

Master of Science in Anatomy
Program code: 056010

INTRODUCTION

The Department of Anatomy (Faculty of Medicine) offers a Master of Science program in **Anatomy**. The program only offers thesis option as research requirements.

According to the University Council decision dated 4/2/2007, Thesis students admitted with effect from September 2007 are exempted from the comprehensive examination.

PROGRAM REQUIREMENTS

33 TOTAL COURSE CREDITS

19 COMPULSORY COURSES (credits in parenthesis)

0510-501	Biostatistics and Computers in Medicine	(2)
0560-507	Neuroanatomy	(2)
0560-509	Cell Biology and Microscopic Techniques	(3)
0560-510	Tissue Histology and Embryology	(2)
0560-511	Anatomy of Limbs and Thorax	(4)
0560-513	Anatomy of Head and Neck	(3)
0560-520	Anatomy of the Abdomen and Pelvis	(3)

5 ELECTIVES COURSES

0560-514	Advanced Cell Biology	(Equivalency 0560-523)	(2)
0560-523	Seminars in Advanced Cell Biology		(1)
0560-537	Advance in Neuroscience Research		(2)
0560-538	Introduction to Tissue Culture		(2)
0560-539	Fine Structure of Cells		(2)
0560-540	Behavioral Neuroscience Methods		(2)
0560-541	Neurobiology of Pain		(2)
0560-543	Teaching and evaluation in Anatomy Current trends		(2)
2000-501	Scientific Writing and Communication Skills		(3)
2000-503	Ethics and Professionalism		(2)

9 COMPULSORY COURSES

0560-597	Thesis	(0)
0560-598	Thesis	(0)
2000-599	Thesis	(9)

COURSE DESCRIPTION

0560-507: NEUROANATOMY

CR: 2

The study of both peripheral and central nervous systems is provided in this section. This includes the topography of the brain, spinal cord and their meningeal coverings as well as their blood supply and cerebrospinal fluid circulation. Also it deals with neuronal pathways and connections and functional and applied aspects. In this course the various parts of the body are linked together under the umbrella of the nervous system as the most important control system of the body.

0560-509: CELL BIOLOGY & MICROSCOPIC TECHNIQUES

CR: 3

The course forms the foundation to the various branches of human anatomy. This course would help the students learn the anatomy in detail. In the cell biology component of this course, the student will study the structure of the cell and the subcellular structures with reference to their functional significance. It includes cellular mechanisms that rules homeostasis, cell cycle and differentiation. Relation to tissue formation, reaction and apoptosis are emphasized to understand the body functions in health and disease. The microscopic techniques component of the course aims to provide students with a theoretical background and practical experience in a variety of microscopic techniques commonly used in studying cell biology and histology. Advances made in microscopic techniques will be covered with emphasis on the advantages and limitations of each technique. The use of microscopy in characterizing normal cells and tissues will be discussed. A variety of topics will be covered including light microscopy, histochemistry, immunohistochemistry, fluorescence microscopy, and confocal microscopy.

0560-510: TISSUE HISTOLOGY & EMBRYOLOGY

CR: 2

Tissue Histology: The human anatomy at the microscopic level starts in this course with the study of the microscopic structure and characteristic features of the basic tissues of the

human body. Understanding the microscopic structure is essential for knowing its functions. In addition to the lecture sessions, practical sessions are conducted on conventional light and electron microscopic preparations.

This course is essential for future biomedical research and may provide basis for studies in histopathology.

General Embryology with developmental Genetics:

This course is designed to study the development and growth of humans including embryogenesis, organogenesis and postnatal growth with emphasis on correlation of development with gross anatomy and common developmental anomalies. The course is also emphasis on genes regulating the development and anomalies resulting from mutations. In addition, the course provides the knowledge of various modes of inheritance with examples. The students shall learn the common anomalies/diseases arising from structural and numerical chromosomal abnormalities.

The course also provides an insight into the advanced techniques in genetics which predicts birth defects

0560-511: ANATOMY OF LIMBS & THORAX

CR: 4

This course is designed to give a detailed theoretical knowledge and practical skills (dissection) in limbs and thorax region of the human body. The students shall learn the clinical relevance of these regions. The students shall also study the related microscopic structure and embryology in detail.

0560-513: ANATOMY OF HEAD & NECK

CR: 3

This course is designed to give a detailed theoretical knowledge and practical skills (dissection) in the head and neck regions of the human body. The students shall learn the clinical relevance of these regions. The students shall also study the related microscopic structure and embryology in detail.

0560-514: ADVANCED CELL BIOLOGY**CR: 2 PR: 0560-509****Equivalency: 0560-523**

This course is designed to provide students with an active learning environment. The focus of this course is on development of critical thinking and analyses. Students are required to discuss and critique research articles. The course will enable students to interact amongst themselves, integrate the knowledge and develop new ideas. Students will be exposed to variety of research topics and techniques through published scientific articles. In addition to weekly discussions, students are required to give a short talk on the selected articles. The role of the faculty is to help students learn how to engage in a thinking process that will enhance their ability to communicate, reason and format hypothesis. Students will also be encouraged to attend the faculty of Medicine seminar series as and when topics in cell biology are covered.

0560-520: ANATOMY OF THE ABDOMEN AND PELVIS**CR: 3**

This course is designed to give a detailed theoretical knowledge and practical skills (dissection) in the abdomen and pelvic regions of the human body. The students shall learn the clinical relevance of these regions. The students shall also study the related microscopic structure and embryology in detail.

0560-523: SEMINARS IN ADVANCED CELL BIOLOGY**CR: 1 PR: 0560-509**

This course is designed to provide students with an active learning environment. The focus of this course is on development of critical thinking and analyses. Students are required to discuss and critique research articles. The course will enable students to interact amongst themselves, integrate the knowledge and develop new ideas. Students will be exposed to a variety of research topics and techniques through published scientific articles. In addition to weekly discussions, students are required to give a short talk on the selected articles. The role of the faculty is to help students learn how to engage in a thinking process that will enhance their ability to communicate, reason and format hypothesis. Students will also be encouraged to attend the Faculty of Medicine seminar series as and when topics in cell biology are covered.

0560-537: ADVANCE IN NEUROSCIENCE RESEARCH**CR: 2 PR: 0560-507**

This course is designed to examine the core material on essential topics in neuroscience from the molecular to the systems levels. The course will cover broad areas in up-to-date neuroscience research with specific emphasis on anatomical approaches. Students will become acquainted with the main theories, research and advances in selected topics of neuroscience. Teaching sessions will include lectures, discussions and lab rotations.

0560-538: INTRODUCTION TO TISSUE CULTURE**CR: 2**

The main objective of this course is to introduce the students to the principles of tissue culture and application of tissue culture techniques in biomedical research. The course will include one lecture (1 h) and one lab (3 h) every week.

0560-539: FINE STRUCTURE OF CELLS**CR: 2 PR: 0560-509**

This course is designed to study ultrastructure of cells and tissues. Basic techniques of transmission and scanning electron microscopy will be learned and students will prepare biological specimens and evaluate the ultrastructure and surface morphology. Special techniques to study ultrastructure of cells, tissues and organs will be discussed. Current research articles on the use and application of electron microscopes will be discussed.

0560-540: BEHAVIORAL NEUROSCIENCE METHODS**CR: 2 PR: 0560-507**

This course is designed primarily to educate graduate students in planning and executing learning and memory related behavioral experiments. This course includes theory and the practical use of water maze, radial arm maze, and passive avoidance behavioral tests. Further, the course includes collection of appropriate literature, design an experiment with water maze /radial arm maze/passive avoidance behavioral test/tests. The course also includes collection of the behavioral data, analysis of the collected data with suitable statistical methods, drawing conclusions and writing a manuscript by graduate students. The course would provide the students with ample knowledge on behavioral neuroscience research methodology.

0560-541: NEUROBIOLOGY OF PAIN
CR: 2 PR: 0560-507

This course is designed to present the theory and research on the anatomical structures and physiological processes involved in the transmission and modulation of pain. The latest practices in experimental pain research including the standards of current research methodologies, analytical procedures, and interpretation of results will be discussed. The course will provide training in neuropathic pain research focused on preclinical rodent models of neuropathic pain and on methods for measuring pain.

0560-543: TEACHING AND EVALUATION IN ANATOMY CURRENT TRENDS
CR: 2

There will be two sessions every week. During the session one, the major and principle will be raised by the course coordinator. The student's responses are channelized in the required manner and the necessary check list will be provided. During the second session of the week, there will be student's presentation using the previously provided checklist. The required input and suggestions will be given to enhance the quality of their presentation. Each student is expected to know his or her role as a teacher and also a researcher in fulfilling the objectives or goals set by the institution and university. The course should provide confidence and apt skills to tackle the ever changing medical science curriculum.

0560-597: THESIS
CR: 0

0560-598: THESIS
CR: 0

2000-599: THESIS
CR: 9