



MGM INSTITUTE OF HEALTH SCIENCES

(Deemed University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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Value Added Course

MICROSCOPE AND STAINING TECHNIQUE

Dr. Rajesh B. Goel
Registrar

MGM Institute of Health Sciences
(Deemed University u/s 3 of UGC Act, 1956)
Navi Mumbai- 410 209

Dr. Shashank D. Dalvi
Vice Chancellor
MGM Institute of Health Sciences
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**Mahatma Gandhi Mission's
Medical College**

Value Added Course

**Microscope and Staining Techniques
[Conducted by Dept of Anatomy]**

Light Microscopy: Eye of Medicine

The development of the microscope is tightly coupled with developments in cell biology and medicine. Microscopes provide the observer with enhanced resolution (ability to observe two nearby objects as distinct objects), contrast (ability to detect different regions of the specimen on the basis of intensity or colour) and magnification (ability to make small objects visible). The human eye can resolve objects of the order of 0.1 mm, while the light microscope can resolve objects on the order of 0.2 mm (200 nm) with a magnification of 1000X.

The development of various types of optical microscopes incorporated the following components: microscope objectives that minimize chromatic and other optical aberrations (image distortion), stands that minimize mechanical vibrations and sources of illumination from sunlight to lasers.

Additionally, there were new methods of fixing and cutting specimens (microtomes), specimen staining techniques (dyes, stains, molecular probes) that increase specimen contrast. Also important were the development of various optical methods that provide contrast (phase and differential interference microscopes, fluorescence microscopes) for live cells, techniques for imaging long-term live cell cultures (time-lapse and video-microscopy), optical techniques to provide optical sectioning of specimens (confocal microscopes), and nonlinear-optical imaging techniques (multiphoton, harmonic generation and coherent anti-Stokes Raman microscopes).

Staining methods:

Staining of slides is key to visualized slides. It helps in differentiating cells and tissue architecture. It has immense importance to identify normal from abnormal structures, cells and dysplastic tissue.

Standard tissue staining protocols evolved in 100 year of time. Which gives sharp and crispy images as well preserve tissue for years to come.

Acquiring skill also helps medical student to understand staining method and why particular tissue stains in peculiar colour and stain.

Digital microscope imaging

Although microscopy plays a very important role in biology and medicine, the observation is performed with the naked eye under the conventional optical microscopes. This can result in eye fatigue after a relatively long time of continuous observation. In addition, the image information cannot be stored and processed for different image enhancement purposes. To solve these limitations, digital microscopes have been developed and tested.

Uses of microscopy:

In today's healthcare we cannot imagine medicine without eye of microscope. Various uses of microscopy vary from histology, pathology, physiology, haematology, microbiology to structure of drug discoveries to immunohistochemistry, biochemistry etc.

Knowledge of cutting edge technology and use of microscope is an essential skill development in practice of medicine and its various branches.

To make aware and develop microscopy skill this course is added.

Eligibility:

Medical students (MBBS)

Course schedule:

| Sr. No. | Topic | Theory hrs. | Practical hrs. |
|---------|--|----------------|----------------|
| 1 | Microscopy introduction & history | 1 hr. | - |
| 2 | Concept of magnification & resolution | 1 hr. | 1 hr. |
| 3 | Units used in microscopy | 1 hr. | - |
| 4 | Different types of microscopes, their uses, advantages & disadvantages | 2 hrs. | - |
| 5 | Light microscopy introduction & principle | 1 hr. | - |
| 6 | Parts of light microscope | 1 hr. | 1 hr. |
| 7 | Algorithm for the use of light compound microscope | 1 hr. | 3 hrs. |
| 8 | Care of microscope | 1 hr. | 2 hrs. |
| 9 | Introduction to tissue processing | 1 hr. | 1 hr. |
| 10 | Slide preparation | 1 hr. | 1 hr. |
| | Total | 11 hrs. | 9 hrs. |
| | | 20 hrs | |

- Evaluation Method – MCQ Test and practical evaluation 1hr.
- Course will be conducted twice a year
- Limited Entries (25 students per course)

Books for Reference:

1. Manual of Histological Techniques by Santosh Kumar Mondal; Jaypee publication.
2. Principles and Techniques in Histology, Microscopy and Photomicrography by D. R. Singh (Author) CBS publication.
3. FUNDAMENTALS OF LIGHT MICROSCOPY AND ELECTRONIC IMAGING Second Edition By Douglas B. Murphy, Michael W. Davidson A JOHN WILEY & SONS, INC., PUBLICATION.
4. Bancroft's Theory and Practice of Histological Techniques by Kim S Suvarna MBBS BSc FRCP FRCPath (Author); Elsevier pub; 8th ed.



MGM Medical College, Aurangabad
VAC - Microscope and Staining Technique
Students List - UG
Batch-1, December 7,14,21,28 2019

| Sr. No. | Roll No | Name of Student | Class | Gender |
|---------|---------|--------------------------------|------------|--------|
| 1 | 19056 | Jain Rashi Manoj | First MBBS | F |
| 2 | 19042 | Ghadamode Harish Anantrao | First MBBS | M |
| 3 | 19133 | Sisode Abhijeet Vikas | First MBBS | M |
| 4 | 19011 | Banu Rihana Khalil Ahmed Khan | First MBBS | F |
| 5 | 19057 | Jaiswal Vidhi Satish | First MBBS | F |
| 6 | 19129 | Siddiqui Ahmareen Arif Azal | First MBBS | F |
| 7 | 19071 | Kawalkar Kapil Vivek | First MBBS | M |
| 8 | 19004 | Ansary Faraz Sami | First MBBS | M |
| 9 | 19037 | Gabhane Parul Durgeshwar | First MBBS | F |
| 10 | 19013 | Birajdar Sanket Shivshankar | First MBBS | M |
| 11 | 19142 | Thakur Abhay Avneesh | First MBBS | M |
| 12 | 19130 | Singh Deepak Kumar Dilip Kumar | First MBBS | M |
| 13 | 19072 | Khamari Shashwati Dilip | First MBBS | F |
| 14 | 19150 | Yadav Yashi Manish | First MBBS | F |
| 15 | 19074 | Khan Yahya Mahmood | First MBBS | M |
| 16 | 19020 | Chavhan Himanshu Vasant | First MBBS | M |
| 17 | 19100 | Patel Jaimin Hiteshbhai | First MBBS | M |
| 18 | 19089 | Motewar Ashwini Ashish | First MBBS | F |
| 19 | 19143 | Toshniwal Prasad Bhagwandas | First MBBS | M |
| 20 | 19080 | Ladda Padmaja Sanjay | First MBBS | F |
| 21 | 19113 | Rochkari Shashwati Pravin | First MBBS | F |
| | | Total - 21 Students | | |

AH
Course Co-ordinator
Professor & HOD
Dept of Anatomy
MGM Medical College Aurangabad.



[Signature]
Dean
MGM Medical College
Aurangabad
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AURANGABAD