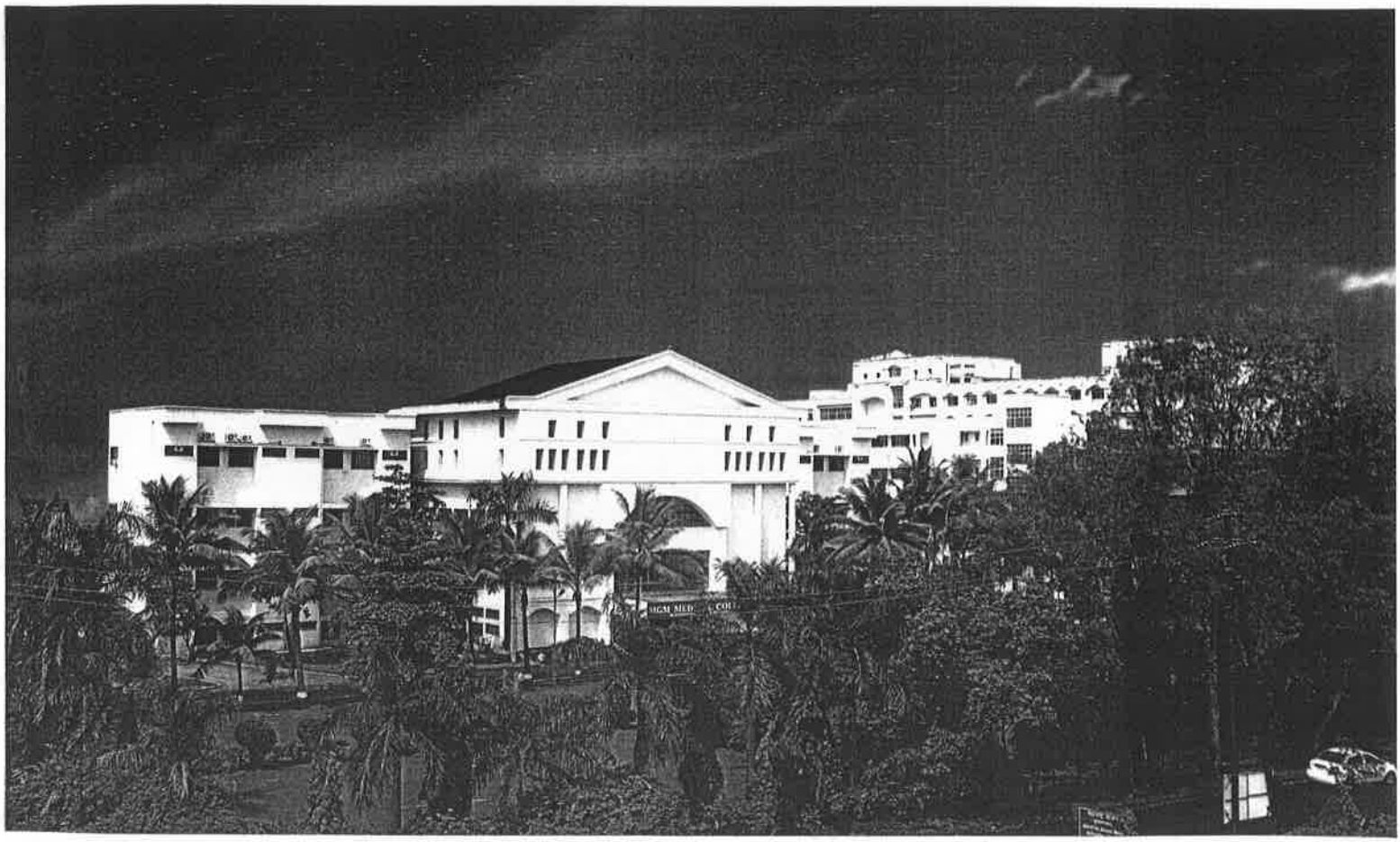
Curriculum for

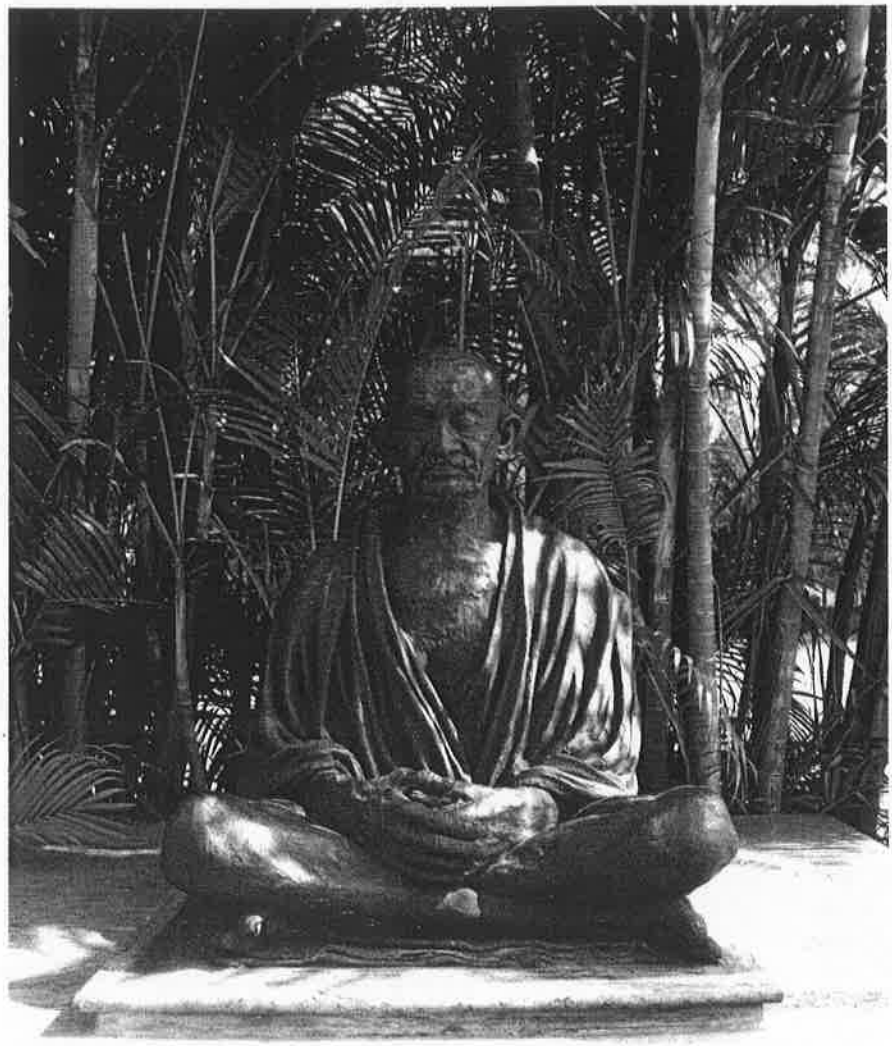
MD Degree in Biochemistry



IN PURSUIT OF EXCELLENCE

MGM INSTITUTE OF HEALTH SCIENCES
(Deemed University Established u/s 3 of UGC Act, 1956)
Navi Mumbai - 410 209
www. mgmuhs.com

INSPIRING MINDS



Mission

To improve quality of the life for individuals and community by promoting health, preventing and curing disease, advancing biomedical and clinical research and educating tomorrow's Physicians and Scientists.

Vision

By 2020 the MGM University of Health Sciences will rank one of the top private Medical Institution. This will be achieved through ground breaking **discoveries in basic sciences and clinical research** targeted to prevent and relieve human suffering, **excellence in Medical Education** of the next generation of academic clinicians and intrinsic scientists.

MGM University of Health Sciences will transform the **Education of** tomorrow's Physicians and Scientists conducting Medical **Research** to advance health and improving lives by providing world-class patient care.

Many see the 21st Century as the golden age of biomedical research. The MGM University of Health Sciences will position for leadership at the horizon of this new era to promote and stabilise stand human health with a standard of excellence.

Chancellor's Message

It is my pleasure to welcome you to join constituent colleges of Mahatma Gandhi Misson's (MGM) University of Health Sciences, Navi Mumbai. I wish to avail this opportunity to apprise you and your parents about the academic excellence of the deemed university.

The MGM University of Health Sciences was established u/s 3 of UGC Act, 1956 vide HRD Notification No.F.9-21/2005-U.3(A) dated 30-8-2006. The MGM University is an outcome of untiring efforts of our educationists, professionals, social activists, technocrat, students and parents. The Mahatma Gandhi Mission Trust that manages the University of Health Sciences and over 40 institutions in Navi Mumbai, Aurangabad, Nanded, and Noida has the vision to empower the masses with the availability of state-of-the-art education. Most of our institutions have ISO certifications that further endorse our commitment to stringent quality standards. I am proud to state that we have succeeded in these accomplishments during our journey of the past 25 years.

I recollect the memories of struggle and determination when the MGM Trust established its two medical colleges, one each at Navi Mumbai and Aurangabad some twenty years ago. Both the medical colleges have grown into institutions imparting both undergraduate and postgraduate courses, and delivering quality health care to communities in their respective areas. While both colleges are engaged in their primary functions of teaching, patient care and research, they have also excelled in their pursuit for advancement of science and in taking health services to communities through extension programmes. A shining example is the establishment of the Department of Infectious Diseases in 1993 in collaboration with the University of Texas-Houston, USA. This department has established the state-of-the-art clinical services and laboratories for research and care of infectious diseases and received the acclaim of Director General of ICMR when he stated "MGM is the first medical college in India to establish a separate department of infectious diseases. This is the need of the hour." The department has undertaken path-breaking research and shaped the course of our national control programmes on HIV/AIDS and tuberculosis. The original research of the constituent colleges has been acclaimed among the scientific world globally.

In an era of economic liberalization and the competition among varsities, both in and out of India, the task of grooming professionals who will compete with the best in the world , is tough. To aid our efforts to excel, MGM University of Health Sciences has the latest research facilities, a dedicated research faculty, as well as an array of distinguished visiting faculty members. The quiet ambience of our campuses, the well filled library with subscriptions to international and national journals, and the lush-green gardens add to our accomplishments.

Considering the manpower needs of educational, industrial agricultural, and health sector to maintain their steady growth, several fresh M.Sc. courses have courses have been launched. M.Sc. courses introduced at the
University from the current academic year shall provide knowledge, skills and subsequent employability that are at par with the counterparts in India and abroad. The curricula of the courses have been designed by experts and peer-reviewed with an emphasis on the job requirements of educational institutions, industries, health care, and research institutions. These courses will empower the students to choose a career in a classroom, a research laboratory or an industry. I am happy that the university is ticking towards the pinnacle with the introduction of these value-added postgraduate courses in medical biotechnology, medical genetics and other basic sciences.

Finally, I wish to place on record my gratitude to the founder members, stake-holders, faculty, staff, students and their parents for providing the MGM Trust with your advice and support.

Once again, it is my pleasure to welcome you to join constituent colleges of MGM University of Health Sciences' at Navi Mumbai and Aurangabad.

Kamal Kishore Kadam
Chancellor

Dr R.D.Bapat
Vice Chancellor

Dr S.N.Kadam
Pro Vice Chancellor

Dr N.N.Kadam
Director (Examination)

Dr Ajit shroff
Dean (Aurangabad Campus)

Dr Z.G. Badade
Registrar

Dr G.S.Narshetty
Dean (Navi Mumbai Campus)

SYLLABUS FOR M.D. BIOCHEMISTRY

Goal :

The broad goal of teaching & training of postgraduate students in Medical Biochemistry is to make them understand the scientific basics of the life processes at the molecular level and to orient them towards the applications of the knowledge acquired in solving clinical problems. At the end of his/her training, the student shall be able to take up a career in Teaching Institution or in diagnostic laboratory or in Research.

OBJECTIVES:

A) KNOWLEDGE:

At the end of the course the students shall be able to:

1) Explain the structure, function & inter-relationships of bimolecules & their deviation from normal & their consequences.
2) Summarize the fundamental aspects of enzymology & alteration on enzymatic activity with reference to clinical applications.
3) Explain the molecular & biochemical basis of inherited disorders with their associated sequel.
4) Explain the mechanisms involved in maintenance of body fluids & pH homeostasis.
5) Integrate the various aspects of metabolism & their regulatory pathways.
6) Outline the molecular mechanisms of gene expression & regulation, the principles of genetic engineering & their application in medicine.
7) Explain the molecular concept of body defenses & their applications in medicine
8) Explain the biochemical basis of environmental health hazards, biochemical basis of cancer & Carcinogenesis.

9) Familiarize with the principles of various conventional & specialized laboratory investigations & instrumentation analysis and interpretation of a given data.

10) Effectively organize & supervise diagnostic laboratory to ensure quality control/Assurances.

B) SKILLLS:

At the end of the course the students shall be able to:

1) Make use of conventional techniques/instruments to perform biochemical analysis relevant to clinical screening & diagnosis.

2) Analyze & interpret investigative data.

3) Demonstrate the skills of solving scientific & clinical problems and decision-making.

4) Develop skills as a self-directed learner, recognize continuing educational needs, select & use appropriate learning resources.

5) Demonstrate competence in basic concept of research methodology & be able to critically analyze relevant published research literature.

C) INTEGRATION:

The knowledge acquired in Biochemistry shall help the students to integrate molecular event with structure & function of the human body in health & disease.

1) Eligibility – Recognized degree of M.B.B.S. or its equivalent recognized qualification.

2) Duration of course shall be of 3 (Three) years from the date of admission.

PERIOD OF TRAINING:

Duration of the course shall be of three years (six academic terms) from the date of admission.

1) The students will attend all U.G. lectures and practicals and will work in central clinical laboratory of the hospital and do all the routine, emergency and special investigations.

2) The students will be posted in the Dept. of Pathology & Microbiology for a period of one month each to learn hematology ,Blood grouping & serology etc.
3) The students will be posted in the Dept. of Medicine to study the Clinical cases for a period of 3 months. However, they will attend P.G. activities and duties in in the Department of Biochemistry & Central Clinical Laboratory of the Hospital.
4) Students will paticipate in P.G. activities ; viz, Seminars ,Group discussion, Journal club etc. and will attend P.G. Lecture
5) Students should learn basic knowledge of computers and medical statistics.
6) Training in Medical audit ,management , health economics , health information system,basics of medical statistics & bioinformatics , exposure to human behavioural studies & medical ethics shall be imparted to the P.G. students.
7) They will be required to participate in the teaching & traning programmes of U.G. students.
8) They will be granted a term provided they will put 80% attendance during the academic term.

SCHEME OF EXAMINATION

Syllabus For M.D. Biochemistry

Paper I (General Biochemistry and Instrumentation)

1) History & scope of Biochemistry.
2) Cell structure & biochemical functions .Membrane structure & functions.
3) Transport through biological cell membrane
4) Chemistry & biological importance of carbohydrates ,proteins & amino acids, lipids , nucleic acids, porphyrins glycosaminoglycans, glycoproteins.
5) Chemistry of blood & hemoglobin, plasma proteins,Blood coagulation.
6) Enzymes & coenzymes –chemistry ,nomenclature properties & mode of action of enzymes,Enzyme kinetics, factors affecting enzyme activity,enzyme inhibitions,applications of enzymes & isoenzymes.
7) Bioenergetics & biological oxidation-General concept of oxidation & reduction.Electron transport Chain (ETC)- functioning of ETC & inhibitors of ETC, Oxidative phosphorylation,Uncouplers and theories of Biological oxidation & oxidative phosphorylation.
8) Principle, working & applications of, a) Colorimetry b)Spectrophotometry c)Flame photometry d) Flurometry e)Atomic absorption spectroscopy g) ultra centrifugation
9) Principle, types& applications of , a)Electrophoresis b)chromatography .
10) Autoanalyzers, Blood gas analyzers
11) Automation in clinical chemistry
12) pH, electrodes & methods of pH determination.
13) Basics of Mass spectroscopy, Nuclear Magnetic Resonance, chemiluminescence and Electron - microscopy
14) Environmental Biochemistry – Definition, importance of pollution free & ecofriendly environment, exposure to cold stress, exposure to heat , air pollution water pollution & food pollution
15) Immunochemistry – The Immune system, Immunoglobins, antigen –antibody mediated immunity, mononuclear phagocytes –macrophages ,elements of clinical immunity.

Paper- II: METABOLISM AND NUTRITION

1) Digestion & absorption from gastrointestinal tract.
2) Intermediary metabolism, metabolism of Carbohydrates, Lipids, Proteins , and Amino acids , Nucleic acids,Hemoglobin, metabolic control, energy production & regulation.
3) Metabolic interrelationships & regulatory mechanisms .
4) Metabolic changes during starvation
5) Energy metabolism-Calorimetry, BMR- its determination & factors affecting it, SDA of food.
6) Macro & micro –elements & their role in health & disease, water metabolism & its regulation.
7) Vitamins- chemistry, biological importance , deficiency manifestations & recommended daily allowance.
8) Principles of Nutrition –Balanced diet & its planning, Nutritive importance of various food sources, Calorific value of food , toxins & additives , Obesity, Protein Energy Malnutrition (PEM)- Kwashirkor & Marasmus .
9) Diet in management of chronic diseases viz, Diabetes mellitus, Coronary artery disease, Renal disorders, Cancer, Hypertension, Anemia ,Rickets & Osteomalacia.
10) Diet for over weight person, pregnant woman and during lactation

PAPER –III CLINICAL BIOCHEMISTRY

1) Chemistry, composition & functions of lymph, CSF, ascitic fluid, pleural fluid, & synovial fluid.
2) Urine formation, excretion & urine analysis.
3) Composition, chemistry & functions of specialized tissues like muscle, bone, nerve, connective tissue, & brain adipose tissue.
4) Chemistry of respiration & acid base balance& imbalance
5) Hormones-: Communication among cells & tissues. Hormone- General mechanism of action of hormones, chemistry, functions, synthesis of steroid hormones , polypeptide hormones, & thyroid hormones. Chemistry & functions of hormones of pancreas, and parathyroid. Local hormones. Clinical disorders of hormones, Hormone receptors.
6) Biochemistry of Diabetes mellitus, Atherosclerosis, Fatty liver, and obesity.
7) Organ function tests
   a) Liver function tests
   b) Kidney function tests
   c) Thyroid function tests.
   d) Adrenal function tests
   e) Pancreatic function tests
   f) Gastric function tests
8) Radioisotopes & their clinical applications.
9) Biochemistry of aging.
10) Neurochemistry in Health & Disease.
11) Biochemical changes in pregnancy & lactation.
12) Water & electrolytes balance & imbalance.
13) Total Quality Management of Laboratories.
   a) Internal Quality control
   b) External Quality control
   c) Accreditation of laboratories
14) Basics of Medical statistics
15) Inborn errors of metabolism.
16) Biotrasformations of Xenobiotics
17) Basic concepts of Biochemical Defense Mechanisms

Paper IV

MOLECULAR BIOLOGY , BIOTECHNOLOGY & RECENT ADVANCES IN CLINICAL BIOCHEMISTRY

1) Central dogma, genetic code, protein biosynthesis & its regulation.
2) DNA: structure, functions, replications, Mutation & repair of DNA, Sequencing of nucleotides in DNA, Mitochondrial DNA, and DNA recombination.
3) RNA: composition, types, structure & functions.
4) Role of Nucleic acids in diagnosis of Molecular diseases & infectious diseases
5) Mitochondrial DNA & diseases.
6) Human Genome Project.
7) Genes & chromosomes, Gene mapping, Chromosome walking etc.
8)Gene expression & gene amplification & gene regulation, Oncogenes, & biochemistry of cancer.
9) Genetic engineering: Recombinant DNA technology & its applications. Restriction endonucleases, Plasmids, Cosmids, Gene cloning, Gene libraries.
10) Basics techniques in genetic engineering.
    a) Isolation & purification of DNA, Methods of DNA assay.
    b) Blotting techniques – Southern, Northern & Western blotting.
    c) Polymerase chain reaction & its applications.
    d) Ligase chain reaction & its applications.
11) Tumor markers & growth factors
12) Biotechnology: Gene therapy, Nucleic acid hybridization, and DNA probes, Microarray of gene probes.
13) Genomics and Proteomics
14) Medical Bioinformatics
15) Lipid peroxidation, free radicals & antioxidants, Nitric oxide formation & its metabolism & its role in Medicine.
16.)Biochemistry of AIDS
17.)Genetic control of Immunity
18.)Research Methodology & Medical ethics.

SYLLABUS FOR PRACTICALS :

1) All undergraduate practicals and routine emergency and special investigations carried out in central clinical laboratory of the hospital,which are useful for diagnosis and prognosis of the disease.

2) Total Quality Management of Laboratory

a)Specimen collection , handling & storage of sample.

b) Methods of standardization & calibration.

c) Methods of quality control & assessment.

3) Fractionation & Identification of,

a) Amino acids b) Sugar c) Proteins d) Lipoproteins by

i) Thin Layer Chromatography ii) Paper chromatography (circular, Uni-dimensional& two dimentional iii) Gel electrophoresis- agarose, starch, & Polyacrylamide Gel Electrophoresis iv) paper electrophoresis & cellulose acetate paper electrophoresis .

4) a) Estimation of total activity of following enzymes .

i. LDH & seperation of its isoenzymes by Polyacryamide gel electrophoresis, Cellulose acetate electrophoresis & quantitation by densitometry.
ii. AST(GOT)
iii. ALT(GPT)
iv. Alkaline phosphatase
v. Acid phosphatase
vi. Amylase
vii. Creatine kinase its Isoenzymes

b) Enzyme kinetics and Determination of Km value and effect of pH substrate concentration & temperature on Enzyme activity.

c) Endocrinology: Estimation of Hormones.

5) Isolation of DNA and PCR technique.

6) Estimation of serum lipid profile :

i) Serum total cholesterol

ii) Serum HDL cholesterol

iii) Serum VLDL & LDL

iv) Serum Triglycerides

v) Serum Phopholipids

7) Estimation of Fe & Total Iron Binding capacity,& ferritin

8) Estimation of Glycosylated Hb.

9) Body fluid analysis - Urine
- CSF
- Ascitic fluid
- Pleural fluid

10) Estimation of VMA.

11) Estimation of Na, K & Lithium by Flame photometer.

Dissertation:

The dissertation is compulsory for candidates registered for P.G. degree & should include candidates own work under a supervisor , qualified for the purpose & recognized as a P.G. teacher by the University. The subject of dissertation along with synopsis (about 200 words) signed by P.G. teacher, H.O.D.& Head of the Institution will be submitted to the University. Ethics Committee of the Institution must approve the topic of dissertation.

Completed dissertation will be submitted to the University in the 5th term, that is, 6 month before the date of final examination.

Books recomonded:

1)Bichemistry Ed Lubert Stryer . W.H. Freeman & company ,New york.

2)Principles of Biochemistry . Ed. Lehninger , Nelson & Cox .
CBS publishers & distributers .

3)Harpers Biochemistry Ed. R.K. Murray , D.K. Granner, P.A. Mayes & V.W.Rodwell.
Appleton & Lange ,Stanford ,Conneticut.

4)Textbook of Biochemistry with clinical correlations. Ed. Thomas M. Devlin.
Wiley Liss Publishers.

5)Genes VI Ed. Benjamin Lewin .
Oxford University press.

6) Tietz Textbook of Clinical chemistry, Ed. Burtis & Ashwood W.B.
Saunders Company.

7)Principles & techniques of practical Biochemistry Ed. Keith Wilson & John Walker
Cambridge University press .

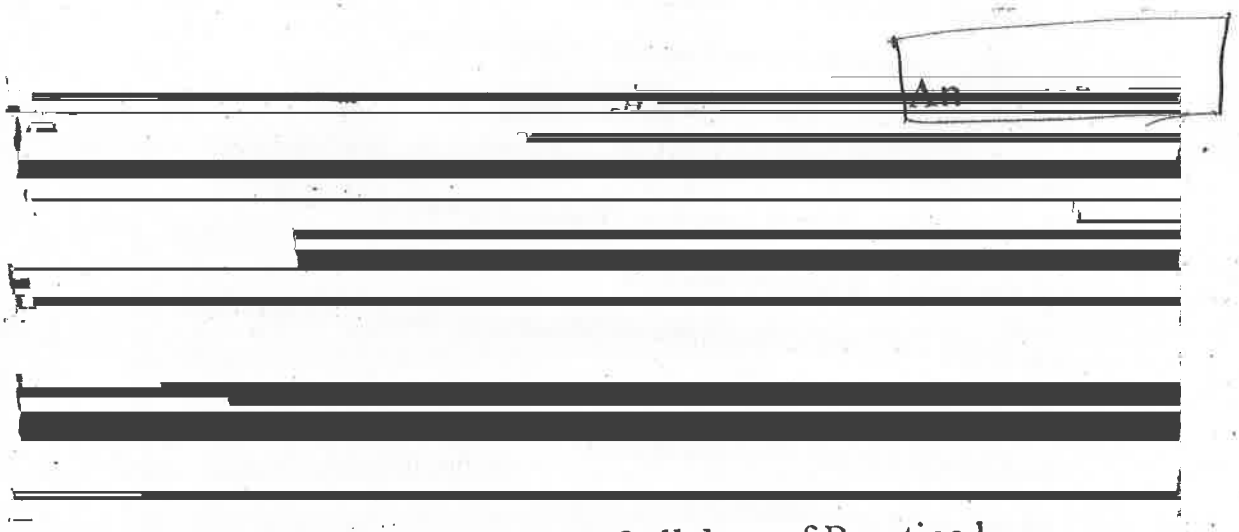
8)Biochemistry Ed. Donald Voet & Judith G. Voet
John Wiley & Sons ,Inc.

9)Molecular cloning –A laboratory Manual .J. Sambrook , E.F. Fritsch & T.Maniatis
Cold Spring Harbor Laboratory Press.

10)Molecular cell Biology , H.Lodish,A. Berk, S.L. Zipursky, P. Matsudaira ,D. Baltimore , J.Darnell.

11)Bio-technology 1st edition . U. Satyanarayan.
Books & Allied Publisher (p) Ltd.Kolkatta.

Bom 28/2013, Dated 26/03/2013



IIIMD Biochemistry – Syllabus of Practical

1. Lab Safety measures and first aid
2. Laboratory waste disposal
3. Preparation of various reagents and solutions
4. Tests for monosaccharide.
5. Tests for disaccharides.
6. Test for polysaccharide and Osazone formation.
7. Colour reactions of proteins.
8. Precipitation reactions of proteins
9. Urine ; Physical characteristics and normal constituents (organic)
10. Urine report; Physical characteristics and Abnormal constituents.
11. Standardization & Estimation of blood sugar by different methods
12. Standardization & Estimation of blood urea.
13. Standardization & Standardization Estimation of i) Serum creatinine, ii) Creatinine in urine.
14. Standardization & Determination of serum total protein,albumin and A/g ratio.
15. Standardization & Estimation of total serum bilirubin.
16. Standardization & Estimation of serum cholesterol.
17. Standardization & Estimation of serum calcium.
18. Standardization & Estimation of serum phosphorus (Inorganic)
19. Standardization & Estimation of S.G.P.T(ALT).
20. Standardization & Estimation of S.G.O.T (AST).
21. Standardization & Estimation of serum alkaline phosphatase.
22. Standardization & Estimation of serum acid phosphatase.

26. Enzyme kinetics and Determination of Km value and effect of pH substrate concentration & temperature on Enzyme activity.

27. Endocrinology: Estimation of Hormones.

28. Isolation of DNA and PCR technique.

29. Estimation of Fe & Total Iron Binding capacity,& ferritin

30. Estimation of Glycosylated Hb.

31. Body fluid analysis - Urine – CSF,- Ascitic fluid, - Pleural fluid

32. Estimation of VMA.

33. Creatine kinase its isoenzymes

34. pH- measurement,

35. Colorimetry.

36. Flame photometry.

37. Total Quality Management of Laboratory

a)Specimen collection , handling & storage of sample.

b) Methods of standardization & calibration.

c) Methods of quality control & assessment.

38. Fractionation & Identification of,

a) Amino acids b) Sugar c) Proteins d) Lipoproteins by

i) Thin Layer Chromatography ii) Paper chromatography (circular, Unidimensional & two dimentional

ii) Electrophoresis: Gel electrophoresis- agarose, starch, & Polyacrylamide Gel Electrophoresis iv) paper electrophoresis & cellulose

iv) acetate paper electrophoresis .

v) LDH & seperation of its isoenzymes by Polyacryamide gel electrophoresis, Cellulose acetate electrophoresis & quantitation by densitometry.

MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI

MARKLIST FOR PRACTICAL AND VIVA-VOCE EXAMINATION

EXAM CENTRE:_____ **COURSE / EXAM : PG –**

DATE OF EXAMINATION:_____ **EXAMINATION FOR: MD BIOCHEMISTRY**

Seat No	1 CLINICAL				2 TECHNIQUES &VIVA-VOCE							GRAND TOTAL (1+2)
	Long Case	Short Case I	Short Case II	Total	Separation Techniques	Standardization	Micro Teaching	Urine analysis	Viva	Dissertation Viva	Total	
	100	50	50	**200**	25	25	25	25	80	20	**200**	**400 Marks**

NAME OF EXAMINER	COLLEGE	SIGNATURE WITH DATE
1.		
2.		
3.		
4.		

Paper wise Distribution of Topics

viii)	M.D.	ANATOMY	I.	General and gross anatomy including corresponding microanatomy and embryology and clinical anatomy of Head, Face, Neck and Thorax.
			II.	Gross anatomy including corresponding microanatomy and Embryology and clinical anatomy of Abdomen, Pelvis and Perineum and superior and inferior extremity.
			III.	Neuroanatomy including corresponding microanatomy, embryology and clinical anatomy.
			IV.	Genetics, Radiological Anatomy, Sectional Anatomy, Clinical Anatomy and Recent Advances.
	MD	Psychiatry	I	Basic Sciences – Neuroanatomy, Neurophysiology, Psychology and their applications
			II	Neuropsychiatry, Liaison Psychiatry
			III	Clinical Psychiatry Part - 1
			IV	Clinical Psychiatry Part -2 with Recent Advances
	MD	Biochemistry	I	General Biochemistry and Instrumentation
			II	Metabolism and Nutrition
			III	Clinical Biochemistry
			IV	Molecular Biology, Biotechnology and Recent Advaces in Clinical Biochemistry
	MD	Respiratory Medicine	I	Basic Sciences – Anatomy, Physiology, Pathology, Microbiology, Pulmonary and extra pulmonary T.B., Public Health, Surgical aspects
			II	Non-Tubercular Pulmonary Diseases
			III	Internal Medicine as applied to pulmonary Medicine
			IV	Recent advancement in pulmonary medicine

IN PURSUIT OF EXCELLENCE

MGM DEEMED UNIVERSITY OF HEALTH SCIENCES

Constituent Colleges

Navi Mumbai

M.G.M. Medical College
M.G.M School of Biomedical Science
M.G.M School of Physiotherapy
M.G.M New Bombay College of Nursing
M.G.M College of Nursing

Aurangabad

M.G.M. Medical College
M.G.M School of Biomedical Science
M.G.M School of Physiotherapy
M.G.M College of Nursing

MAHATMA GANDHI MISSION

AURANGABAD

- MGM's Jawaharlal Nehru Engineering College
- MGM's Institute of Management
- MGM's Mother Teresa College of Nursing
- MGM's Mother Teresa Institute of Nursing Education
- MGM's College of Journalism & Media Science
- MGM's Medical Center & Research Institute
- MGM's College of Fine Arts
- MGM's Dr. D. Y. Pathrikar College of Comp. Sc. & Tech.
- MGM's Hospital & Research Center
- MGM's College of Agricultural Bio-Technology
- MGM's Dept. of Bio-Technology & Bio-informaties.
- MGM's Inst. of Hotel Management & Catering Tech.
- MGM's Institute of Indian & foreign Languages & Comm.
- MGM's College of Physiotherapy
- MGM's Hospital, Ajabnagar
- MGM's Sangeet Academy (Mahagami)
- MGM's Institute Naturopathy & Yoga
- MGM's Sports Club & Stadium
- MGM's Institute of Vocational Courses
- MGM's Horticulture
- MGM's Health Care Management
- MGM's Junior College of Education (Eng. & Mar.)
- MGM's Sanskar Vidyalaya (Pri. & Sec. - Mar.)
- MGM's Clover Dale School (Pri. & Sec. - Eng.)
- MGM's First Steps School (Pre-Primary - English)
- MGM's Sanskar Vidyalaya (Pre-Priamary - Marathi)
- MGM's School of Biomedical Sciences

NAVI MUMBAI

- MGM's College of Engineering & Technology
- MGM's Institute of Management Studies & Research
- MGM's Dental College & Hospital
- MGM's College of Physiotherapy
- MGM's College of Media Science
- MGM's Institute of Research
- MGM's New Bombay Hospital, Vashi
- MGM's Hospital, CBD
- MGM's Hospital, Kamothe
- MGM's Hospital, Kalamboli
- MGM's Infotech & Research Centre
- MGM's Pre-Primary School (English & Marathi)
- MGM's Primary & Secondatry School (Eng. & Mar.)
- MGM's Junior College Science
- MGM's Junior College of Vocational Courses
- MGM's Florence Nightingale Inst. Nursing Edu.
- MGM's College of Nursing
- MGM's College of Law

NANDED

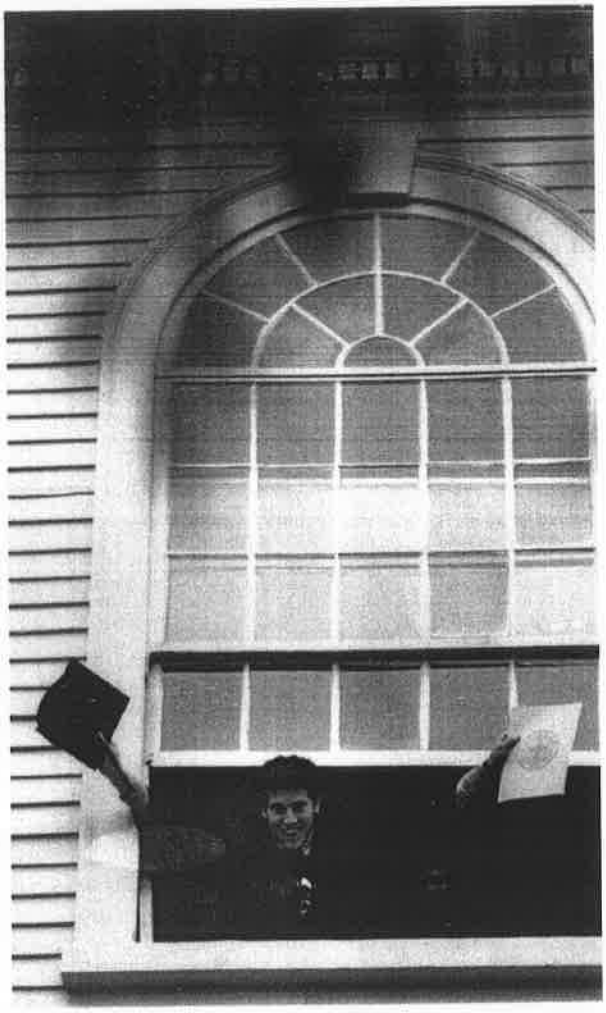
- MGM's College of Engineering
- MGM's College of Fine Arts
- MGM's College of Computer Science
- MGM's College of Journalism & Media Science
- MGM's Centre for Astronomy & Space Tech.
- MGM's College of Library & Information Science

PARBHANI

- MGM's College of Computer Science

NOIDA (U.P.)

- MGM's College of Engineering & Technology



MGM University of Health Sciences
(Education - Health Services - Research)
A Mission started, nurtured and Managed
by Professional Doctors, Scientists Engineers...

MGM INSTITUTE OF HEALTH SCIENCES
(Deemed University u/s 3 of UGC Act, 1956)

Post Box -6, MGM Educational Complex, Sector-18,
Kamothe, Navi Mumbai – 410209
Ph : - 022-27422471, 65168127, 65138121 Fax : 022-27420320
E-mail : mgmuniversity@mgmuhs.com
Website: www.mgmuhs.com

Resolution passed in BOM – 48/2017, dated 24/01/2017

Resolution No. 5.25: Resolved to institute 6 monthly progress Report for PG Students of all Courses from the batches admitted in 2016-17. **[Annexure-XVII of BOM-48/2017]**

ANNEXURE - XVII

Mahatma Gandhi Mission's Medical College and Hospital
Navi Mumbai

Six monthly Progress Report for Postgraduate Students

PART A

Name of the PG student: .....

Department: .....

Admitted in (Month and Year): .....

Name of the PG guide: .....

Report for the period: ..... to .....

Attendance: ..... days (.....%)

PART B

Grading as per performance

Grade	Percentage
A	80% and above
B	65% to 79%
C	50% to 64%
D	Below 50%

1. OPD work:
2. Ward work:
3. Lab work:
4. OT work:
5. ICU work:
6. Teaching assignments:

PART C

Progress of Thesis

PART D

Activities from serial No. 1 to 5 should be rated on a scale of 0 to 10.

1. Case Presentations

Sr. No.	Topic	Date	Guide	Marks

2. Microteaching

Sr. No.	Topic	Date	Guide	Marks

3. Recent Advances

Sr. No.	Topic	Date	Guide	Marks

4. Seminars

Sr. No.	Topic	Date	Guide	Marks

5. Journal Clubs

Sr. No.	Journal	Title of Paper	Date	Guide	Marks

6. Marks obtained in tests

Sr. No.	Date	Theory / Practical	Marks obtained

7. Any other academic activity conducted:

PART E

1. Papers presented

Sr. No.	Title of Paper	Authors	Event	Date

2. Posters presented

Sr. No.	Title of Poster	Authors	Event	Date

3. Publications

(Note: Mention only those publications that are published or are accepted for publication during the said period only)

Sr. No.	Title of Paper	Authors	Journal	Year/Vol/ Issue	Page Nos	Indexed/ Non-Indexed	Status

Certificate by the PG Guide

This is to certify that Dr _____ has an attendance of _____% , during the period _____ to _____
His /Her performance during the said period has been **satisfactory/ average / unsatisfactory.**

Overall Grading:

Date:

Name and Signature of PG guide:

Certificate by the Head of Department

This is to certify that the performance of Dr _____, during the period _____ to _____ , has been **satisfactory/ average / unsatisfactory.**

Overall Grading:

Date:

Name and Signature of HOD:

Final Remarks

Satisfactory / Average / Unsatisfactory

Director (Academics)

Dean

Date:

Resolution No. 1.3.7.13 of BOM-51/2017: Resolved to accept PG Topics (50 hrs)– Anatomy, Physiology, Biochemistry [Annexure-IV]

M.D. BIOCHEMISTRY

PG activities First Year

(Seminars, Group discussion, Journal club, Lectures etc.) TOTAL: 50 Hours

Sr. No.	Topics	Hours
1.	Chemistry of Carbohydrates	2
2.	Chemistry of Lipids	2
3.	Chemistry of Proteins	3
4.	Water Soluble Vitamins	3
5.	Fat Soluble Vitamins	2
6.	Hemoglobin Chemistry	1
7.	Enzymes	4
8.	Biological Oxidation	1
9.	Oxidative Phosphorylation	1
10.	Glycolysis & TCA	1
11.	Glucogenesis & HMP Shunt	1
12.	Glycogen Metabolism	1
13.	Regulation of Blood Glucose & Diabetes Mellitus	1
14.	Transamination, Deamination & Urea Cycle	1
15.	Phenylalanine & Tyrosine Metabolism	1
16.	Tryptophan Metabolism	1
17.	Glycine & one Carbon Metabolism	1
18.	Metabolism of Sulphur containing Amino acids	1
19.	Fatty Acid Synthesis	1
20.	Beta Oxidation of Fatty acids	1
21.	Lipoprotein Metabolism	1
22.	Ketone body Metabolism	1
23.	Cholesterol Metabolism	1
24.	Hemoglobin Metabolism & Porphyrias	2
25.	Integration of Metabolism	1
26.	Starvation Metabolism	1
27.	Inborn Errors of Metabolism	1
28.	Nucleic acid chemistry & Metabolism	2
29.	Nutrition- PEM & Obesity	1
30.	Macro Minerals	2
31.	Micro Minerals	2
32.	Biochemistry of Cancer	1
33.	Colorimetry & Spectrophotometry	1
34.	pH Meter	1
35.	Mechanism of Hormone Action	1
36.	Detoxification	1
	Total	50

M.D. BIOCHEMISTRY

PG activities Second Year

(Seminars, Group discussion, Journal club, Lectures etc.) TOTAL: 50 Hours

Sr. No.	Topics	Hours
1.	Semi-auto & Auto analyser	2
2.	Automation in Clinical Chemistry	1
3.	Water & Electrolyte Balance	2
4.	Flame Photometry	1
5.	Acid Base Balance	2
6.	Blood Gas Analyser	1
7.	Total Quality Management	1
8.	Internal Quality Control	2
9.	External Quality Control	1
10.	Point of Care Testing	1
11.	Liver Function Tests	2
12.	Renal Function Tests	2
13.	Urine Analysis	2
14.	Body Fluid Analysis	1
15.	Cardiac Profile	1
16.	Thyroid Function Tests	1
17.	Lipid Profile & Atherosclerosis	1
18.	Electrophoresis & Chromatography	1
19.	ELISA	1
20.	Chemiluminescence & Immunoassay	1
21.	Flurometry	1
22.	Atomic Absorption Spectroscopy	1
23.	Ultracentrifugation	1
24.	Nephelometry & Turbidometry	1
25.	Endocrinology	2
26.	Pancreatic Function Tests	1
27.	Gastric Function Tests	1
28.	Adrenal Function Tests	1
29.	Free Radicals & Antioxidants	1
30.	Diet in Management of Chronic Diseases	2
31.	Central DOGMA & Genetic Code	1
32.	Replication in Prokaryotes & Eukaryotes	1
33.	Mutation & Repair of DNA	1
34.	DNA Sequencing	1
35.	Transcription	1
36.	Post Transcriptional Modification	1
37.	Translation & Post Translation Modification	2
38.	Mitochondrial DNA & Diseases	1
39.	Biochemistry of Bone, Muscle, Connective tissue	1
40.	Biochemistry of Adipose Tissue, Brain & Nerve	1
	Total	50

M.D. BIOCHEMISTRY

PG activities Third Year

(Seminars, Group discussion, Journal club, Lectures etc.) TOTAL: 30 Hours

Sr. No.	Topics	Hours
1.	Accreditation of Lab	2
2.	Research Methodology & Medical Ethics	1
3.	Immunochemistry	2
4.	Mass Spectroscopy	1
5.	Nuclear Magnetic Resonance	1
6.	Neurochemistry	1
7.	Gene Expression & Regulation	2
8.	Gene Amplification with Techniques	2
9.	Gene Mapping, Chromosome Walking	1
10.	Genetic Engineering	2
11.	Techniques in Genetic Engineering	3
12.	Diagnostic role of Nucleic Acids	1
13.	Oncogenes & Tumor Markers	1
14.	Gene Therapy	1
15.	DNA Probes	1
16.	Micro array	1
17.	Human Genome Project	1
18.	Bioinformatics	1
19.	Genomics & Proteomics	1
20.	Metabolomics	1
21.	Biochemistry of Aging	1
22.	Biochemistry of AIDS	1
23.	Biochemistry of Pregnancy & Lactation	1
	Total	30

Resolution No. 1.3.7.11 (i) of BOM-51/2017: Resolved that the following Bioethics topics in PG Curriculum are to be included for PG students of all specialization and a sensitization of these topics can be done during PG Induction programme:

- Concept of Autonomy
- Informed Consent
- Confidentiality
- Communication Skills
- Patient rights
- Withholding / Withdrawing life-saving treatment
- Palliative Care
- Issues related to Organ Transplantation
- Surgical Research and Surgical Innovation
- Hospital Ethics Committee
- Doctor-Patient relationship

Resolution No. 1.3.23 of BOM-51/2017: Resolved to implement a Structured Induction programme (07 days) for PG students. [Annexure-XLIV]

MGM INSTITUTE OF HEALTH SCIENCES
Navi Mumbai

Induction Program for newly admitted Postgraduate students

Day 1	• Address by Dean, Medical Suptd, Director (Academics) • Pre-test • Communication Skills • Universal Safety Precautions • Biomedical Waste Management • Infection Control Policy
Day 2	• Emergency services • Laboratory services • Blood Bank services • Medicolegal issues • Prescription writing • Adverse Drug Reaction • Handling surgical specimens
Day 3	• Principles of Ethics • Professionalism • Research Ethics • Informed Consent • Confidentiality • Doctor-Patient relationship
Day 4 Day 5 Day 6	• Research Methodology • Synopsis writing • Dissertation writing • Statistics
Day 7	• ATLS • Post-test

The Induction Program will be conducted in the first week of June.
Timing: 9.30 am to 3.30 pm

(Prof. Dr. Siddharth P. Dubhashi)
Director (Academics)

Resolution No. 3.5.4 of BOM-52/2018: Resolved to add Question on Clinical lab data interpretation (10x5 = 50 marks) in MD Biochemistry practical examination, with effect from batch appearing in University April 2019 examination onwards. **[Annexure-I]** ✓

Annexure-I

Annexure VI

DEPARTMENT OF BIOCHEMISTRY

MGM MEDCICAL COLLEGE

MD Previous Pattern

Long Case (1)	Short Case (2) x 50	Standardization	Technique	Urine Analysis	Micro teaching	Viva
100 Marks	100 Marks	25 Marks	25 Marks	25 Marks	25 Marks	100 Marks

MD proposed Pattern

Long Case	Short Case	CLINICAL LABORATORY DATA INTERPRETATION 10 CASESx5=50	Electrophoresis/ Chromatography	Urine Analysis 50	Quality control interpretation Method Validation	Micro teaching	Viva voce Including thesis presentation
75 Marks	25 Marks	50 Marks	25 Marks		50 Marks	25 Marks	100 Marks

Resolution No. 3.5.6 of BOM-52/2018:

(i) Resolved to have allied postings for MD Anatomy, MD Physiology and MD Biochemistry as mentioned below, with effect from batch admitted in 2017-18 onwards:

3) **MD Biochemistry** - fourth semester-

a. General Medicine – 02 months which include MICU, SICU, Dialysis, Cardiology, Endocrinology & EMS
b. Hematology – 01 month
c. Microbiology – 01 month
d. Paediatrics & PICU – 20 days
e. CRL - 10 days

However they will attend PG activities and duties in the department of Biochemistry and central clinical laboratory of the hospital.

PG (MD/MS) students to be posted at Biotechnology laboratory as per their defined allied posting schedule.

Resolution No. 3.5.7 of BOM-52/2018: Resolved to include the below mentioned topics of Bioethics in PG Curriculum, with effect from batch admitted in 2016-17 onwards:

(iii) Biochemistry :

1. Prudency of investigation.
2. Confidentiality of tests and results.
3. Disposal of investigation material and integrity

(iv) Further it was also resolved to include the above Bioethics topics in respective PG handbooks.

Resolution No. 4.5.4.2 of BOM-55/2018: Resolved to have 10 short notes out of 11 (10 marks each) in all the papers in university examination for PG courses including superspeciality. To be implemented from batch appearing in April/May 2019 examination onwards for MD/MS/Diploma and August/September 2019 examination onwards for superspeciality.