

ORTHODONTICS

Units of Credit

One unit of credit is awarded for ten hours of lecture or seminar, twenty hours of laboratory or clinic, or thirty hours of independent study per term. In the predoctoral programs (DDS and IDS), students are assigned to comprehensive care clinics for approximately 650 hours during the second year and 1,000 hours during the third, in addition to specialty clinic rotations. Units of credit are assigned in the comprehensive care clinical disciplines in proportion to the amount of time an average student spends providing specific types of care for assigned patterns.

Courses are taught on a permanent or interim (continuing) basis. Course numbers followed by the letter 'I' indicate interim courses which are taught over two or more quarters. Units assigned to interim courses build upon each preceding quarter's unit value and culminate in a final and permanent unit value. The final unit value is transcribed with the permanent course while interim courses and corresponding unit values can be found on report cards.

Full-time enrollment in the predoctoral programs at the School of Dentistry (DDS and IDS) is defined as 16 or more units per term. Full-time enrollment in the graduate residency programs in orthodontics and endodontics and in the dental fellowship and internship programs is defined as 20 or more units per term.

Pacific's orthodontics residency program, instituted in 1971, is fully accredited by the Commission on Dental Accreditation, and is recognized for educational eligibility by the American Board of Orthodontics. The program's courses prepare the resident to provide excellent treatment based on contemporary biologic orthodontic principles.

Faculty members foster the humanistic atmosphere with informal professional relationships and mutual respect with the residents. Clinical instruction and practice are conducted in the orthodontic clinic.

Didactic courses include principles of orthodontics, cephalometrics and 3D imaging and airway consideration, facial growth, biomechanics, craniofacial biology, cleft lip and palate, research methodology, appliance laboratory, pediatrics, statistics, anatomy, bone biology and clinical use of temporary anchorage device, TMD, orthognathic surgery, restorative-orthodontic relationships, practice management, and periodontic/orthodontic care. The faculty fosters a collegial atmosphere and mutual respect between residents and faculty.

Clinical instruction and practice are conducted in the school's orthodontic clinic in six half-day clinics per week which include treatment for children, adolescents, adults, and multidisciplinary (integrated with periodontal and restorative procedures) patients. Adult patients constitute about one fourth of a student's caseload. Each resident starts approximately 50-55 new patients and 50-60 transfer patients during the residency program. Residents are also rotated through the Children's Hospital Oakland Craniofacial Panel as well as the Stanford Sleep Surgery clinic. Fixed appliance treatment employs the edgewise technique, although instruction permits a wide latitude of clinical variation based on patient needs and special faculty expertise. Experience in treating the entire range of orthodontic problems is provided. Each resident also starts multiple cases utilizing micro-implant anchorage, including MARPE (microimplant-assisted rapid palatal expander) appliances. From 1998 to 2002 the orthodontic department was the initial testing site for the new Invisalign technology, and today provides a state-of-the-art approach to treating a wide variety of patients with Invisalign. Each resident generally starts more than 10 patients with this clear appliance. Complete 3D digital records are obtained from Cone Beam Computed

Tomography (CBCT) scan, iTero intra-oral scan, and 3D facial scan. Digital orthodontics and 3D printing technology also allows residents to perform 3D digital set-up, 3D printed indirect bonding, and in-house clear aligner treatment.

Each resident engages in a research project and completes a thesis to qualify for the Master of Science in Dentistry degree. These are submitted for publication in scientific journals.

Residents are scheduled for didactic and clinical instruction five full days per week and full participation is required. While there is no prohibition of weekend private dental practice, residents' commitments during the program seriously limit this opportunity.

More information on the program, including admissions requirements, curriculum and schedule, graduation and certification requirements is available here (<http://dental.pacific.edu/academic-programs/residency-and-graduate-programs/graduate-orthodontics-program/>).

MSD (Master of Science in Dentistry) / Certificate in Orthodontics

- Initiate and complete a research project to include critical review of the literature, development of a hypothesis and the design, statistical analysis and interpretation of data
- Research expertise under the guidance of a faculty member and thesis committee, culminating in a thesis and its defense
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A graduate of an advanced specialty education program in orthodontics is competent to:

- Integrate biomedical and clinical knowledge to improve oral health.
- Think critically; use the scientific method to evaluate established and emerging biomedical and clinical science evidence to guide practice decisions.
- Practice Evidence based Orthodontics - critically evaluate the literature and other information pertaining to this field.
- Treat all types of malocclusion, whether in the permanent or transitional dentitions
- Treat and manage developing dentofacial problems which can be minimized by appropriate timely intervention
- Use dentofacial orthopedics in the treatment of patients when appropriate
- Treat and manage major dentofacial abnormalities and coordinate care with oral and maxillofacial surgeons and other healthcare providers
- Provide all phases of orthodontic treatment including initiation, completion and retention
- Manage patients with functional occlusal and temporomandibular disorders
- Treat or manage the orthodontic aspects of patients with moderate and advanced periodontal problems
- Coordinate and document detailed interdisciplinary treatment plans which may include care from other providers, such as restorative dentists and oral and maxillofacial surgeons or other dental specialists
- Develop and document treatment plans using sound principles of appliance design and biomechanics

- m. Use dental materials knowledgeably in the fabrication and placement of fixed and removable appliances
- n. Develop and maintain a system of long-term treatment records as a foundation for understanding and planning treatment and retention procedures
- o. Practice orthodontics in full compliance with accepted Standards of ethical behavior
- p. Understand current three dimensional (3D) imaging techniques to evaluate the developmental and functional inter-relationships between TMJ, occlusions, airway, and facial growth
- q. Understand the following supporting knowledge:
 - Biostatistics
 - History of Orthodontics and Dentofacial Orthopedics
 - Jurisprudence
 - Oral Physiology
 - Pain and Anxiety Control
 - Pediatrics
 - Periodontics
 - Pharmacology
 - Preventive Dentistry
 - Psychological Aspects of Orthodontic and Dentofacial Orthopedic Treatment
 - Public Health Aspects of Orthodontics and Dentofacial Orthopedics
 - Speech Pathology and Therapy
 - Sleep physiology and Sleep Disordered Breathing
- r. Engage in ongoing quality assurance to improve patient outcomes.
- s. Behave professionally: manage personal behavior and performance in accordance with standards of the school and the profession.
- t. Practice in accordance with current local, state, and federal laws and regulations.
- u. Demonstrate ongoing reflection, self-assessment, continuous learning, and professional development.
- v. Participate in professional activities to promote the profession and serve individuals and communities.

OR 430	Surgical-Orthodontic Treatment	4
OR 431	Orthognathic Surgery Seminar I	4
OR 432	Multidisciplinary Seminar I	2
OR 433	Retention Seminar I	1
OR 440	Imaging in Orthodontics, TMJ & Airway Consideration	2
OR 441	Orthodontic Treatment of Craniofacial Anomolies	2
OR 442	Clear Aligner Technique I	4
OR 443	Dental Sleep Medicine I	2
OR 444	Periodontic-Orthodontic Relations	4
OR 456	Clinical Orthodontics I	30
OR 457	Mixed Dentition Orthodontics I	8
OR 458	Surgical Orthodontics I	2
OR 459	Clinical Orthodontics in Craniofacial Anomalies I	2
OR 501	Principles of Orthodontics	8
OR 502	Microimplant I	1
OR 503	Research Design I	2
OR 504	Research Practicum and Thesis II	5
OR 511	Practice Management I	2
OR 512	Preparation for Specialty Examination	2
OR 514	Temporomandibular Joint Disorders	1
OR 521	Current Literature Seminar II	4
OR 523	Comprehensive Case Analysis Seminar II	4
OR 524	Treatment Planning Seminar II	8
OR 531	Orthognathic Surgery Seminar II	4
OR 532	Multidisciplinary Seminar II	2
OR 533	Retention Seminar II	1
OR 541	Orthodontic Treatment of Craniofacial Anomalies II	4
OR 542	Clear Aligner Technique II	4
OR 543	Dental Sleep Medicine II	2
OR 544	Multidisciplinary Course	2
OR 556	Clinical Orthodontics II	38
OR 557	Mixed Dentition Orthodontics II	8
OR 558	Surgical Orthodontics II	3
OR 559	Clinical Orthodontics in Craniofacial Anomalies II	3
OR 602	Microimplant II	1
OR 603	Research Design II	1
OR 604	Research Practicum and Thesis III	6
OR 611	Practice Management II	2
OR 612	Ethics	1
OR 613	Orthodontics Speaker Series	1
OR 621	Current Literature Seminar III	1
OR 623	Comprehensive Case Analysis Seminar III	1
OR 624	Treatment Planning Seminar III	2
OR 631	Orthognathic Surgery Seminar III	1
OR 632	Multidisciplinary Seminar III	1
OR 656	Clinical Orthodontics III	9
OR 657	Mixed Dentition Orthodontics III	2
OR 658	Surgical Orthodontics III	1
OR 659	Clinical Orthodontics in Craniofacial Anomalies III	1

Master of Science in Dentistry - Orthodontics

BMS 401	Research Philosophy and Design I	1
BMS 502	Biomedical Science	1
OR 401	Cephalometrics	4
OR 402	Facial Growth	4
OR 403	Critical Thinking - Research Design	3
OR 404	Research Practicum and Thesis I	2
OR 410	Biomechanics	7
OR 411	Genetics in Orthodontics	2
OR 412	Orofacial Clefts and Abnormal Craniofacial Development	2
OR 414	Introduction to Contemporary Orthodontics	4
OR 420	Bone Biology and Microimplant	4
OR 421	Current Literature Seminar I	4
OR 422	Anatomy	1
OR 423	Comprehensive Case Analysis Seminar I	4
OR 424	Treatment Planning Seminar I	8
OR 426	Principles of Orthodontic Technique	5