

# Dentistry Graduate (Clinical) Programs

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## Program Description

The following programs will be evaluated: Advanced Education in General Dentistry, Dental Public Health, Endodontics, Oral and Maxillofacial Pathology, Oral and Maxillofacial Radiology, Oral and Maxillofacial Surgery, Orthodontics, Pediatric Dentistry, Periodontics, and Prosthodontics.

- Advanced Education in General Dentistry provides advanced training in clinical dentistry and applied basic sciences. Up to 10 students accepted each year. Specialty Certificate awarded. 12 months in length.
- Dental Public Health is the science and art of preventing and controlling dental diseases and promoting dental health through organized community efforts. Up to 3 students accepted each year. Specialty Certificate awarded. 12 months in length.
- Endodontics is concerned with the morphology, physiology, and pathology of the human dental pulp and periradicular tissues. Its study and practice encompass the basic and clinical sciences including biology of the normal pulp, the etiology, diagnosis, prevention, and treatment of diseases and injuries of the pulp and associated periradicular conditions. Accepts 4 students per year. Specialty Certificate awarded. Optional MS in Oral Biology available. 27 months in length.
- Oral and Maxillofacial Pathology deals with the nature, identification, and management of diseases affecting the oral and maxillofacial regions. It is a science that investigates the causes, processes, and effects of these diseases. Accepts 1 student per year. Specialty Certificate and MS in Oral Biology awarded. 36 months in length.
- Oral and Maxillofacial Radiology deals with the production and interpretation of images and data produced by all modalities of radiant energy that are used for the diagnosis and management of diseases, disorders and conditions of the oral and maxillofacial region. Accepts 3 students per year. Specialty Certificate awarded. Optional MS in Oral Biology available. 24 months in length.
- Oral and Maxillofacial Surgery includes the diagnosis, surgical and adjunctive treatment of diseases, injuries and defects involving both the functional and esthetic aspects of the hard and soft tissues of the oral and maxillofacial region. Four major surgery areas are defined in training standards: 1) trauma 2) pathology 3) orthognathic surgery and 4) reconstructive surgery. Program has two options available: (1) Accepts 1 active navy/military student per year. Specialty Certificate awarded. (2) Accepts 3 students per year, MD awarded from Texas A&M University.
- Orthodontics includes the diagnosis, prevention, interception, and correction of malocclusion, as well as neuromuscular and skeletal abnormalities of the developing or mature orofacial structures. Accepts 6 students per year. Specialty Certificate and MS in Oral Biology awarded. 36 months in length.
- Pediatric Dentistry is an age-defined branch of dentistry that provides both primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence, including those with special health care needs. Accepts 11 students per year. Specialty Certificate awarded. Optional MS in Oral Biology available. 24 months in length.
- Periodontics includes didactic and clinical courses on all aspects of periodontics - including etiology, pathogenesis, systemic interactions/considerations, diagnosis, treatment planning, surgical/non-surgical therapy, maintenance care, dental implantology, interdisciplinary considerations, and oral medicine/stomatology. Accepts 3 to 4 students per year (10 maximum in total). Specialty Certificate and MS in Oral Biology awarded. 36 months in length.

- Prosthodontics: training on the diagnosis, treatment planning, rehabilitation and maintenance of the oral function, comfort, appearance and health of patients with clinical conditions associated with missing or deficient teeth and/or oral and maxillofacial tissues using biocompatible substitutes. Accepts 3 to 4 students per year (10 maximum in total). Specialty Certificate and MS in Oral Biology awarded. 36 months in length.

All programs follow a mentor model and share several learning objectives - including communication skills, problem solving and critical thinking skills, assessment of treatment objectives, and assessment of professionalism. As a result, all programs will be assessed on these specific skill sets, starting with communication skills.

### **Outcome 1 – Problem Solving and Critical Thinking Skills**

Students will be able to integrate knowledge and synthesize information, generate differential diagnoses, prioritize patient problems, and demonstrate diagnostic reasoning ability.

#### **Measure 1.1 – Graduate Student Evaluation Form**

**Data Collection:** A graduate student evaluation form will collect information on (1) ability to integrate knowledge, (2) ability to synthesize information, (3) ability to generate differential diagnosis, (4) ability to prioritize patients' problems, and (5) diagnostic reasoning ability. They will be graded using the score key of 0 = unacceptable, 1 = marginally acceptable, 2 = satisfactory, and 3 = exceptional. Scores will be provided by the various teaching faculty and reported to the Program Directors. Once data is compiled at the program level, it will be forwarded to the Graduate Office for compilation and evaluation.

**Methodology or data analysis strategy:** A spreadsheet will be created that will anonymously report all scores given to an individual student in the five areas being evaluated. Aggregate scores will be used to compare student and program scores. More successful programs will provide input on how they effectively teach problem solving and critical thinking skills to their graduate students: [See relevant spreadsheet under *Supporting Documentation*.]

#### **Target 1.1**

At least 75% of the entire graduate student population will score a 2 (satisfactory) or better.

#### **Finding 1.1: Met**

Out of the total of 92 graduate students in the clinical programs, 90 (97.8%) received a score of >2. One of the low-scoring students received a score of "1" (one) in two areas with a score of "2" (two) in the other three skill areas, which gave them an average score of 1.6. This student was a first-year student who is enrolled in a >3 year program.

The other low-scoring student is enrolled in a program that is ~2 years in duration. Their scores were uniformly unsatisfactory not only in the area assessed, but in other areas as well.

			Problem Solving / Critical Thinking Skills				
Program	Program Year	Ability to Integrate Knowledge	Ability to Synthesize Information	Ability to Generate Differential Diagnoses	Ability to Prioritize Patient's Problems	Diagnostic Reasoning Ability	Individual Student's Abilities Average
Oral Surgery C	4	3.00	2.00	3.00	3.00	3.00	2.80
Oral Surgery C	3	2.00	2.00	2.00	3.00	3.00	2.40
Oral Surgery C	2	2.00	2.00	2.00	3.00	2.00	2.20
Oral Surgery C	1	2.00	1.00	1.00	2.00	2.00	1.60
Oral Surgery	5	3.00	2.00	3.00	2.00	2.00	2.40
Oral Surgery	5	2.00	3.00	3.00	3.00	3.00	2.80
Oral Surgery	4	2.00	2.00	3.00	2.00	3.00	2.40
Oral Surgery	4	2.00	2.00	2.00	2.00	2.00	2.00
Oral Surgery	2	2.00	2.00	2.00	2.00	2.00	2.00
Oral Surgery	2	2.00	2.00	2.00	2.00	2.00	2.00

The other low-scoring student received scores of "0" (zero) in all five areas. This was also a first-year student, but they are being required to repeat the first year to remediate.

			Problem Solving / Critical Thinking Skills				
Program	Program Year	Ability to Integrate Knowledge	Ability to Synthesize Information	Ability to Generate Differential Diagnoses	Ability to Prioritize Patient's Problems	Diagnostic Reasoning Ability	Individual Student's Abilities Average
Pediatric Dentistry	2	3.00	2.80	2.90	3.00	3.00	2.94
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74
Pediatric Dentistry	2	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	2	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74

Pediatric Dentistry	2	2.80	2.80	2.80	2.80	3.00	2.84
Pediatric Dentistry	1	3.00	2.80	3.00	2.80	2.80	2.88
Pediatric Dentistry	1	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	1	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88
Pediatric Dentistry	1	0.00	0.00	0.00	0.00	0.00	0.00
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	3.00	3.00
Pediatric Dentistry	1	2.50	2.90	2.90	3.00	2.90	2.84
Pediatric Dentistry	1	2.50	2.50	2.80	2.80	2.80	2.68
Pediatric Dentistry	1	2.50	2.50	2.80	2.80	2.90	2.70

In general, the scores increased with years in program, as is to be expected.

The current findings show that, although there is some variability, the clinical graduate students show a greater than satisfactory performance when measuring Problem Solving/Critical Thinking Skills. Only two of the 92 students were less than satisfactory. Twelve of the students had an average of "Satisfactory" (2), leaving 78 of the students with an average score >2. Thirty of those 78 had an average score of 3.0, and the average of all students in all programs was 2.61.

These findings are in line with trends in applicant quality for the clinical graduate programs. The programs have generally seen an increase in the quality of the applicants' metrics with a concomitant increase in the metrics of the entering classes.

## Use of Results

Although we have met and achieved well above the target, there are areas in which we can improve. When evaluating the various skills that were assessed, it was noted that the skill, "Ability to synthesize information," was consistently the lowest scoring skill among the programs.

In order to improve upon this area, the program directors decided to make a change to a course that is common to all of the programs, "Literature Review." Instead of reviewing literature from the respective

disciplines in a random manner, it was decided to ask questions, and review the pertinent literature to the establish the best evidence-based answers. Exercises performed in this manner should engage the students in information synthesis as well as help develop the habit of applying evidence-based dentistry and an impetus for life-long learning.

The faculty and leadership of the respective were intimately involved in the plans to improve the students' performance. Since they were all involved with the assessments, they could readily identify areas of weakness and focus on those for improvement. The faculty met, and set goals for improvement. Based on those goals, they developed a plan of action and implemented it.

### **Status Update on a Previous Action**

Student feedback was sought to determine strengths and weaknesses of current courses. In one course in particular, Orthodontic/Oral Surgery case conference, this feedback prompted us to change the organization of the course in order for the graduate students to provide more useful information to students and faculty attending. The changes also encourage the students to engage in more communication between the departments prior to the case presentations in order to better integrate the diagnosis and treatment planning of the patients being reviewed.

It has been reported that this increased communication, especially between the graduate students/residents has improved the quality of the communication as well as the depth of knowledge that the students have regarding each other's contribution to the treatment planning. In order to expand on these successes, program directors in other departments are in the process of developing an interdisciplinary case conference that will integrate treatment between more of the dental specialties.

## Supporting Documentation

TAMU COLLEGE OF DENTISTRY Academic Year 2023 / 2024							
Program	Program Year	Problem Solving / Critical Thinking Skills					
		Ability to Integrate Knowledge	Ability to Synthesize Information	Ability to Generate Differential Diagnoses	Ability to Prioritize Patient's Problems	Diagnostic Reasoning Ability	Individual Student's Abilities Average
AEGD	1	2.00	2.00	2.00	2.00	3.00	2.20
AEGD	1	2.00	2.00	2.00	2.00	2.00	2.00
AEGD	1	3.00	3.00	3.00	3.00	3.00	3.00
AEGD	1	2.00	2.00	2.00	2.00	2.00	2.00
AEGD	1	3.00	3.00	2.00	3.00	2.00	2.60
AEGD	1	2.00	2.00	2.00	2.00	2.00	2.00
<b>Program Average</b>		<b>2.33</b>	<b>2.33</b>	<b>2.17</b>	<b>2.33</b>	<b>2.33</b>	<b>2.30</b>
Dental Public Health	1	2.00	2.00	2.00	2.00	2.00	2.00
<b>Program Average</b>		<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>2.49</b>	<b>2.75</b>	<b>2.85</b>
Endodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Endodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Endodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Endodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Endodontics	1	2.00	2.00	3.00	3.00	3.00	2.60
Endodontics	1	2.00	2.00	2.00	2.00	2.00	2.00
Endodontics	1	2.00	2.00	3.00	3.00	3.00	2.60
Endodontics	1	3.00	3.00	3.00	3.00	3.00	3.00
<b>Year 1 Average</b>		<b>2.25</b>	<b>2.25</b>	<b>2.75</b>	<b>2.75</b>	<b>2.75</b>	<b>2.55</b>
<b>Year 2 Average</b>		<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>
<b>Program Average</b>		<b>2.63</b>	<b>2.63</b>	<b>2.88</b>	<b>2.88</b>	<b>2.88</b>	<b>2.78</b>
Oral Pathology	3	2.70	3.00	3.00	3.00	3.00	2.94
Oral Pathology	2	2.70	2.30	3.00	2.70	3.00	2.74
Oral Pathology	1	2.70	2.70	3.00	2.70	2.30	2.68
<b>Program Average</b>		<b>2.70</b>	<b>2.67</b>	<b>3.00</b>	<b>2.80</b>	<b>2.77</b>	<b>2.79</b>
Oral Radiology	2	3.00	3.00	3.00	3.00	3.00	3.00
Oral Radiology	2	3.00	3.00	3.00	3.00	3.00	3.00
Oral Radiology	2	3.00	3.00	3.00	3.00	3.00	3.00
Oral Radiology	1	2.30	3.00	2.00	3.00	2.30	2.52
Oral Radiology	1	2.30	3.00	2.00	3.00	3.00	2.66
<b>Year 1 Average</b>		<b>2.30</b>	<b>3.00</b>	<b>2.00</b>	<b>3.00</b>	<b>2.65</b>	<b>2.59</b>
<b>Year 2 Average</b>		<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>	<b>3.00</b>
<b>Program Average</b>		<b>2.72</b>	<b>3.00</b>	<b>2.60</b>	<b>3.00</b>	<b>2.86</b>	<b>2.84</b>
Oral Surgery C	4	3.00	2.00	3.00	3.00	3.00	2.80
Oral Surgery C	3	2.00	2.00	2.00	3.00	3.00	2.40
Oral Surgery C	2	2.00	2.00	2.00	3.00	2.00	2.20
Oral Surgery C	1	2.00	1.00	1.00	2.00	2.00	1.60
Oral Surgery	5	3.00	2.00	3.00	2.00	2.00	2.40
Oral Surgery	5	2.00	3.00	3.00	3.00	3.00	2.80
Oral Surgery	4	2.00	2.00	3.00	2.00	3.00	2.40
Oral Surgery	4	2.00	2.00	2.00	2.00	2.00	2.00
Oral Surgery	2	2.00	2.00	2.00	2.00	2.00	2.00

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TAMU COLLEGE OF DENTISTRY Academic Year 2023 / 2024							
Program	Program Year	Problem Solving / Critical Thinking Skills					
		Ability to Integrate Knowledge	Ability to Synthesize Information	Ability to Generate Differential Diagnoses	Ability to Prioritize Patient's Problems	Diagnostic Reasoning Ability	Individual Student's Abilities Average
Oral Surgery	2	2.00	2.00	2.00	2.00	2.00	2.00
<b>Program Average</b>		<b>2.20</b>	<b>2.00</b>	<b>2.30</b>	<b>2.40</b>	<b>2.40</b>	<b>2.26</b>
Orthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	3	2.00	2.00	3.00	3.00	2.00	2.40
Orthodontics	3	3.00	3.00	3.00	2.00	2.00	2.60
Orthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	3	2.00	2.00	3.00	3.00	3.00	2.60
Orthodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	2	2.00	2.00	2.00	3.00	2.00	2.20
Orthodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	2	2.00	2.00	2.00	2.00	2.00	2.00
Orthodontics	2	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	1	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	1	2.00	2.00	2.00	3.00	2.00	2.20
Orthodontics	1	2.00	2.00	2.00	3.00	2.00	2.20
Orthodontics	1	2.00	2.00	2.00	3.00	2.00	2.20
Orthodontics	1	3.00	3.00	3.00	3.00	3.00	3.00
Orthodontics	1	3.00	3.00	3.00	3.00	3.00	3.00
<b>Year 1 Average</b>		<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>3.00</b>	<b>2.50</b>	<b>2.60</b>
<b>Year 2 Average</b>		<b>2.67</b>	<b>2.67</b>	<b>2.67</b>	<b>2.83</b>	<b>2.67</b>	<b>2.70</b>
<b>Year 3 Average</b>		<b>2.67</b>	<b>2.67</b>	<b>3.00</b>	<b>2.83</b>	<b>2.67</b>	<b>2.77</b>
<b>Program Average</b>		<b>2.61</b>	<b>2.61</b>	<b>2.72</b>	<b>2.89</b>	<b>2.61</b>	<b>2.69</b>
Pediatric Dentistry	2	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	2	2.80	2.80	2.80	2.80	2.80	2.80
Pediatric Dentistry	2	2.80	2.90	3.00	2.90	2.90	2.90
Pediatric Dentistry	2	2.80	2.80	2.80	2.80	2.80	2.80
Pediatric Dentistry	2	3.00	2.80	2.90	3.00	3.00	2.94
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74
Pediatric Dentistry	2	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	2	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	2	2.50	2.80	2.80	2.80	2.80	2.74
Pediatric Dentistry	2	2.80	2.80	2.80	2.80	3.00	2.84
Pediatric Dentistry	1	3.00	2.80	3.00	2.80	2.80	2.88
Pediatric Dentistry	1	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	1	3.00	3.00	3.00	3.00	3.00	3.00
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	2.90	2.88

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**TAMU COLLEGE OF DENTISTRY**  
Academic Year 2023 / 2024

Program	Program Year	Problem Solving / Critical Thinking Skills					
		Ability to Integrate Knowledge	Ability to Synthesize Information	Ability to Generate Differential Diagnoses	Ability to Prioritize Patient's Problems	Diagnostic Reasoning Ability	Individual Student's Abilities Average
Pediatric Dentistry	1	0.00	0.00	0.00	0.00	0.00	0.00
Pediatric Dentistry	1	2.80	2.80	2.90	3.00	3.00	3.00
Pediatric Dentistry	1	2.50	2.90	2.90	3.00	2.90	2.84
Pediatric Dentistry	1	2.50	2.50	2.80	2.80	2.80	2.68
Pediatric Dentistry	1	2.50	2.50	2.80	2.80	2.90	2.70
<b>Year 1 Average</b>		<b>2.52</b>	<b>2.54</b>	<b>2.65</b>	<b>2.67</b>	<b>2.65</b>	<b>2.61</b>
<b>Year 2 Average</b>		<b>2.79</b>	<b>2.86</b>	<b>2.88</b>	<b>2.88</b>	<b>2.90</b>	<b>2.86</b>
<b>Program Average</b>		<b>2.65</b>	<b>2.70</b>	<b>2.76</b>	<b>2.78</b>	<b>2.77</b>	<b>2.73</b>
Periodontics	3	2.00	2.00	2.00	2.00	2.00	2.00
Periodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Periodontics	3	2.00	2.00	2.00	2.00	2.00	2.00
Periodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Periodontics	2	3.00	2.00	2.00	2.00	2.00	2.20
Periodontics	2	3.00	2.00	2.00	3.00	2.00	2.40
Periodontics	2	3.00	2.00	3.00	3.00	2.00	2.60
Periodontics	1	2.00	2.00	2.00	2.00	2.00	2.00
Periodontics	1	2.00	2.00	2.00	2.00	2.00	2.00
Periodontics	1	3.00	2.00	2.00	2.00	2.00	2.20
<b>Year 1 Average</b>		<b>2.33</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.00</b>	<b>2.07</b>
<b>Year 2 Average</b>		<b>3.00</b>	<b>2.00</b>	<b>2.33</b>	<b>2.67</b>	<b>2.00</b>	<b>2.40</b>
<b>Year 3 Average</b>		<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>	<b>2.50</b>
<b>Program Average</b>		<b>2.60</b>	<b>2.20</b>	<b>2.30</b>	<b>2.40</b>	<b>2.20</b>	<b>2.34</b>
Prosthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Prosthodontics	3	2.50	2.50	3.00	2.50	2.50	2.60
Prosthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Prosthodontics	3	3.00	3.00	3.00	3.00	3.00	3.00
Prosthodontics	2	2.00	2.00	2.50	2.50	2.00	2.20
Prosthodontics	2	2.00	2.00	2.00	2.00	2.00	2.00
Prosthodontics	2	2.50	3.00	3.00	3.00	2.50	2.80
Prosthodontics	1	2.50	2.50	2.50	2.50	2.50	2.50
Prosthodontics	1	2.00	2.00	2.00	2.00	2.00	2.00
Prosthodontics	1	2.00	2.00	2.00	2.00	2.00	2.00
<b>Year 1 Average</b>		<b>2.17</b>	<b>2.17</b>	<b>2.17</b>	<b>2.17</b>	<b>2.17</b>	<b>2.17</b>
<b>Year 2 Average</b>		<b>2.17</b>	<b>2.33</b>	<b>2.50</b>	<b>2.50</b>	<b>2.17</b>	<b>2.33</b>
<b>Year 3 Average</b>		<b>2.88</b>	<b>2.88</b>	<b>3.00</b>	<b>2.88</b>	<b>2.88</b>	<b>2.90</b>
<b>Program Average</b>		<b>2.45</b>	<b>2.50</b>	<b>2.60</b>	<b>2.55</b>	<b>2.45</b>	<b>2.51</b>
<b>All Programs Overall Average</b>		<b>2.59</b>	<b>2.56</b>	<b>2.63</b>	<b>2.65</b>	<b>2.60</b>	<b>2.61</b>