DENT 501. Biological Aspects of the Stomatological System. 0 - 2 Units.
This course is a review of biochemistry, molecular and cellular biology, histology, and oral anatomy and an expansion of oral biological topics that underlie the disciplines of endodontics, orthodontics, periodontics, and pediatric dentistry.

DENT 502. Correlative Medical Science. 0 - 2 Units.
Case-based discussion of selected systemic disease commonly encountered by the dentist.

DENT 503. Facial Growth and Development. 0 - 1 Units.
Emphasis on the qualitative, quantitative, and integrative changes during postnatal craniofacial growth and development.

DENT 504. Advanced Facial Growth. 1 Unit.
Student participation in seminar evaluation series dealing with problems and controversies apparent in the literature in regard to theories of growth, development, and aging. Emphasis on the craniofacial literature, but not exclusively.

DENT 505. Dentofacial Anomalies. 0 - 1 Units.
This course is designed to provide the student with the practical experience regarding the multidisciplinary aspects of diagnosis and treatment of patients with craniofacial anomalies. Observation of team sessions and active participation in patient examinations, diagnosis, and treatment planning.

DENT 507. Dental Ethics for the Graduate. 0 - 1 Units.
This 8 week course is given in group discussion format. Topics of ethical dilemmas, informed consent, professional (both national and local) codes of ethics, IRB introduction, patient autonomy, contractual obligations and purrery are discussed using case scenarios and student presentations.

DENT 508. Master's Thesis Protocol. 2 Units.
The requirements for the degree of Master of Science in Dentistry include the successful completion of a suitable research experience, demonstration of scholarly attainment, and the ability to conduct directed research.

DENT 509. Temporomandibular Disorders, Orofacial Pain and Sleep Disorders. 0 - 3 Units.
This course will enable first year dental residents to learn the principles of pain mechanisms, types of OFP and Sleep Disorders, differential diagnosis and management of these conditions in adults and children. By the end of this course the residents should be able to identify the most common types of OFP and sleep disorders, be able to make the differential diagnosis, and manage simple OFP case and / or refer the most complex OFP cases. Recommended preparation: DMD, DDS or equivalent degree.

DENT 510. Epidemiology and Biostatistics. 0 - 3 Units.
A detailed presentation of epidemiological and biostatistical techniques designed to acquaint the student with a broad spectrum of scientific approaches and to prepare for a research project. Topics include design of observational and experimental studies, common biostatistical techniques encountered in the dental literature such as t-test, ANOVA, chi-square, correlation and regression, and assessing the validity of diagnostic tests. Instruction includes lectures, critique of selected literature and computer analysis of data.

DENT 512. Advanced Oral Pathology. 0 - 3 Units.
Lectures and seminars on the clinical and histopathologic characteristics of many of the common oral diseases. Special emphasis on developing a logical approach to clinical and histopathologic diagnosis. Participation is expected for in-class discussion of the clinical and histopathologic material presented.

DENT 513. Anatomy of the Head and Neck. 0 - 3 Units.
This course deals with the structural, functional, and clinical relationships of the many organs and organ systems which comprise the head, neck, and pharyngeal regions of the human body.

DENT 514. Research Methods: Preparation. 0 - 1 Units.
The goal of this course is to facilitate a formal statement of the student's research idea as preparation for working with a thesis committee or undertaking independent research.

DENT 516. Microbiology, Immunology, and Immune Systems. 0 - 1 Units.
This course reviews bacterial structure and classification, provides insight into oral bacterial pathogenesis. Principles of antibiotic use and mechanisms of resistance are reviewed. Microbial diagnostic methodologies are discussed. Integration of periodontics, endodontics, and pediatric dentistry is stressed as it relates to the inflammatory process in the human host.

DENT 518. Behavioral Considerations in Oral Health Care. 0 - 1 Units.
This course focuses on the behavioral knowledge and skills the oral health practitioner must possess in order to deliver effective, patient-centered care. Specifically, the course is designed to enhance graduate students' existing knowledge and skills in relation to dentist-patient communication, management of diverse patient populations, and patient education and facilitation of health behavior change.

DENT 520. Skeletal Anchorage. .5 Unit.
This course provides 1st year orthodontic residents with the theoretical knowledge and practical skills necessary to successfully treat orthodontic patients in need of absolute anchorage with orthodontic mini-implants. In addition, the most current articles in the orthodontic literature pertaining to this topic are read and discussed. The theory will be supplemented by practical exercises as necessary.

DENT 521. Manot Cave Dig, Israel. 0 - 1 Units.
This project is an ongoing collaboration between the CWRU School of Dental Medicine and Tel Aviv University. The newly discovered excavations have produced thousands of butchered deer bones, hundreds of stone tools, an one partial human skull. Traditionally CWRU faculty and students will be going in July to continue their work. Interested students are given the opportunity to learn basic archeological techniques while working in a newly discovered cave in Northern Israel. The Manot cave was discovered in 2008 and after 6 field seasons has yielded thousands of artifacts shedding light on what life was like for our early ancestors. Each participant will rotate through several stations of Dental Medicine and Tel Aviv University. The newly discovered faunal and floral remains. In addition to the hands-on experience they also get to attend field lectures by some of the world's most famous researchers in human prehistory. Lodging is in comfortable cabins within easy walking distance from the cave site. This two-week field and lab experience is not only educational but also presents the opportunity to travel around the beautiful country of Israel.
DENT 522. Orthodontic Biomechanics. 1 Unit.
This course provides first year orthodontic residents with the theoretical
biomechanical knowledge necessary to successfully treat a wide range of
orthodontic malocclusions using the preadjusted straight wire appliance,
the segmented arch technique, treatment auxiliaries, and orthodontic
mini-implants. In addition, the most current articles in the orthodontic
literature pertaining to this topic are read and discussed. The theory will
be supplemented by practical exercises as necessary.

DENT 550. Clinical Pharmacology. 0 - 1 Units.
This course is designed to enable residents to obtain an understanding
of the pharmacology of the most commonly prescribed medications;
pharmacotherapeutic concepts in relationship to disease
pathophysiology; rational drug therapy in the treatment of disease;
drug-drug interactions and drug-disease interactions; adverse drug
events. Residents will be expected to apply information on disease
pathophysiology and pharmacotherapy to clinical cases. The ultimate
goal is to provide relevant information to assist clinicians in practice.

DENT 555. Management of Medical Emergencies. 0 - 1 Units.
This course covers the diagnosis and management of common medical
emergencies, with special emphasis on patient evaluation and history
taking to prevent such emergencies in the dental office. Venipuncture
technique and the use of emergency equipment are demonstrated.
Also included is a basic course in cardiopulmonary resuscitation, with
practical demonstrations and examinations that lead to certification in
basic CPR.

DENT 561. Orthodontics for Pediatric Dentists I. 0 - 3 Units.
The course is designed to familiarize the pediatric dentistry residents
with (1) the clinical evaluation of patients to determine appropriateness
of orthodontic intervention, (2) record taking, (3) diagnosis, (4) treatment
planning of cases in the mixed and permanent dentition, (5) treatment
administration and (6) retention strategies. The primary focus will be on
interceptive orthodontics including growth modification and corrective
orthodontics in the permanent dentition. First in a series of four courses.

DENT 562. Orthodontics for Pediatric Dentists II. 1 Unit.
Second in a series of four courses. See DENT 561 Orthodontics for
Pediatric Dentists.

DENT 564. Advanced Principles of Occlusion. 1 Unit.
This course is designed to provide in-depth knowledge of the
structure and function of all anatomic components involved in
occlusion, biomechanics of articulation and mastication; recording of
mastication patterns; diagnosis of occlusal dysfunction; relationship to
neuromuscular and temporomandibular joint anatomy and pathology;
evidence based therapy used in the management of occlusal and
temporomandibular disorders and its significance to inflammatory
periodontal disease.

DENT 565. Practice Management I (Ortho). 0 - 1 Units.
Seminar and demonstration course designed to prepare the student for
all phases of the "business" of orthodontics as well as the responsibility
of being a "professional." Management of the department clinic, private
practice management, office visitations, and the business community,
and ethics through the use of guest speakers on jurisprudence,
personal and professional insurance, accounting, estate planning, risk
management, informed consent, banking, office design, organized
dentistry and investments. First in a series of four courses.

DENT 567. Practice Management III (Ortho). 1 Unit.
Third in a series of four courses. (See DENT 565.)

DENT 568. Practice Management IV (Ortho). 1 Unit.
Fourth in a series of four courses. (See DENT 565.)

DENT 569. Orthodontic Literature Review I. 1 Unit.
The course will focus on contemporary and classic literature selected to
cover a wide range of orthodontic topics. The selected literature includes
the reading list suggested by the American Board of Orthodontics in
preparation for the Part II of the ABO examination. Students will be
required to discuss the articles and answer questions pertaining to the
reviewed material.

DENT 570. Orthodontic Literature Review II. 1 Unit.
The course will focus on contemporary and classic literature selected to
cover a wide range of orthodontic topics. The selected literature includes
the reading list suggested by the American Board of Orthodontics in
preparation for the Part II of the ABO examination. Students will be
required to discuss the articles and answer questions pertaining to the
reviewed material.

DENT 572. Pre-Clinical Principles in Orthodontics. 0 - 1 Units.
This course is comprised of a series of seminars presented by
orthodontic faculty covering topics that will prepare the first orthodontic
resident for the initial phases of clinical training.

DENT 573. Advanced Specialty Principles: Clinical I. 2 Units.
Full fixed orthodontic appliance treatment of patients in an educational
setting. First in a series of four courses.

DENT 574. Advanced Specialty Principles: Clinical II. 2 Units.
Second in a series of four courses. (See DENT 573.)

DENT 575. Advanced Specialty Principles: Clinical III. 2 Units.
Third in a series of four courses. (See DENT 573.)

DENT 576. Advanced Specialty Principles: Clinical IV. 1 Unit.
Fourth in a series of four courses. (See DENT 573.)

DENT 580. Orthodontics-Oral Surgery Conference. 0 - 1 Units.
A seminar series involving a multidisciplinary approach to the treatment
of patients with severe craniofacial deformities. Begins in the fall of each
year (continuing for four semesters) with a series of lectures, followed
by assignment of patients supervised jointly by the departments of
orthodontics and oral surgery. Meetings held bimonthly to review patient
progress, plan treatment, and present cases for discussion. Each student
involved in all phases of treatment: presurgical orthodontics, the surgical
procedure, finishing orthodontics, and retention.

DENT 583. Orthodontic Diagnostic Seminar I. 1 Unit.
Series of lectures and seminars covering the science of orthodontic
diagnosis. Course consists of lectures on techniques of diagnosis,
treatment planning, and critique of cases from the department or from
faculty private practices. Content also includes long-term follow-up of
post retention cases. First in a series of three courses.

DENT 584. Orthodontic Diagnostic Seminar II. 1 Unit.
Second in a series of three courses. (See DENT 583.)

DENT 585. Orthodontic Diagnostic Seminar III. 1 Unit.
Third in a series of three courses. (See DENT 583.)

DENT 586. Limited Tooth Movement for the Dental Specialist. 0 - 1 Units.
A review of the rationale for orthodontic treatment in periodontally
diseased patients and in pre-restorative dentitions. Lectures, audio-visual
programs, and technique sessions. Diagnosis, treatment planning, and
various methods of tooth movement.

DENT 587. Periodontal Prosthesis. 1 Unit.
This course examines and defines the periodontal prosthetic
interrelationships beginning with treatment planning and continuing
with discussing the utilization of the combined treatment modalities. It
focuses on provisionalization, furcation treatment, occlusion, aesthetics,
removable appliances, and special advanced treatment problems.
DENT 588. Hospital Rotation. 2 Units.
Students are assigned full time to anesthesia service and perform such
duties as directed by anesthesiology staff: preoperative evaluation
of patients, indications and contraindications for specific methods
of anesthesia, relationship of medical problems to anesthesia risks,
assisting in preparation of patients for anesthesia, intubation and
anesthesia management, assisting in the management of complications,
and post-anesthetic recovery management including monitoring of vital
signs, blood gases, EKG, etc., and participation in post-anesthesia rounds
and conferences.

DENT 589. Orthodontic Diagnostic Seminar IV. 1 Unit.
The fourth course in a series which consists of weekly lectures and seminars covering the science of orthodontic diagnosis. Consists of lectures on the techniques of diagnosis, various diagnostic aids, and case planning. Also consists of seminars where the students perform diagnosis, plan treatment and critique cases from the department. This course is used for long-term follow-up clinic.

DENT 651. Thesis M.S.D.. 1 - 9 Units.
Subsections for each program area of study: endodontics, orthodontics, periodontics, or pediatric dentistry.

DENT 661. Conscious IV Sedation I. 2 Units.
Didactic portion covers physical evaluation, physiology, pharmacology, emergencies, and techniques. Cardiac monitoring, basic life support, and advanced cardiac life support.

DENT 662. Conscious IV Sedation II. 1 Unit.
(See DENT 661.) Supervised clinical experience in conscious IV sedation.

DENT 663. Implant Dentistry I Periodontics. 1 Unit.
Designed to enhance the understanding of current concepts and their role in the multidisciplinary treatment of the patient.

DENT 664. Implant Dentistry II Periodontics. 1 Unit.
(See DENT 663.) Clinical demonstration, participation, and case presentation in implant dentistry.

DENT 682. Cephalometrics. 0 - 1 Units.
A lecture and laboratory course in cephalometric roentgenography leading to a thorough understanding of craniofacial radiographic techniques. Use of x-rays and radiation hygiene, and technical and interpretive proficiency.

DENT 683. Imaging and IT. 1 Unit.
This course is designed to give some basic computer knowledge and prepare the resident for the use of computers in the orthodontic office.

DENT 684. Radiology and Cephalometrics. 1 Unit.
Fundamentally related to cephalometric radiography, skeletal morphology, and cephalogram interpretations of historic analyses via the Krogman-Sassouni Syllabus. Also, clinical evaluations of hard and soft tissue relationships of the airway and skeletal maturation are presented. The use of Bolton Standards in craniofacial analysis is stressed.

DENT 692. Restorative Fellowship. 6 Units.
Provides for 12 months of clinical and didactic training in all phases of general dentistry beyond the scope of predoctoral dental education. Areas of emphasis include advanced restorative techniques, proper selection of restorative materials, restoration of implants, fixed and removable prosthodontics, and esthetic dentistry. At the discretion of the course director, students may register for an additional 12 months, during which time the student will build on knowledge attained during the first year, continue with advanced didactic instruction, expand their clinical experience through continued patient care, participate in clinical research, and have teaching opportunities.

DENT 693. Fellowship of Advanced Clinical Education - Advanced Dental Studies. 1 - 9 Units.
Fellowship of Advanced Clinical Education (or F.A.C.E.) - Advanced Dental Studies is a special course per agreement in collaboration with Qassim University in Saudi Arabia.

DENT 694. Fellowship in Dentistry. 6 Units.
The Fellowship in Dentistry provides for advanced clinical, didactic and research training beyond the scope of the pre-doctoral dental education.

DENT 695. Oral Surgery Residency. 1 - 10 Units.
Allows registration for non-degree-seeking students in graduate level courses at the direction of the department.

DENT 696. Advanced Dental Training. 0 - 6 Units.
This course is a one year advanced training in dental medicine at Case Western Reserve University School of Dental Medicine. Responsibilities may include clinical and didactic responsibilities. The course is designed to give students clinical experience in a defined focus area.

DENT 697. Advanced Dental Training II. 1 Unit.
Continuation of Advanced Dental Training I. Prereq: D.D.S. or equivalent.

DENT 698. Multidisciplinary Seminar. 0 - .5 Units.
This seminar meets monthly to discuss multidisciplinary cases to develop treatment recommendations for the patients presented. Each graduate department selects a clinical case that requires the services of at least three dental specialties. Ideally, patients should be in the beginning stage of treatment planning so the input from the various specialties can be used to develop a comprehensive plan to establish a healthy oral environment. It is expected that several alternative treatments will be discussed and the relative merits of each approach evaluated. To maximize the benefit of this seminar to the student learning process, an attending faculty member should be present from each of the dental specialty programs. In addition, all seminars have a Prosthodontist to provide input on the restorative treatment options.

DENT 699. AEGD Residency Training. 1 - 8 Units.
This is a multidisciplinary course that encompasses didactic and clinical training in general dentistry.