HDO 500: Biology of the Oral Mineralized Tissues
This course deals with the basic chemistry, crystallography, ultrastructure, and metabolism of the calcium phosphates involved in the formation and physiological and pathological resorption of the various mineralized tissues found in or associated with the oral cavity (enamel, dentin, cementum, bone). Ectopic calculus formation will be examined.
Prerequisites: HDO 560, 561, 562, and 563 or their equivalent. Fall and Spring
3 credits, Letter graded (A, A-, B+, etc.)

HDO 510: Salivary Metabolism and Secretion
Consideration is given to the normal and abnormal structure and function of the glandular systems found in the oral cavity. The composition, regulation, and functions of the secretions from the major and minor salivary glands will receive particular attention.
3 credits, Letter graded (A, A-, B+, etc.)

HDO 520: Oral Microbial Systems
Consideration is given to the structural composition, metabolism, and environmental relationships of the bacterial systems formed on and in association with the oral hard and soft tissues. Specific and mixed bacterial populations, such as those resident on extra-oral mucosal surfaces and the skin and their role in oral disease will be dealt with.
Prerequisite: HDO 560, 561, 562, and 563 or their equivalent. Fall and Spring
3 credits, Letter graded (A, A-, B+, etc.)

HDO 530: Molecular Biology and Pathology of the Periodontium
This course deals with the ultrastructure and biochemical composition of the periodontal tissues, remodeling of the extracellular matrix with an emphasis on the role of metalloproteinases; the microbial interrelations with the organic and inorganic components of the periodontal tissues, the biochemical dynamics of gingival inflammation and wound healing, and the metabolic processes responsible for the composition and flow of gingival crevicular fluid. Prerequisites: HDO 560, 561 and 563 or their equivalent. Fall and Spring
2 credits, Letter graded (A, A-, B+, etc.)

HDO 535: Epithelial Keratinization and Differentiation
The course examines the growth and differentiation of stratified squamous epithelia. Particular emphasis is placed on molecular events involved in the differentiation program. Consideration is also given to mechanisms involved in oral and cutaneous disorders.
Prerequisites: Permission of instructor required; HBP 531 suggested; students must have had a background in cellular biochemistry molecular biology.
Fall and Spring, 2 credits, Letter graded (A, A-, B+, etc.)

HDO 550: Oral Diagnostics and Therapeutic Technology, Lectures and Laboratory Techniques
Recent advances in the use and development of research technology for the early diagnosis and treatment monitoring of oral and systemic disease. Special attention is paid to the principles of technology transfer including patents and patenting; searching of on-line databases is a key component. The course includes relationships of dry mouth to salivary physiology, diabetes, and drug medications; salivary film measurements, wetting of oral surfaces, viscoelasticity and lubricity; the use of the Periotron and enzyme assays for the diagnosis of gingivitis and periodontal disease; instrumentation used in sensitive teeth measurement and evaluation of treatment effectiveness using oral compositions and iontophoresis; oral candidiasis and denture stomatitis and early detection and causes of dental caries; oral malodor measurements including use of the Halimeter and its use in the formulation of oral compositions.
Application to clinical practice and clinical studies is covered.
3 credits, Letter graded (A, A-, B+, etc.)

HDO 560: Oral Biology and Pathology I
The first of four comprehensive courses on molecular structure, biochemical and physiological function, developmental anatomy and pathology of the various systems that constitute the oral apparatus. Covers the embryological development of the face and oral cavity and the biology and pathology of the oral mineralized tissues. Prerequisites: Undergraduate degree in basic science; permission of instructor. Fall and Spring
3 credits, Letter graded (A, A-, B+, etc.)

HDO 561: Oral Biology and Pathology II
The second of four comprehensive courses on molecular structure, biochemical and physiological function, developmental anatomy and pathology of the various systems that constitute the oral apparatus. Covers the biology and pathology of the periodontal structures and the microbiology of the oral cavity. Prerequisites: Undergraduate degree in basic science; permission of instructor. Fall and Spring
3 credits, Letter graded (A, A-, B+, etc.)

HDO 562: Oral Biology and Pathology III
This course is the third of four comprehensive courses on molecular structure, biochemical and physiological function, developmental anatomy, and pathology of the various systems that constitute the oral apparatus. The course consists of the following two units of instruction: (1) the biology and pathology of the salivary glands and their products and (2) the biology and pathology of the periodontal structures. Prerequisites: Undergraduate degree in basic science and permission of instructor.
Fall and Spring
3 credits, Letter graded (A, A-, B+, etc.)

HDO 563: Oral Biology and Pathology IV
This course is the last of four comprehensive courses on molecular structure, biochemical and physiological function, developmental anatomy and pathology of the various systems that constitute the oral apparatus. Covers the biology and pathology of the oral sensory systems and the biology and pathology of oral motor systems. Prerequisites: Undergraduate degree in basic science and permission of instructor. Admission to Graduate Health Sciences Center Program.
3 credits, Letter graded (A, A-, B+, etc.)

HDO 590: Research Projects in Oral Biology and Pathology
Individual laboratory projects closely supervised by faculty members to be carried out in their research laboratories.
3 credits, Letter graded (A, A-, B+, etc.) May be repeated 2 times FOR credit.

HDO 599: Graduate Research
Original investigations undertaken with supervision of a faculty member.
1-12 credits, Letter graded (A, A-, B+, etc.) May be repeated for credit.

HDO 690: Oral Biology and Pathology Seminars
Research seminars by students, staff, and visiting scientists. Prerequisite: permission of instructor. Fall and Spring
1 credit, Letter graded (A, A-, B+, etc.) May be repeated for credit.

HDO 695: Oral Biology and Pathology Teaching Practicum
Practice instruction in the teaching of oral biology and pathology at the undergraduate level carried out under faculty orientation and supervision.

3 credits, Letter graded (A, A-, B+, etc.)

**HDO 699: Thesis Research Oral Biology and Pathology**

Dissertation Research, Prerequisite: Advancement to Candidacy Passing.

Fall, Spring, and Summer, 1-9 credits, Letter graded (A, A-, B+, etc.)

May be repeated for credit.

**HDO 702: Oral Pathology**

Covers the clinical and histopathologic manifestations of acquired, inherited and neoplastic diseases of the human oral cavity. Includes benign and malignant tumors of bone, odontogenic and non-odontogenic cysts and tumors, mucosal and salivary gland diseases, and oral manifestations of systemic diseases.

Letter graded (A, A-, B+, etc.)

**HDO 704: Translational Oral Biology**

Covers the biochemical, physiological, microbiological and electronic principles involved in a variety of techniques used as aids in the diagnosis of oral diseases.

Letter graded (A, A-, B+, etc.)

**HDO 705: Oral Medicine**

Introduces the principles of patient care related to stomatologic and dermatologic disease, neurologic abnormalities, hematologic disturbances, and the medically compromised patient. 16 course hours Prerequisites: HDO 701

Letter graded (A, A-, B+, etc.)

**HDO 706: Oral Facial Genetics**

Focuses on the utilization, preparation and analysis of basic human genetics in clinical situations. Covers genetic disorders of the craniofacial complex and dentistry for the multiple handicapped patient. 30 course hours Prerequisite: HD 501 or permission of instructor

Letter graded (A, A-, B+, etc.)

**HDO 707: Clinical Pharmacology**

Covers pharmacology in dental practice emphasizing clinical usage of antibiotics, sedatives, tranquilizers and analgesics. Drug interactions and side effects are discussed. 18 course hours Prerequisite: HD 608

Letter graded (A, A-, B+, etc.)

**HDO 803: Oral Pathology Conference II**

Clinicopathologic case presentations and development of differential diagnosis skills. 11 course hours Prerequisites: HDO 702, HDO 703

Letter graded (A, A-, B+, etc.)

**HDO 805: Summer Research**

SUMMER RESEARCH

S/U grading

May be repeated for credit.

**HDO 821: Year IV Clinic: Oral Diagnostics**

The clinical continuation of HDO 704 in which the principals of oral diagnostics are applied to patient care.

Letter graded (A, A-, B+, etc.)