

OBIO - ORAL BIOLOGY

OBIO 601 Cellular and Molecular Biology

Credits 2 to 3. 2 to 3 Lecture Hours. Intermediary metabolism of protein, protein synthesis, nucleic acid metabolism and biochemical endocrinology; offered fall semester. **Prerequisite:** none.

OBIO 602 General Histology

Credits 3. 3 Lab Hours. General histology and microscopic anatomy of the four basic tissues. Laboratory study of electron micrographs and prepared slides is employed; offered fall semester.

OBIO 603 Gross Anatomy

Credits 4. 4 Lab Hours. Conceptual and functional basis for understanding macroscopic structure of the human body utilizing laboratory dissection of human cadavers; regional anatomy of the back, thorax, upper limb and head is emphasized; offered fall semester.

OBIO 604 Neuroscience

Credits 2. 1 Lecture Hour. 1 Lab Hour. Lectures and laboratory sessions on gross and microscopic anatomy of the human central and peripheral nervous system; neurophysiology of the central nervous system, peripheral nerves, special sense, autonomic and clinical mediation; offered spring semester.

OBIO 605 Mammalian Physiology

Credits 4 to 5. 4 to 5 Lab Hours. Basic physiology principles of cells, muscle, nerve, blood, heart, circulation, respiration, digestion, excretion and central nervous system in maintaining homeostasis; classical laboratory experiments are used to demonstrate these principles; offered spring semester.

OBIO 606 Oral Histology

Credits 3. 3 Lecture Hours. Origin and development of the dental tissues and their related structures; current publications and research reports are used to provide the opportunity to investigate some phase of active interest to them and their anticipated future interest in practice; offered spring semester.

OBIO 607 Microbiology

Credits 3. 3 Lecture Hours. Introduction to basic microbiology with emphasis on oral and medical microbes, taxonomy and microbial physiology; taught in conjunction with dental curriculum; additional readings and discussions for graduate students; offered fall and spring semesters.

OBIO 608 Introduction to Evidence-Based Dentistry and Clinical Research

Credits 3. 3 Lecture Hours. A year-long course for graduate students consisting of lecture sessions, small group discussions, and seminars; progress grade will be given at the end of the first semester followed by a final grade of record at the end of the year; provide dental scientists and dentists-in-training with the knowledge and tools to take advantage of constantly increasing knowledge in clinical, material, and basic biomedical sciences; taught in conjunction with dental curriculum; additional readings and discussions for graduate students; not available for distance learning.

OBIO 610 Responsible Conduct in Biomedical Research

Credit 1. 1 Lecture Hour. A survey of topics required for research; utilizes outside reading assignments, online modules, class presentation and discussion of cases associated with topic; offered spring semester of odd years.

OBIO 611 Research Design and Methodology

Credits 2. 2 Lecture Hours. An introduction to the research process; sufficient background in research design and methodology is provided to enable students to critically evaluate literature and assist in the formulation of research projects; includes discussion of rules and regulations for human and animal research; offered fall semester.

OBIO 612 Seminar: Current Issues in Science

Credit 1. 1 Other Hour. Guest lectures, workshop lectures and discussions include topics of current interest to program faculty and students and of general interest in the biomedical sciences; offered fall and spring semesters.

OBIO 613 Interactive Writing and Grant Proposals

Credit 1. 1 Lecture Hour. Interactive writing, produce National Institutes of Health (NIH) formatted grant. **Prerequisites:** Admission to MS or PhD in Oral Biology.

OBIO 621 Applied Biostatistics

Credits 2. 2 Lecture Hours. Overview of applied biostatistics with an emphasis on oral health research; training includes computer-based instruction in data analysis using SPSS; offered spring semester.

OBIO 622 Advanced Biostatistics

Credits 2. 2 Lecture Hours. Advanced biostatistical methods, including multivariate and longitudinal analysis, computer simulations, and applications in craniofacial biology. **Prerequisites:** OBIO 621 or equivalent.

OBIO 630 Growth and Mechanisms of Development

Credits 0 to 2. 0 to 2 Lecture Hours. Normal prenatal growth and development; patterns and mechanisms of growth and maturation; offered fall semester.

OBIO 631 Advanced Craniofacial Development and Craniofacial Anomalies

Credits 1 to 10. 1 to 10 Lecture Hours. Detailed investigation of the basic processes and mechanisms of postnatal growth and adaptation of the craniofacial region; emphasis on the areas of controversy surrounding current understanding of the factors influencing postnatal craniofacial growth and form; adaptive capabilities of growth and form; adaptive capabilities of craniofacial tissues; effect of altered function on craniofacial growth and form; influence of treatment on craniofacial growth and form; theories of craniofacial growth; offered fall semester.

OBIO 632 Physical Growth and Maturation

Credits 0.50 to 2. 0.50 to 2 Lecture Hours. Pattern and mechanisms of postnatal growth and maturation; offered spring semester.

OBIO 633 Microscopy

Credits 2. 2 Lecture Hours. Principles and methods of scanning electron microscopy; technical instruction includes tissue preparation and equipment maintenance; usage of scanning electron, light, fluorescent and confocal microscopes and computer imaging techniques; offered spring semester.

OBIO 634 Nanobiomaterials and Regenerative Medicine

Credit 1. 1 Lecture Hour. State-of-the-art knowledge of nanobiomaterials and regenerative medicine; topics include nanobiomaterials design, syntheses and preparation, nanobiotechnology for scaffold fabrication, surface functionality of nanobiomaterials, nanobiomaterials for drug and gene delivery, stem cell and nanobiomaterials, and the applications of nanobiomaterials for various tissue regeneration (bone, cartilage, tooth, et. al.).

OBIO 640 Cellular and Molecular Biology of Oral Craniofacial Tissues I

Credits 1 to 10. 1 to 10 Lecture Hours. A general survey intended to provide background information concerning the methods and theory of modern cellular/molecular biology; lays the groundwork for more advanced study, aids those interested in incorporating cellular/molecular approaches into their research work, and enables one to read, understand and evaluate current scientific literature; offered spring semester.

Prerequisites: OBIO 601 or equivalent.

OBIO 641 Cellular and Molecular Biology of Oral Craniofacial Tissues II

Credits 1 to 10. 1 to 10 Lecture Hours. Processes of epithelial-mesenchymal interaction as related to odontogenesis, amelogenesis, dentinogenesis, collagen formation, intracellular and extracellular calcium homeostasis, plaque and calculus, and wound healing; offered spring semester.

OBIO 642 Techniques in Cell and Molecular Biology

Credit 1. 1 Lecture Hour. Principal methods of cellular/molecular investigation of proteins and nucleic acids including immunocytochemistry, western blotting, northern/southern blotting, radioimmunoassay, in situ hybridization, polymerase chain reaction, intracellular recording, and fluorescence confocal microscopy; offered summer semester. **Prerequisite:** OBIO 640 or equivalent.

OBIO 643 Advanced Biology of Mineralized Tissues

Credits 2. 2 Lecture Hours. Overview of the advanced biology of mineralized tissues and their roles in oral health and disease; basic molecular biology of teeth and the skeleton including bone, cartilage, and other aspects of systemic biology; offered fall semester.

OBIO 644 Evolutionary and Functional Morphology

Credit 1. 1 Lecture Hour. Comparative anatomy and evolution of craniofacial structure with emphasis on current techniques of electrophysiology, kinesiology, and musculoskeletal biomechanics of orofacial function; offered fall semester.

OBIO 645 Seminar: Current Issues in Bone and Mineralized Tissue Biology

Credit 1. 1 Other Hour. Topics of current importance in bone and mineralized tissue biology; offered fall and spring semesters.

OBIO 651 Sensory Neurobiology and Pain

Credit 1. 1 Lecture Hour. An overview of the various sensory systems is explored with the primary emphasis on the processing of pain and temperature information from the craniofacial complex; offered summer semester of odd years.

OBIO 652 Advanced Neuroscience

Credit 1. 1 Lecture Hour. Advanced concepts of neuroscience are presented with an in-depth coverage of membrane and system function. **Prerequisite:** OBIO 604 or equivalent.

OBIO 660 Teaching Skills for Health Professions Educators

Credit 1. 1 Other Hour. Provides an overview of teaching principles and methods; geared toward the special needs of the health profession educator; materials are presented; active involvement in exercises concerned with all aspects of the teaching/learning process; seminar and workshop format.

OBIO 661 Teaching Practicum in Applied Biostatistics

Credits 1 to 4. 1 to 4 Other Hours. Advanced practicum designed to engage all aspects of teaching applied biostatistics; learn how to present biostatistics that health professions graduate students can master; includes applying statistical concepts and methods to one's own research and to that published in the professional literature; learn about the creation and evaluation of fair assessments of student performance including tests, projects, grading, etc; not available for distance learning. **Prerequisite:** OBIO 621.

OBIO 662 Teaching Practicum in Gross Anatomy

Credits 3. 3 Lab Hours. Assist with laboratory dissection of human cadavers; lead class study groups and prepare pro-sections for the D1 class; regional anatomy of the back, thorax, upper limb and head is emphasized; taught in conjunction with dental curriculum; additional readings and exercises are designed to instruct graduate students in how to teach the subject.

OBIO 670 Clinical Pharmacology

Credit 1.5. 1.5 Other Hour. Selection and evaluation of dentally-related drugs and review of current literature; seminar format; limited to clinical specialty students; offered fall semester.

OBIO 671 Applied Medical Physiology

Credits 2. 1 Lecture Hour. 1 Lab Hour. Basic physiology of the cardiovascular, respiratory and renal systems; each area is expanded to include physiology problems seen clinically as they relate to the dental intern; offered summer semester. **Prerequisite:** OBIO 605 or equivalent.

OBIO 672 Head and Neck Anatomy

Credits 1 to 1.5. 1 to 1.5 Lab Hours. Special emphasis on surgical anatomy and distribution of nerves and vasculature of particular interest in the field of dentistry; offered summer semester.

OBIO 673 Oral Microbiology

Credits 2 to 3. 2 to 3 Lecture Hours. Current, relevant topics in microbiology that would affect the practice of dentistry or the dental research community. **Prerequisites:** Graduate classification.

OBIO 674 Immunology

Credits 1 to 2. 1 to 2 Lecture Hours. Principles of immunology; emphasis on oral aspects and related diseases.

OBIO 675 Current Topics in Biomedical Sciences I

Credits 0 to 10. 0 to 10 Other Hours. Reading and discussion of current literature pertinent to topic of seminar; presentation of papers on selected topics is required; may be used for multiple courses in any one semester; offered fall, spring and summer semesters.

OBIO 676 Current Topics in Biomedical Sciences II

Credits 0 to 10. 0 to 10 Other Hours. Reading and discussion of current literature pertinent to topic of seminar; presentation of papers on selected topics is required; may be used for multiple courses in any one semester; offered fall, spring and summer semesters.

OBIO 677 Directed Readings I

Credits 0 to 10. 0 to 10 Other Hours. Individualized courses for single students involve in-depth study of specific topics in the biomedical sciences.

OBIO 678 Directed Readings II

Credits 0 to 10. 0 to 10 Other Hours. Individualized courses for single students involve in-depth study of specific topics in the biomedical sciences.

OBIO 679 Directed Readings III

Credits 0 to 10. 0 to 10 Other Hours. Individualized courses for single students involve in-depth study of specific topics in the biomedical sciences.

OBIO 687 Research and Special Problems I

Credits 0 to 10. 0 to 10 Other Hours. Concentrated investigation in any area of biomedical sciences; may be used for individualized laboratory rotations or research.

OBIO 688 Research and Special Problems II

Credits 0 to 10. 0 to 10 Other Hours. Concentrated investigation in any area of biomedical sciences; may be used for individualized laboratory rotations or research.

OBIO 689 Special Topics In...

Credits 0 to 4. 0 to 4 Other Hours. Selected topics in an identified area of oral biology. May be repeated for credit.

OBIO 691 Research

Credits 0 to 10. 0 to 10 Other Hours. Original research on a problem related to oral biology as partial fulfillment of the degree requirements; search literature, establish a research problem, prepare a research proposal, have it approved by thesis committee, conduct necessary experimental and control procedures to test the established hypothesis, analyze the data and write thesis.