

DEPARTMENT OF ORTHOPEDIC SURGERY

Nabil Ebraheim, M.D., Chair
Martin Skie, M.D., Track Director

Track Name: Bone Biology and Orthopedic Sciences

The Department of Orthopedic Surgery offers graduate-level courses through the Master of Science in Biomedical Sciences program at the University of Toledo. This is a 2-year program consisting of classes, seminars, and research. The students work with:

- Dr. Martin Skie, Department of Orthopedic Surgery;
- Beata Lecka-Czernik, Department of Orthopedic Surgery;
- A. Champa Jayasuriya, Department of Orthopedic Surgery; and
- Dr. Vijay Goel, Department of Bioengineering.

Our unique partnership with the Department of Bioengineering allows our researchers and physicians to have access to not only lab and research facilities, but also to the expertise of scientists in the biomechanics field.

Research in Orthopedic Sciences at the University of Toledo College of Medicine & Life Sciences covers a broad spectrum of topics including:

- Biomechanics
- Biomineralization
- Bone diseases
- Bone tissue engineering and regenerative medicine
- Hand and foot disorders
- Hip and knee replacements
- Spinal injuries and disorders
- Sports medicine
- Stem cell technologies
- Trauma/fixation

Additional information may be found at http://www.utoledo.edu/med/depts/ortho/master_program/index.html (http://www.utoledo.edu/med/depts/ortho/master_program/).

Degrees Offered

No results found.

ORTH 5700 Orthopaedic X-Ray Conference

[2 credit hours]

Weekly discussion of interesting and challenging clinical orthopaedic cases through X-ray conference discussion. Management and treatment options of each case presented also are discussed. May be repeated for credit.

Term Offered: Spring, Summer, Fall

ORTH 5800 Ortho Bone Physiology

[3 credit hours]

Lecture topics will include the physiology of bone fracture healing process, bone adaptation, molecular genetics of the musculoskeletal system, bone tumor process, etc. This course serves to provide the student with a good general knowledge of bone physiology and its function.

Term Offered: Spring, Fall

ORTH 5850 Introduction to Clinical Orthopaedics

[3 credit hours]

Introduction to Clinical Orthopaedics provides an overview of the various sub-specialties within Orthopaedic Surgery. Students are familiarized to the clinic and operating room setting. They will be taught the importance of common physical exam findings, interpretation of radiographic studies and the importance of routine laboratory tests as they relate to conditions of the musculoskeletal system.

Term Offered: Spring, Summer, Fall

ORTH 5900 Orthopaedic Biomechanics I

[3 credit hours]

Introduction to the basic biomechanics concept in orthopaedics. Lectures will include statistics and dynamics analysis of forces as applied to the musculoskeletal system. Topics to be covered will also include biomechanics of fixation devices, modeling effects of bone, stress shielding, micro- and macroscopic analysis of bone mechanics, etc.

Term Offered: Summer, Fall

ORTH 5910 Thesis Research Neurosci Neuro

[3 credit hours]

This course concentrates on the studies of body joint mechanics and the dynamics of joint motion. Lectures also will include artificial joint prosthesis designs, including new orthopaedic devices and implants.

Term Offered: Spring

ORTH 5920 Orthopaedic Biomechanics III

[3 credit hours]

This course will cover principally motion analysis, gait, and rehabilitation biomechanics as they apply to the orthopaedic patient. Lectures will include 3-D motion analysis as well as a force plate quantification of gait and movement.

Term Offered: Fall

ORTH 6500 Orthopaedic Basic Science Sem

[3 credit hours]

Weekly lectures on various orthopaedic topics ranging from bone histology to biomechanics. The lectures focus on the basic science of orthopaedics, including the physiology, biochemistry, genetics, anatomy, etc. of the musculoskeletal system. May be repeated for credit.

Term Offered: Spring, Fall

ORTH 6550 Jnl Rev Orthopaedic Science

[1 credit hour]

Orthopaedic Grand Rounds is a conference format where nationally known authorities on orthopaedic topics present a talk, followed by discussion of challenging clinical cases presented to the speaker. Usually the topics involve the latest state-of-the-art orthopaedic treatments or breakthroughs. The Journal Club meetings are seminar discussions of the latest scientific research articles from professionally recognized journals. May be repeated for credit.

Term Offered: Spring, Summer, Fall

ORTH 6750 Biomaterials in Medicine

[3 credit hours]

Biomaterials use in wide variety range of applications in medicine including drug delivery carriers and replacement of tissues.

Term Offered: Spring

ORTH 6910 Orthopaedic Trauma

[1 credit hour]

Topics could include the trauma of musculoskeletal system, the pathogenesis, treatment options and clinical outcomes; may involve theoretical and/or experimental work. May be repeated for credit.

Term Offered: Summer, Fall

ORTH 6920 Orthopaedic Spine

[1 credit hour]

Focus will be on spine mechanics, anatomy, spine fixation devices, clinical outcome of spine surgeries, etc. May involve theoretical and/or experimental work. May be repeated for credit.

Term Offered: Summer, Fall

ORTH 6940 Adult Reconstruction & Tumor

[1-3 credit hours]

ORTH 6940 is a clinical elective in Adult Reconstruction and Orthopaedic Oncology. Students will gain familiarity with concepts in joint replacement and the problems associated with it. Students will have the opportunity to observe hip and knee replacement surgeries. There is also exposure to tumors of the musculoskeletal system and reconstructive options for their treatment. Students will spend 1 – 3 hours per week with a physician in those specialties.

Term Offered: Spring, Summer, Fall

ORTH 6960 Upper Extremity and Hand

[3 credit hours]

Topics will include (but are not limited to) study of the biomechanics of the upper extremity and hand, brachial plexus injuries, treatment options, surgical exposures, detail anatomy, etc. May involve theoretical and/or experimental work. May be repeated for credit.

Term Offered: Spring, Fall

ORTH 6990 Thesis Research

[3-6 credit hours]

Each student is required to work with a mentor on a research project that may include laboratory and/or clinical research on a project of interest to Orthopaedics..... Each student will be expected to have a committee consisting of no less than 3 faculty members, including the student's mentor as the chair of the committee. Regular meetings will be scheduled to review the thesis project and ensure progress towards completion of the thesis research in a timely manner. The student will be expected to write a thesis at the completion of their project and defend this to their committee and give a public presentation.

Term Offered: Spring, Summer, Fall

ORTH 8750 Biomaterials in Medicine

[3 credit hours]

Biomaterials use in wide variety range of applications in medicine including drug delivery carriers and replacement of tissues.

Term Offered: Spring