MGM INSTITUTE OF HEALTH SCIENCES
(Deemed University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
Sector-01, Kamothe, Navi Mumbai - 410 209
Tel 022-27432471, 022-27432994, Fax 022 - 27431094
E-mail : registrar@mgmuhs.com | Website : www.mgmuhs.com

MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI

LEARNING OUTCOME BASED CURRICULAM FRAMEWORK

M.Sc Medical Anatomy Course

Program Outcomes

Sr. No.		
1	Objectives of PG Education	• At the end of the course, the students shall be able to • **1. Knowledge** 1. Describe gross anatomy of entire body including upper limb, lower limb, thorax, abdomen, pelvis, perineum, head and neck, brain and spinal cord. 2. Explain the normal disposition of gross structure, and their interrelationship in the human body. She/He should be able to analyze the integrated functions of organs systems and locate the site of gross lesions according to deficits encountered. 3. Describe the process of gametogenesis, fertilization, implantation and placenta formation in early human embryonic development along with its variation and applied anatomy. 4. Demonstrate knowledge about the sequential development of organs and systems along with its clinical anatomy, recognize critical stages of development and effects of common teratogens, genetic mutations and environmental hazards. She/He should be able to explain developmental basis of variations and congenital anomalies. 5. Explain the principles of light, transmission and scanning, compound, electron, fluorescent and virtual microscopy. 6. Describe the microscopic structure of various tissues & organs and correlate structure with functions as a prerequisite for understanding the altered state in various disease processes. 7. Describe knowledge about cell and its components, cell cycle, cellular differentiation and proliferation. 8. Describe structure, number, classification, abnormalities and syndromes related to human chromosomes. 9. Describe important procedures in cytogenetics and molecular genetics with its application.

		10. Demonstrate knowledge about single gene pattern inheritance, intermediate pattern and multiple alleles, mutations, non-mendelian inheritance, mitochondrial inheritance, genome imprinting and parental disomy. 11. Demonstrate knowledge about reproduction genetics, assisted reproduction, prenatal diagnosis, genetic counseling and ethics in genetics. 12. Explain principles of gene therapy and its applied knowledge. 13. Describe immune system and cell types involved in defense mechanisms of the body. Also explain gross features, cytoarchitecture, functions, development and histogenesis of various primary and secondary lymphoid organs in the body. 14. Demonstrate knowledge about common techniques employed in cellular immunology and histo compatibility testing. 15. Demonstrate applications of knowledge of structure & development of tissue organ system to comprehend deviations from normal. 16. Demonstrate knowledge about recent advances in medical sciences which facilitate comprehension of structure function correlations and applications in clinical problem solving. 17. Demonstrate knowledge about surface marking of all regions of the body. 18. Demonstrate knowledge about outline of comparative anatomy of whole body and basic human evolution 19. Demonstrate knowledge about identification of human bones, determination of sex, age, and height for medico legal application of anatomy • **2. Skills** At the end of the course the student should be able to: 1. Identify, locate and demonstrate surface marking of clinically important structures in the cadaver and correlate it with living anatomy. 2. Acquire mastery in dissection skills, embalming, tissue preparation, and staining and museum preparation. 3. Locate and identify clinically relevant structures in dissected cadavers. 4. Locate and identify cells & tissues under the microscope. 5. Identify important structures visualized by imaging techniques, specifically radiographs, computerized tomography (CT) scans, MRI and ultrasonography. 6. Demonstrate various movements at the important joints and actions of various groups of muscles in the human body. 7. Demonstrate anatomical basis of common clinical procedures expected to be performed by a basic medical doctor.

		8. Demonstrate different methods of teaching-learning and make presentations of the subject topics and research outputs **<u>Specific practice based competencies:</u>** **1. Gross anatomy:** 1.1 Procurement, Embalming and Preservation of human cadavers 1.2 Preparation of tanks for preserving bodies 1.3 Dissection of cadaver 1.4 Window dissection of important regions 1.5 Preparation of specimens for museum with display a) soft parts b) models c) charts 1.6 Preparation and preservation of human bones / skeleton as assigned by the faculty **2. Histology:** 2.1 Preparation of common fixatives embalming fluid 10% formalin, Bouin's fluid etc 2.2 Making paraffin blocks and section cutting and mounting 2.3 Preparation of staining set for H and E staining and staining paraffin sections with the stain 2.4 Making celloidin, araldite, gelatin blocks and their section cutting 2.5 Processing hard tissues, decalcification of bones, block making and sectioning, preparation of ground sections of calcified bones. 2.6 Frozen section cutting on freezing microtome and cryostat 2.7 Honing and Stropping of microtome knives, including sharpening by automatic knife sharpener 2.8 Histology file in which LM and EM pictures of all the organs and tissues of the body should be drawn and a small description of salient features written **3. Histochemical Methods:** 3.1 Practical classes for staining of glycogen, mucopolysaccharides, alkaline phosphatase acid phosphatase, and calcium **4. Cytogenetics:** 4.1 Knowledge about preparation of media, different solutions, stains etc. 4.2 Preparation of buccal smear for sex chromatin Human chromosome preparation from peripheral blood and karyotyping. 4.3 Banding techniques (G and C) 4.4 Making of Pedigree charts for study of patterns of inheritance. 4.5 Chromosomal Analysis.

		5. Neuroanatomy: 5.1 Dissection of brain and spinal cord for teaching and learning purpose 5.2 Preparation of brain and spinal cord macroscopic and microscopic sections and identification of different parts in them. 5.3 Discussions on clinical problems related to neurological disorders and anatomical explanation for the same.
2	Generic Graduate Attributes	**Scholarly Attitude :** • Acquire competencies in gross and surface anatomy, Neuroanatomy, embryology, genetics, histology, radiological anatomy, applied aspects and recent advances of the above mentioned branches of anatomy to teach medical students. • Acquire mastery in dissection skills, embalming, tissue preparation, staining and museum preparation. • Acquire skills in teaching, research methodology, epidemiology & basic information technology. • Acquire knowledge in the basic aspects of Biostatistics and research methodology. • Has knowledge to plan the protocol of a thesis, carry out review of literature, execution of research project and preparation of report. • Has ability to use computer applications Microsoft office (Microsoft word, excel, power point), Internet, Searching scientific databases (e.g. PubMed, Medline, Cochrane reviews). • Acquire skills in paper & poster preparation, writing research papers and Thesis. **Research Aptitude :** • Making presentations of the subject topics and research outputs. • Demonstrate the ability to identify applied implications of the knowledge of anatomy and discuss information relevant to the problem, using consultation, texts, archival literature and electronic media. • Demonstrate the ability to correlate the clinical conditions to

		the anatomical/ embryological/hereditary factors. • Demonstrate the ability to evaluate scientific/clinical information and critically analyze conflicting data and hypothesis. • Develop honest work ethics and empathetic behavior with students and colleagues. • Acquire capacity of not letting his/her personal beliefs, prejudices, and limitations come in the way of duty. • Acquire attitude and communication skills to interact with colleagues, teachers and students. • Practicing different methods of teaching-learning. **Exemplary Leadership:** • Demonstrate self-awareness and personal development in routine conduct. (Self awareness) • Communicate effectively with peers, students and teachers in various teaching learning activities. (Communication) • Demonstrate a. Due respect in handling human body parts & cadavers during dissection. (Ethics & Professionalism) b. Humane touch while demonstrating living surface marking in subject/patient. (Ethics & Professionalism) • Acquire capacity of not letting his/her personal beliefs, prejudices and limitations come in the way of duty. • Appreciate the issues of equity and social accountability while exposing students to early clinical exposure. (Equity and social accountability).
3	Desired Learning Outcomes of Degree	. **Element of Critical thinking** 1. Demonstrate the ability to identify applied implications of the knowledge of anatomy and discuss information relevant to the problem, using consultation, texts, archival literature and electronic media. 2. Demonstrate the ability to correlate the clinical conditions to the anatomical/ embryological/hereditary factors. 3. Demonstrate the ability to evaluate scientific/clinical information and critically analyze conflicting data and

		hypothesis. **Dynamic Professionalism** 1. Develop honest work ethics and empathetic behavior with students and colleagues. 2. Acquire capacity of not letting his/her personal beliefs, prejudices, and limitations come in the way of duty. 3. Acquire attitude and communication skills to interact with colleagues, teachers and students.
4	Proportion of knowledge / Skill / Soft Skill in Curriculum	**Effective Communication Skills** 1. Practicing different methods of teaching-learning. 2. Making presentations of the subject topics and research outputs
5	Curriculum and Employability	**Global Competencies :** 1. Skilled and employed to be a globally competent teacher, researcher and anatomist.

MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI

M.Sc. MEDICAL ANATOMY

SEMESTER - 1 SYLLABUS

Course Outcomes

Course Objective (Teaching Objectives)	• To teach basic Anatomical concepts related to General Anatomy, General histology, General Embryology and Musculoskeletal system
Course Outcomes (learning Objectives)	• To understand the basic anatomical concepts of General Anatomy • To understand the basic anatomical concepts of General Histology • To understand the basic anatomical concepts of General Embryology • To understand the basic anatomical concepts of Muscular System • To understand the basic anatomical concepts of Skeletal System

MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI

M.Sc. MEDICAL ANATOMY

SEMESTER - 2 SYLLABUS

CourseObjective (Teaching Objectives)	• To teach basic Anatomical concepts related to Respiratory system, Cardiovascular system, Gastrointestinal system, Genitourinary system, Endocrine system, Nervous system.
Course Outcomes (learning Objectives)	• To understand the basic anatomical concepts of Respiratory system • To understand the basic anatomical concepts of Cardiovascular system • To understand the basic anatomical concepts of Gastrointestinal system • To understand the basic anatomical concepts of Genitourinary system • To understand the basic anatomical concepts of Endocrine system • To understand the basic anatomical concepts of Nervous system

Dr. Rajesh B. Goel
Registrar
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