9 of the *Concise* textbook are the objectives for this section of the course

XVII. DEVELOPMENT OF THE TEETH AND ANOMALIES

- 1. The objectives at the beginning of Unit #11 of the *Concise* textbook are the objectives for this section of the course

XVIII. THE DECIDUOUS DENTITION

- 1. The objectives at the beginning of Unit #10 of the *Concise* textbook are the objectives for this section of the course

## RESOURCES

### I. Media Resources

#### A. Printed media

##### 1. Required textbook

Fuller, J. and Denehy, G.  
*Concise Dental Anatomy and Morphology*, 4th ed.(C)  
The University of Iowa Press, 2001

Unit #1 (Introduction and Nomenclature)  
Unit #2 (Anatomic & Physiologic Considerations of Form & Function)  
Unit #3 (The Permanent Incisors)  
Unit #4 (The Permanent Canines)  
Unit #5 (The Permanent Maxillary Premolars)  
Unit #6 (The Permanent Mandibular Premolars)  
Unit #7 (The Permanent Maxillary Molars)  
Unit #8 (The Permanent Mandibular Molars)  
Unit #9 (Pulp Cavities)  
Unit #10 (The Deciduous Dentition)  
Unit #11 (Development of the Teeth and Anomalies)

#### B. Non-printed media

##### 1. Electronic media

Blackboard Course Info  
Internet address: <http://blackboard.db.uth.tmc.edu>

Monograph – (M, distributed by faculty)  
Ferguson  
*DENF 1601 Dental Anatomy*  
UT Dental Branch, Houston, 1996

##### 2. Microfiche

Rout, J. L.  
*Oral Anatomy Terminology*  
Catalog #1088, 1089 and 1090  
Available in room DB 330

##### 3. Tooth I.D. Study Sets

Dosch R., Frey G., and Quock R.  
*Study Sets for Tooth Identification*  
Available in room DB 330

II. Human Resources

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## STUDY PLAN AND REQUIREMENTS

The study of this course consists primarily of textbook assignments, handouts and a lecture series. The student should begin with an initial review of required media for each upcoming examination. Upon completion of this review, study time should be based on the student's understanding of the material.

**Note:** the material for which the student is responsible in preparing for each quiz or examination is listed in the course lecture schedule. Quizzes and examinations will be based on the referenced material. The student should refer to the course schedule for lecture and quiz/examination dates in developing an individual study plan.

The lectures in the course schedule are designed to enhance your performance in this course and the Dental Anatomy laboratory courses. **Note:** the lectures should **not** be considered a replacement for studying the assigned handouts and chapters in the textbook. Lectures are normally posted on Blackboard for your convenience. Attendance to these lectures will be necessary to ensure satisfactory completion of these courses in a timely manner.

**DENF 1601 DENTAL ANATOMY  
2009 Fall Semester Schedule**

Lectures: Mondays, 8-8:50 am; Fridays, 11-11:50 am

Final: December 11, 8-8:50 am

DATE	LECTURE TOPICS (Room 340) M - Monograph C - Concise Dental Anatomy and Morphology	PRESENTERS
1 - Aug 17	Introduction to Dental Anatomy	Frey
2 - Aug 21	Terminology	Dosch
3 - Aug 24	Tooth Identification	Dosch
4 - Aug 28	Form and Function	Dosch
5 - Aug 31	<b>TERMINOLOGY QUIZ</b> <span style="float: right;"><b>Room 207</b></span> <u>Study Material:</u> Microfiche #'s 1088, 1089, 1090 Lecture on Terminology	
6 - Sep 4	Incisors	Frey
7 - Sep 7	<i>Labor Day Holiday</i>	
8 - Sep 11	Canines	Frey
9 - Sep 14	<b>Groups 1 &amp; 2</b> <b>TOOTH ID QUIZ</b> <span style="float: right;"><b>Room B25</b></span> <u>Study Material:</u> Lecture on Tooth ID Guidelines for Tooth Identification (M)	Frey
10 - Sep 18	<b>Groups 3 &amp; 4</b> <b>TOOTH ID QUIZ</b> <span style="float: right;"><b>Room B81</b></span> <u>Study Material:</u> Lecture on Tooth ID Guidelines for Tooth Identification (M)	Frey
11 - Sep 21	<b>EXAMINATION #1</b> <span style="float: right;"><b>Room 207</b></span> <u>Study Material:</u> Units #1 and 2 (C) "Axial Inclinations of Teeth" (M) "Proximal Contact and Facio-lingual Taper" (M)	Frey
12 - Sep 25	Maxillary Premolars	Quock
13 - Sep 28	Mandibular Premolars	Quock
14 - Oct 2	<b>EXAMINATION #2</b> <span style="float: right;"><b>Room 207</b></span> <u>Study Material:</u> Units #3 and 4 (C) "Functions of Permanent Anterior Teeth" (M)	Frey

<b>DATE</b>	<b>LECTURE TOPICS</b> (Room 340) M - Monograph C - Concise Dental Anatomy and Morphology	<b>PRESENTERS</b>
15 – Oct 5	Occlusal Relationships, Part I	Laman
16 – Oct 9	Occlusal Relationships, Part II	Laman
17 - Oct 12	Occlusal Relationships, Part III	Laman
18 - Oct 16	<b>EXAMINATION #3</b> <b>Room 340</b> <u>Study Material:</u> Units #5 and 6 (C) "Shape Entities of Posterior Teeth and their Functions" (M)	Frey
19 - Oct 19	Maxillary Molars	Quock
20 - Oct 23	Mandibular Molars	Quock
21 - Oct 26	<b>EXAMINATION #4</b> <b>Room B54</b> <u>Study Material:</u> Units #7 and 8 (C)	Frey
22 - Oct 30	Introduction to Mandibular Movements	Quock
23 – Nov 2	Tooth Microstructure and Dental Pulp Morphology - General Considerations	Frey
24 - Nov 6	<b>EXAMINATION #5</b> <b>Room 207</b> <u>Study Material:</u> "Introduction to Occlusion" (M) Occlusal Relationships Parts I, II, and III Introduction to Mandibular Movements	Frey
25 – Nov 9	Dental Pulp Morphology - Individual Teeth	Frey
26 – Nov 13	Development of the Dentition and Eruption of the Primary Dentition	Frey
27 - Nov 16	Anomalies of the Dentition	Dosch
28 - Nov 20	<b>EXAMINATION #6</b> <b>Room 207</b> <u>Study Material:</u> Units #9 (C) Tooth Microstructure Lecture Dental Pulp Morphology – Individual Teeth	Frey
29 - Nov 23	Dental Anatomy of the Primary Dentition General Considerations	Quock
30 - Nov 27	<i>Thanksgiving Holiday</i>	

DATE	LECTURE TOPICS (Room 340) M - Monograph C - <i>Concise Dental Anatomy and Morphology</i>	PRESENTERS
31 – Nov 30	Dental Anatomy of the Primary Dentition Individual morphology <b>Course Evaluation</b>	Quock
32 – Dec 4	Review	Frey
<b>Fri, Dec 11 8-8:50 am</b>	<b>FINAL EXAMINATION</b> <b>Room 207</b> <u>Study Material:</u> Units 10, 11 (C) Anatomy of the Primary Dentition Lectures 1 and 2 Development of the Dentition, Eruption of the Primary Dentition – Lecture Anomalies of the Dentition – Lecture	Frey

## EVALUATION METHODS

Students will be evaluated in the terminology quiz, the tooth identification quiz and six mass examinations and the final examination over the assigned text and handouts. Unannounced quizzes will be given. Students should refer to the Study Plan and Requirements section of this syllabus to see what they will be responsible for in each examination.

The final grade for the course will be determined by a weighted averaging of the quizzes and examinations. The terminology and tooth identification quizzes will each be worth 9% of the final grade. Unannounced quizzes will be worth 5% of the final grade. Each of the six mass examinations and the final examination will be worth 11% of the final grade.

The terminology quiz will consist of 25 slides. The student will be asked to identify the structure or space illustrated on each slide. The terminology quiz lasts approximately 25-30 minutes.

The tooth identification quiz is a station exam and will consist of 25 teeth (stations). The student will be asked to identify each tooth with the appropriate universal number. Each student will be given approximately 45 seconds per tooth. The tooth identification quiz lasts approximately 25-30 minutes.

Unannounced quizzes may be given during any scheduled lecture period. They may be short answer, multiple choice, true false, or essay. They will be given at 8:00 am or 11:00 am sharp and will be 10 minutes long. If the student is over 10 minutes late they will not be allowed to take the test and will receive a zero. If the student is absent, unless they have an excused absence, they will also receive a zero.

Each mass examination may consist of multiple choice, short answer or fill-in-the-blank questions. There will be 40-45 questions and will be approximately 50 minutes long. The student should refer to the course lecture schedule in this syllabus to review what material will be covered on the examination. Following each mass examination or quiz, a student interested in reviewing their examination/quiz may schedule a review session with the Course Director. **Note:** If a student has concerns about his/her performance on a quiz or an examination, he/she is strongly encouraged to schedule an individual review session with the Course Director.

### Remediation

If a quiz or examination is failed, the student should make an appointment with the Course Director. At that appointment, the student's performance will be reviewed and a remediation process established.

### Attendance

The Office of Student Affairs must validate all requests for excused absences. If the student is granted an excused absence, the course director will administer a make-up quiz or examination. If a student has an unexcused absence for a quiz or examination, a grade of zero (0) will be recorded. If a student with an "unexcused absence" is granted a make-up quiz or examination, a ten-point penalty will be applied to the quiz or examination grade.

The student should refer to the current *Student Guide to Academic Studies* for general policies concerning attendance.

### Course Completion

Each student is required to make a passing grade in the course. Eligibility for remediation and retesting for a failure of the course will be determined by the First Year Student Evaluation and Promotion Committee. If a student is eligible for remediation and retesting for a failure in the course, the student is

required to contact the Course Director. Once a student successfully remediates the course, a grade of 70 will be recorded for the course.