MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)
Grade 'A' Accredited by NAAC
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E-mail: registrar@mgmuhs.com; Website :www.mgmuhs.com

CHOICE BASED CREDIT SYSTEM

(CBCS)

(with effect from 2019-2020 Batches)

Curriculum for

M.Sc. Medical Pharmacology

Amended upto AC-51/2025, Dated 29/04/2025

Amended History

1. Approved as per Resolution No. 3.2.1.6.i, of BOM – 57/2019, dated 26/04/2019.
2. Amended as per Resolution No. 3.2.1.5 of BOM – 59/2019, dated 11/11/2019.
3. Amended as per Resolution No. 3.2.2.5 of BOM-62/2020, dated 16/09/2020.
4. Amended as per Resolution No. 2, Resolution No. 10.4.i of AC-42/2022, dated 26/04/2022. (Incorporated at the end of syllabus)
5. Amended as per Resolution No. 5.17 of AC - 48/2023, dated 12/12/2023.
6. Amended as per [Resolution No. 4.23, (Annexure - 45A)], [Resolution No. 4.37, [Annexure - 59] with effect from admission batch 2025 onward, of AC - 51/2025, dated 29/04/2025 .

Name of the Degree: M.Sc. Medical Pharmacology

AIMS OF THE PROGRAM

Postgraduate qualification in Medical Pharmacology can secure placements in Academics and Pharma industries. In academics, one can persue for higher education like Ph.D. in Pharmacology. After completion of the course, one can work as Teaching faculty in a Medical College or as a researcher associateinResearch and Development(RND).

Duration of Study: The duration of the study for M.Sc. Medical Pharmacology will be of six semesters spread over three years.

Program pattern- Commencement of Semester

- First Semester: August
- Second Semester: February
- Third Semester: August
- Fourth Semester: February
- Fifth Semester: August
- Sixth Semester: February

Eligibility Criteria: As a minimum criterion of eligibility, aspiring candidates are needed to have attained a B.Sc. in any discipline of Life Sciences, Biosciences, Bachelor's degree in any of Physics, Biological Sciences, M.B.B.S, BDS, BAMS, BHMS, B.Pharm.,B.Tech (Biotechnology), Bachelor's Degree in Agricultural, Veterinary and Fishery Sciences, or equivalent examination with a minimum aggregate score of 50%.

For any query visit the website: www.mgmuhs.com

CURRICULUM FOR M. Sc. Medical Pharmacology

I st YEAR

Semester I

	Syllabus Ref. No.	Subject	Credits	Teaching hours	Marks		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF101T	**Medical Anatomy**	**4**	**4**	**20**	**60**	**80**
	MF102T	**Medical Physiology**	**4**	**4**	**20**	**60**	**80**
	MF103T	**Medical Biochemistry**	**4**	**4**	**20**	**60**	**80**
	MF104T	**Medical Pharmacology**	**4**	**4**	**20**	**60**	**80**
	MF105T	**Medical Microbiology**	**4**	**4**	**20**	**60**	**80**
	Practical						
	MF101P	**Medical Anatomy**	**1**	**2**	**20**	**50**	**70**
	MF102P	**Medical Physiology**	**1**	**2**	**20**	**50**	**70**
	MF103P	**Medical Biochemistry**	**1**	**2**	**20**	**50**	**70**
	MF104P	**Medical Pharmacology**	**1**	**2**	**20**	**50**	**70**
	MF105P	**Medical Microbiology**	**1**	**2**	**20**	**50**	**70**
	Total		**25**	**30**	**200**	**550**	**750**

Semester II

	Syllabus Ref. No.	Subject	Credits	Teaching hours	Marks		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF201T	**Medical Anatomy**	**4**	**4**	**20**	**60**	**80**
	MF202T	**Medical Physiology**	**4**	**4**	**20**	**60**	**80**
	MF203T	**Medical Biochemistry**	**4**	**4**	**20**	**60**	**80**
	MF204T	**Medical Pharmacology**	**4**	**4**	**20**	**60**	**80**
	MF205T	**Medical Microbiology**	**4**	**4**	**20**	**60**	**80**
	MF206T	**Research Methodology & Biostatistics (Core Course)**	**4**	**4**	**20**	**60**	**80**
	Practical						
	MF201P	**Medical Anatomy**	**1**	**2**	**20**	**50**	**70**
	MF202P	**Medical Physiology**	**1**	**2**	**20**	**50**	**70**
	MF203P	**Medical Biochemistry**	**1**	**2**	**20**	**50**	**70**
	MF204P	**Medical Pharmacology**	**1**	**2**	**20**	**50**	**70**
	MF205P	**Medical Microbiology**	**1**	**2**	**20**	**50**	**70**
	MF206P	**Research Methodology & Biostatistics (Core Course)**	**1**	**2**	**20**	**50**	**70**
	Total		**30**	**36**	**240**	**660**	**900**

2ND YEAR

Semester III							
	Syllabus Ref. No.	**Subject**	**Credits**	**Teaching hours**	**Marks**		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF301T	Details of general pharmacology, CVS, ANS	4	4	20	100	120
		Core Elective course* **	4	4	Internal Exam 80 Marks*		
	MF302CET	Pharmacovigilance					
	MF303CET	Drug development using vertebrate animals					
	MF304	Clinical Postings	6	18		20 *	20
	MF305	Dissertation/Project Proposal**	5	10		20*	20
	MF306	Seminar	2	2		20*	20
	Practical						
	MF301P	Clinical pharmacokinetic, Pharmacy, dosage form	2	4	20	100	120
	MF302CEP MF303CEP	Core Elective practical*** Pharmacovigilance Drug development using vertebrate animals	1	2	Internal Exam 50 Marks*		

		Total	24	44	40	260	300

***Exam will be conducted at Departmental level**

Semester IV							
	Syllabus Ref. No.	**Subject**	**Credits**	**Teaching hours**	**Marks**		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF401T	**Details of Endocrinology, CNS , Drug Development**	4	4	20	100	120
		General elective ***	4	4			
	MF402GE	Bioethics, Biosafety, IPR & Technology Transfer	Internal Exam of 80 Marks*				
	MF402GE	Disaster Management and Mitigation Resources					
	MF403GE	Human rights					
	MF404	Clinical Postings	7	21		20*	20
	MF405	Dissertation / Project**	5	10		20*	20
	MF406	Seminar	2	2		20*	20
	Practical						
	MF401P	Bioassay, Experimental graphs	2	4	20	100	120
		Total	24	45	40	260	300

***Exam will be conducted at Departmental level**

IIIrd YEAR

Semester V							
	Syllabus Ref. No.	**Subject**	**Credits**	**Teaching hours**	**Marks**		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF501T	Chemotheraputic Agents, Drug discovery & development, Ethics & Ethics Committee.	4	4	20	100	120
	MF502	Clinical Postings	6	18		20*	20
	MF503	Dissertation / Project**	10	20		20*	20
	MF504	Seminar/Journal Club	2	2		20*	20
	Practical						
	MF501P	Clinical research, Instrumentation	1	2	20	100	120
		Total	23	46	40	260	300

***Exam will be conducted at Departmental level**

Semester VI							
	Syllabus Ref. No.	**Subject**	**Credits**	**Teaching hours**	**Marks**		
	Theory				**Internal Assessment**	**Semester Exam**	**Total**
	MF601T	Drug screening and Evaluation methods, Drugs affecting Cardiovascular System, Drug affecting CNS, Pharmacoeconomics, Pharmacoepidemiology, Dermato pharmacology, Ethical Review of Scientific Projects/Papers, Writing Informed Consent form & Patient Information Sheet	4	4	20	100	120
	MF602	Clinical Postings	5	15		20*	20
	MF603	Seminar/Journal Club	1	1		20*	20
	Practical						
	MF601P	Animal handling, short procedures	2	4	20	50	70
	MF602P	Dissertation / Project**	12	24		70	70
		Total	24	50	40	260	300

***Exam will be conducted at Departmental level**

(a) ***Dissertation / Project* **Course** commences in II nd Semester.

Students should undergo ICMR Online Course of Research Methodology before submitting the protocol for their Dissertation. (Ist / II nd Semester)

Allotment of Guide	II nd Semester (On or Before 30 April)
Submission of Protocol for Scientific and Ethical Committee Approval	III rd Semester (On or Before 14 th Aug)
Scientific and Ethical Approval	III rd Semester (On or Before 14 th October)
Commencement of Research Work	III rd Semester 15th October
Submission of Thesis	VI th Semester 31 st March

***** (Elective): Any one subject is to be chosen from the subjects offered** (Subjects offered may change from time to time depending on the availability of expertise)

Elective courses may or may not have practical and/or field work.

~~Annexure Item 7~~**Annexure-74 of**
BOM-57/2019 dt 24.04.2019

Item 7: Restructuring syllabus of M.Sc. Medical Pharmacology Program as per Choice Based Credit System (CBCS)

Name of the Degree: M.Sc. Medical Pharmacology

AIMS OF THE PROGRAM

Postgraduate qualification in MedicalPharmacology can secure placements in Academics and Pharma industries. In academics, one can persue for higher education like Ph.D. in Pharmacology. After completion of the course, one can work as Teaching faculty in a Medical College or as a researcher associateinResearch and Development(RND).

Duration of Study: The duration of the study for M.Sc. Medical Pharmacology will be of six semesters spread over three years.

Program pattern- Commencement of Semester

- First Semester: August
- Second Semester: February
- Third Semester: August
- Fourth Semester: February
- Fifth Semester: August
- Sixth Semester: February

Eligibility Criteria: As a minimum criterion of eligibility, aspiring candidates are needed to have attained a B.Sc. in any discipline of Life Sciences, Biosciences, Bachelor's degree in any of Physics, Biological Sciences, M.B.B.S, BDS, BAMS, BHMS, B.Pharm.,B.Tech (Biotechnology), Bachelor's Degree in Agricultural, Veterinary and Fishery Sciences, or equivalent examination with a minimum aggregate score of 50%.

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ACADEMIC SYLLABUS FOR SEMESTER-I

Name of the Programme	**M. Sc. Medical Pharmacology**
Course Code	
Name of the Course	**Medical Pharmacology I Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concepts of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 1. Understand basic concepts of pharmacology 2. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 3. List indication, contraindication, interaction and adverse reaction of commonly used drugs 4. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 5. Explain and understand the pharmacological basis for prescribing drug in special medical situations

SEMESTER-I

Unit no.	Theory Topics	Hours allotted No. of-hrs
1.	**General Pharmacology :**Introduction to Pharmacology**,** Sources of Drugs, Routes of Drug Administration, Pharmacokinetics , Pharmacodynamics, Factors Modifying Drug action and Adverse drug reactions.	10
2.	**Autonomic Nervous System:** General Consideration, Adrenergic agonist, Adrenergic antagonists, Cholinergic agonists, Anticholinesterases drugs,Anticholinergic drugs, Skeletal muscle relaxants.	11
3.	**Cardiovascular System:** Antihypertensive Agents, Diuretics and Anti-diuretics,Antianginal Agents, Coagulants & Anticoagulants, Thrombolytics & Antiplatelet agents, Drugs for congestive cardiac failure, Management of shock, Hypolipidemic agents and Haematinics.	16
4.	**Gastrointestinal System:** Emetics and Antiemetics, Drugs for peptic ulcer, Anti-diarrheal agents and Laxative & purgatives.	5
5.	**Respiratory System:** Treatment of Cough, Drugs for Bronchial asthma.	3
	Total	**45**

Unit no.	Tutorial Topics	Hours allotted No. of hrs
1.	Bioavailability of Drug	1
2.	Dosage Form of drugs	1
3.	Pharmacovigilance	1
4.	Management of Organophosphorus Compound Poisoning (OPC)	1
5.	Factors Modifying Drug action	1
6.	Atropine Substitutes	1
7.	β adrenergic blockers	1
8.	Management of Hypertension (HT)	1
9.	Management of Angina pectoris	1
10.	Management of Congestive Cardiac Failure (CCF)	1
11.	Management of Myocardial Infarction (MI)	1
12.	Management of Anemia	1
13.	Management of Diarrhea	1
14.	Management of Bronchial Asthma	1
15.	Skeletal muscle relaxants	1
	Total	**15**

Unit no.	**Practical Topics**	**Hours allotted No. of hrs**
1.	Introduction to Practical Pharmacology	4
2.	Prescription Writing	4
3.	Pharmacokinetics- I	4
4.	Routes of Administration – Oral	4
5.	Routes of Administration – Parenteral	4
6.	Routes of Administration – Topical	4
7.	Introduction to Pharmacy	4
8.	Introduction to Experimental Pharmacology	2
	Total hours	**30**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16,
2. EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi
3. R.S. Satoakar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
4. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi

Resolution No. 4.23 of Academic Council (AC-51/2025):

Resolved to approve the revision of syllabus for 2nd Semester of Medical MSc programmes Admission batch 2025 [**ANNEXURE-45A**].

Pharmacology syllabus in 2nd Semester for MSc Medical Pharmacology with effect from admission batch 2025 onwards

ACADEMIC SYLLABUS FOR SEMESTER-II

Name of the Programme	**M. Sc. Medical Pharmacology**
Name of the Course	**Pharmacology II Semester**
Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concepts of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 1. Understand basic concepts of pharmacology 2. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 3. List indication, contraindication, interaction and adverse reaction of commonly used drugs 4. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 5. Explain and understand the pharmacological basis for prescribing drug in special medical situations

SEMESTER-II

Unit no.	Theory Topics	Hours allotted No. of-hrs
1.	**Drugs affecting Central Nervous system (CNS)**.	9
a.	Introduction to CNS, Sedative and Hypnotics	1
b.	Antiepileptics	1
c.	Antidepressants	1
d.	Antipsychotics.	1
e.	NSAIDS	2

f.	Opioids	2
g.	Antiparkinsonian agents.	1
2.	**Endocrine**	07
a.	Introduction to Endocrinology,	1
b.	Glucocorticoids	2
c.	Insulin, Oral hypoglycemic agents	2
d.	Thyroxine & Antithyroid	1
e.	Oral Contraceptives **(Tutorial)**	1
3.	**Chemotherapeutic agents**	14
a.	General consideration **(Tutorial)**	1
b.	Sulphonamides and Cotrimoxazole **(Tutorial)**	1
c.	Fluoroquinolones and Macrolides	1
d.	Penicillins,	1
e.	Cephalosporins	1
f.	Aminoglycosides	1

g.	Tetracyclines and Chloramphenicol	1
h.	Antitubercular drugs	1
i.	Antileprotic agents	1
j.	Antiamoebic agents **(Tutorial)**	1
k.	Antimalarial agents	1
l.	Anthelminthics	1
m.	Antifungal agents **(Tutorial)**	1
n.	Antiviral agents **(Tutorial)**	1
	Total	**30**

Unit no.	**Practical Topics**	**Hours allotted No. of hrs**
1.	Pharmacokinetics –II	4
2.	Pharmacodynamics-I	4
3.	Pharmacodynamics-II	4
4.	Screening techniques for new drugs	4
5.	Adverse drug reactions	4
6.	Sources of drug Information	4
7.	Computer assisted learning (CAL) – Experimental pharmacology	2
8.	CNS Screening instruments and equipments	4
	Total hours	**30**

ACADEMIC SYLLABUS FOR SEMESTER-II

Name of the Programme	**M. Sc. Medical Pharmacology**
Name of the Course	**Pharmacology II Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concepts of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 1. Understand basic concepts of pharmacology 2. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 3. List indication, contraindication, interaction and adverse reaction of commonly used drugs 4. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 5. Explain and understand the pharmacological basis for prescribing drug in special medical situations

SEMESTER-II

Unit no.	Theory Topics	Hours allotted No. of-hrs
1.	**Drugs affecting Central Nervous system (CNS) :**Introduction to CNS,Sedative and Hypnotics,LocalAnaesthetics,GeneralAnaesthetics, Antiepileptics, Antidepressants, Antipsychotics, NSAIDS, Opioids and Antiparkinson agents.	13
2.	**Hormones and Antagonists:** Introduction to Endocrinology, Glucocorticoids,Insulin,Oral hypoglycemic agents,Thyroxine&Antithyroid drugs,Estrogens and Antagonists,Progestins and Antagonists,Oral Contraceptives, Testosterone and Anabolic steroids.	12
3.	**Chemotherapeutic agents:** General consideration, Sulphonamides and Cotrimoxazole, Fluroquinolones, Penicillins, Cephalosporins and Other beta lactam antibiotics, Aminoglycosides, Macrolides, Tetracyclines and Chloramphenicol, Antitubercular drugs, Antileprotic agents, Antimalarial agents, Antiamoebic agents, Antihelminthics, Antifungal agents, Antiviral agents and Cancer Chemotherapy.	20
	Total	**45**

Unit no.	Tutorial Topics	Hours allotted No. of hrs
1.	Management of Epilepsy	1
2.	Management of Depression	1
3.	Management of Pain	1
4.	Management of Drug Dependence	1
5.	Management of Parkinson's disease	1

6.	Management of Diabetes Mellitus	1
7.	Oral contraceptives	1
8.	General consideration of Chemotherapy	1
9.	Management of Urinary tract infection	1
10.	Management of Typhoid	1
11.	Management of Tuberculosis	1
12.	Management of Leprosy	1
13.	Management of Malaria	1
14.	Management of Amoebiasis	1
15.	Management of HIV	1
	Total	**15**

Unit no.	**Practical Topics**	**Hours allotted No. of hrs**
1.	Pharmacokinetics –II	4
2.	Pharmacodynamics-I	4
3.	Pharmacodynamics-II	4
4.	Screening techniques for new drugs	4
5.	Adverse drug reactions	4
6.	Sources of drug Information	4
7.	Computer assisted learning (CAL) – Experimental pharmacology	2
8.	CNS Screening instruments and equipments	4
	Total hours	**30**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16, EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi

2. R.S. Satoskar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
3. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delh

SEMESTER-II

MGM INSTITUTE OF HEALTH SCIENCES **M. Sc. Medical Students** **Syllabus for Research Methodology and Biostatistics**		
	No. of Hours	
I. Research Methodology:	Theory	Practical
Scientific Methods of Research : Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research , Research Methods versus Methodology, Different Steps in Writing Report, Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report	5	—
Research Designs: Prospective, retrospective, Observational Studies: Descriptive, explanatory, and exploratory, Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.	5	—
Sampling Designs : Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	4	0
Measurement in research: Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement	5	5
Methods of Data Collection: Types of data, Collection of Primary Data, Observation Method, Interview Method, Collection of Primary Data	3	0
Ethics and Ethical practice in research and plagiarism	1	
Sampling Fundamentals: Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.	5	2

II. Biostatistics		
Data Presentation : Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	3	3
Measures of Central Tendency and Dispersion : Mean, Median, Mode Range, Inter quartile range, variance and Standard Deviation, Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	3	3
Testing of Hypotheses: Definition, Basic Concepts, Procedure for Hypothesis Testing, Normal distribution, data transformationImportant Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples, Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Testing the Equality of Variances of Two Normal Populations.	6	6
Chi-square Test: Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	2	2
Measures of Relationship: Need and meaning, Correlation and Simple Regression Analysis	2	2
Analysis of Variance and Covariance: Analysis of Variance (ANOVA):Concept and technique of ANOVA, One-way ANOVA, Two-way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique.	4	4
Nonparametric or Distribution-free Tests: Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, Wilcoxon Rank Sum Test: Mann-Whitney U testKruskalWalli's test, Friedman's test, and Spearman Correlation test.	3	3
Vital Health Statistics: Measurement of Population: rate, crude rate, specific rate,*Measurement of fertility***:** specific fertility rate, Total fertility rate,*Reproductionrate,*Gross Reproduction Rate, Net Reproduction Rate, Measures related to mortality: Crude Death Rate (CDR) , Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	4	3
Computer Application UseofComputer in data analysis and research, Use of Software and Statistical package.	0	2
Total hours	55	35

Resolution No. 4.37 of Academic Council (AC-51/2025): Resolved to approve the restructuring of Lecture Hours in syllabus of Research Methodology and Biostatistics for 2nd Semester of MSc Medical Courses applicable from Academic Year 2025 [ANNEXURE-59].

Annexure-59 of AC-51/2025

MGM INSTITUTE OF HEALTH SCIENCES

MGM Medical College Navi Mumbai

DEPARTMENT OF COMMUNITY MEDICINE

M. Sc. Medical Students

Syllabus for Research Methodology and Biostatistics

No. of Hours= 30 (Theory) & 35 (Practical)

I. Research Methodology:

	Th	P
Scientific Methods of Research : • Definition of Research, Assumptions, Operations and Aims of Scientific Research. Research Process, Significance and Criteria of Good Research, Research Methods versus Methodology, Different Steps in Writing Report, • Technique of Interpretation, Precaution in interpretation, Significance of Report Writing, Layout of the Research Report	**2**	0
Research Designs: • Prospective, retrospective, Observational Studies: Descriptive, explanatory, and exploratory, • Experimental Studies: Pre-test design, post-test design, Follow-up or longitudinal design, • Cohort Studies, Case Control Studies, Cross sectional studies, Intervention studies, Panel Studies.	**3**	**0**
Sampling Designs: • Census and Sample Survey, Implications of a Sample Design, Steps in Sampling Design Criteria of Selecting a Sampling Procedure, Characteristics of a Good Sample Design, Different Types of Sample Designs (Probability sampling and non probability sampling), How to Select a Random Sample?, • Systematic sampling, Stratified sampling, Cluster sampling, Area sampling, Multi-stage sampling, Sampling with probability proportional to size, Sequential sampling.	**2**	**0**
Measurement in research: • Measurement Scales, Sources of Error in Measurement, Tests of Sound Measurement, Technique of Developing Measurement Tools, Scaling Meaning of Scaling, Scale Classification Bases, • Important Scaling Techniques, Scale Construction Techniques, Possible sources of error in measurement, Tests of sound measurement	**2**	**5**
Methods of Data Collection: • Types of data, Collection of Primary Data, • Observation Method, Interview Method, Collection of Primary Data	**2**	**0**
• **Ethics and Ethical practice in research and plagiarism**	**1**	
Sampling Fundamentals : • Need and importance for Sampling, Central Limit Theorem, Sampling Theory, Concept of Standard Error, Estimation, Estimating the Population Mean Estimating Population Proportion, Sample Size and its Determination, • Determination of Sample Size through the Approach Based on Precision Rate and Confidence Level.	**2**	**2**

II. Biostatistics

Data Presentation : • Types of numerical data: Nominal, Ordinal, Ranked, Discrete and continuous. Tables: Frequency distributions, Relative frequency, • Graph: Bar charts, Histograms, Frequency polygons, one way scatter plots, Box plots, two way scatter plots, line graphs	**2**	**3**
Measures of Central Tendency and Dispersion : • Mean, Median, Mode. Range, Inter quartile range, variance and Standard Deviation, • Coefficient of variation, grouped mean and grouped standard deviation (including merits and demerits).	**2**	**3**
Testing of Hypotheses: • Definition, Basic Concepts, Procedure for Hypothesis Testing, • Normal distribution, data transformation • Important Parametric Tests, Hypothesis Testing of Means, Hypothesis Testing for Differences between Means, Hypothesis Testing for Comparing Two Related Samples • Hypothesis Testing of Proportions, Hypothesis Testing for Difference between Proportions, Testing the Equality of Variances of Two Normal Populations.	**4**	**6**
Chi-square Test: • Chi-square as a Non-parametric Test, Conditions for the Application Chi-square test, Steps Involved in Applying Chi-square Test, Alternative Formula, Yates' Correction, and Coefficient by Contingency.	**1**	**2**
Measures of Relationship: • Need and meaning, Correlation and Simple Regression Analysis	**1**	**2**
Analysis of Variance and Covariance: • Analysis of Variance (ANOVA): Concept and technique of ANOVA, One-way ANOVA, • Two way ANOVA, ANOVA in Latin-Square Design Analysis of Co-variance (ANOCOVA), ANOCOVA Technique	**2**	**4**
Nonparametric or Distribution-free Tests: • Important Nonparametric or Distribution-free Test Sign test, Wilcoxon signed-Rank Test, • Wilcoxon Rank Sum Test: Mann-Whitney U test Kruskal Walli's test, Friedman's test, and Spearman Correlation test.	**2**	**3**
Vital Health Statistics: • Measurement of Population: rate, crude rate, specific rate, *Measurement of fertility***:** specific fertility rate, Total fertility rate, *Reproduction rate*, Gross Reproduction Rate, Net Reproduction Rate, • Measures related to mortality: Crude Death Rate (CDR) , Age-specific death Rate, Infant and child mortality rate, Measures related to morbidity.	**2**	**3**
Computer Application • Use of Computer in data analysis and research, Use of Software and Statistical package	**0**	**2**
Total Hours	**30**	**35**

ASSESSMENT

1. LETTER GRADES AND GRADE POINTS:

MGMIHS has adopted the UGC recommended system of awarding grades and CGPA under Choice Based Credit Semester System for MSc Medical courses.

1. MGMIHS would be following the absolute grading system, where the marks are compounded to grades based on pre-determined class intervals.
2. The UGC recommended 10-point grading system with the following letter grades will be followed:

Table 1: Grades and Grade Points

Letter Grade	Grade Point
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B (Good)	7
C (Above Average)	6
F (Fail)/ RA (Reappear)	0
Ab (Absent)	0
Not Completed (NC)	0
RC (<50% in attendance or in Internal Assessment)	

a. A student obtaining Grade RA shall be considered failed and will be required to reappear in the examination.

b. Candidates with NC grading are those detained in a course (s); while RC indicate student not fulfilling the minimum criteria for academic progress or less than 50%in attendance or less than 50% in internal assessments (IA). Registrations of such students for the respective courses shall be treated as cancelled. If the course is a core course, the candidate has to re-register and repeat the course when it is offered next time.

c. CBCS Grading System - Marks Equivalence Table

Table 2: Grades and Grade Points

Letter Grade	Grade Point	% of Marks
O (Outstanding)	10	86-100
A+ (Excellent)	9	70-85
A (Very Good)	8	60 -69
B (Good)	7	55 -59
C (Above Average) – **Pass both for UG and PGs**	6	50- 54
F (Fail))/ RA (Reappear)	0	Less than 50
Ab (Absent)	0	-
NC- not completed	0	-
RC- Repeat the Course	0	0

Table 3: Cumulative Grades and Grade Points

Letter Grade	Grade Point	CGPA
O (Outstanding)	10	9.01 - 10.00
A+ (Excellent)	9	8.01 – 9.00
A (Very Good)	8	7.01 – 8.00
B (Good)	7	6.00 - 7.00
C (Above Average)	6	5.01 - 6.00

d. **Assessment of a Course:** Evaluation for a course shall be done on a continuous basis. Uniform procedure will be adopted under the CBCS to conduct continuous internal assessments (IA), followed by one end-semester university examination (ES) for each course.

e. Courses in programs wherein Theory and Lab are assessed jointly, the minimum passing head has to be 50% Grade each for theory and practical's separately. RA grade in any one of the components will amount to reappearing in both components. i.e. theory and practical.

2. Eligibility to appear for the end-semester examinations for a course includes:

2.1 Candidates having ≥ 75% attendance and obtaining the minimum 35% in internal assessments in each course to qualify for appearing in the end-semester university examinations.

2.2 The students desirous of appearing for university examination shall submit the application form duly filled along with the prescribed examination fee.

2.3 Incomplete application forms or application forms submitted without prescribed fee or application form submitted after due date will be rejected and student shall not be allowed to appear for examination.

3. Passing Heads

3.1 The minimum passing head shall be 50% in both Theory and practicals separately including the internal assessment.

3.2 Elective subjects – the minimum prescribed marks for a pass in elective subject should be 50%. The marks obtained in an elective subjects should be communicated to the university before the commencement of the university examination.(FromIIIrd Sem Onwards)

4 Detention:

A student not meeting any of the above criteria may be detained (NC) in that particular course for the semester. In the subsequent semester, such a candidate improve in all, including attendance and/or IA minimum to become eligible for the next end-semester examination.

5 The maximum duration for completing the course will be 6 years (minimum duration of course x 2) i.e. (3x2) =6 years for PG Courses, failing which his/her registration will be cancelled. Full fees of entire course of three years may be liable to be paid by the students.

6 Carry over benefit:

6.1 A candidate who fails in any two main subjects of previous semester shall be permitted to carry over those subjects to the next semester.

6.2 A candidate shall not be allowed to appear in the final semester examination unless the candidate has cleared all the previous semester examinations.

7 Grace Marks for PG Courses:

No grace marks will be awarded for PG Exams.

8. University End-Semester Examination

8.1 There will be one final university examination at the end of every semester.

8.2 A candidate must have minimum 75% attendance (Irrespective of the type of absence) in theory and practical in each subject to be eligible for appearing the University examination.

8.3 The Dean shall send to the university a certificate of completion of required attendance and other requirements of the applicant as prescribed by the university, two weeks before the date of commencement of the written examination.

8.4 A candidate shall be eligible to sit for the examination only, if she / he has secured minimum 35% in internal assessment of that subject. The internal examinations will be conducted at college/ department level.

8.5 Notwithstanding – anything in any examination, a deficiency of attendance at lectures or practical maximum to the extent of 10% - may be condoned by the Dean.

8.6 If a candidate fails either in theory or in practical, he/ she have to re-appear for both.

8.7 There shall be no provision of re- evaluation of answer sheets. Candidates may

apply to the university following due procedure for recounting of theory marks in the

Presence of the subject experts.

8.8 Internal assessments shall be submitted by the Head of the Department to the university

through the Dean MGMMC at least two weeks before commencement of University theory examination.

8.9 Supplementary examination: There shall be no supplementary examination

8.10 Re-Verification -There shall be provision of retotaling of the answer sheets, candidate shall be permitted to apply for recounting/retotaling of theory papers within 8 days from the date of declaration of results.

8.11 Scheme of University Exam Theory PG Program: General structure / patterns for setting up question papers for Theory / Practical courses, their evaluation weightages for PG programs are given in the following tables.

8.12Theory Question Paper Pattern for Core Subjects in **University Examinations (For 1st & 2nd Semester)**

Under CBCS - 60Mark

Question Type	**No. of Questions**	**Questions to be Answered**	**Questions X Marks**	**Total Marks**
Brief Answer Questions	7	6	1X 10	**60**

General Instructions (Theory):

A. Time duration of each Theory Paper will be of Three (3) Hrs .
B. Total Marks of each Theory Paper will be 60 Marks

8. 13Practical Question Paper Pattern For**University Examinations** Under CBCS - 50 Marks

Exercise	**Description**	**Marks**

Q No 1	Practical exercise – 1	1 x10=15 M
Q No 2	Station exercise	3x5M=25 M
Q No 3	VIVA	10 M
		Total = 50 M

General Instructions (Practical):

A. All the students have to remain present at the examination center 15 minutes before the scheduled time for examination.

B. Students have to carry with them certified journal, I-card or examination receipt, and other necessary requirements for examination.

C. Candidate should not leave the practical hall without the permission of examiner.

D. Use of calculator is allowed but the use of mobile phones is strictly prohibited.

E. The candidate has to leave the laboratory only after the submission of all the answer sheets of the exercises performed.

8.14 Internal examination pattern (Theory) : 30marks

Question type	**No. of questions**	**Questions to be answered**	**Question X marks**	**Total marks**
Brief Answer Questions	4	3	1X10	**30**

8.15 Breakup of theory IA calculation for 20 marks

Internal exam (Department -30 Marks)	15 marks
Seminar	5 marks
	Total = 20 M

8.16 Internal Examination Pattern (Practical): 30 Marks

Practical Exercise	10marks

Station Exercise	10 marks
Viva	10 marks
Total practical	**30 Marks**

8.17 Breakup of practical IA calculation:

Internal exam (Department -30 Marks)	15 marks
Journal	5 marks
	Total = 20 M

Internal Assessment marks should be submitted to the university by respective departments at least 15 days prior to onset of university examination.

9. Submission of Protocol of Dissertation: Students should undergo Online Course of Research Methodology (MCI- PG) before submitting the protocol for their Dissertation.

Item 8: Restructuring syllabus and assessment pattern of M.Sc. Medical Pharmacology Program (3rd and 4th Semester) as per Choice Based Credit System (CBCS)

ACADEMIC SYLLABUS FOR SEMESTER-III

Name of the Programme	**M. SC MEDICAL Pharmacology**
Course Code	
Name of the Course	**Medical Pharmacology III Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concept of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 6. Understand basic concepts of pharmacology 7. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 8. List indication, contraindication, interaction and adverse reaction of commonly used drugs 9. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 10. Explain pharmacological basis for prescribing drug in special medical situation on patient

Unit No.	Theory Topics	Hours allotted No. of-hrs
1.	**General Pharmacology :**	**13**
	Introduction to Pharmacology	1
	Sources of Drugs	1
	Routes of Drug Administration	1
	Pharmacokinetics	4
	Pharmacodynamics	2
	Factors Modifying Drug action	2
	ADR.	2
2.	**Clinical Pharmacokinetics**:	**10**
	Bioavailability studies	2
	Analysis of bioavailability	2
	Cmax, Tmax, AUC	1
	Half Life	1
	Volume of distribution	2
	Loading dose and Maintenance dose	1
	TDM	1
3.	**Autonomic Nervous System:**	**11**
	General Consideration	1
	Adrenergic agonist	2
	Adrenergic antagonists	2

	Cholinergic agonists	1
	Anti – cholinesterase	2
	Anti – cholinergic	2
	Skeletal muscle relaxants	1
4.	**Cardiovascular System:**	**21**
	Antihypertensive Agents	3
	Diuretics and antidiuretics	2
	Antianginal Agents	2
	Anticoagulants & Coagulants	3
	Thrombolytics& Antiplatelet agents,	2
	Drugs for CCF	3
	Management of shock	2
	Hypolipidemic agents	1
	Haematinics	3
5.	**Drug Design and Discovery**	**5**
	Path of drug development	2
	Preclinical drug development	3
	Total	**60**

Unit no.	**Practicals**	**Hours allotted** **No. of-hrs**
1.	**Clinical pharmacokinetic parameters:**	**20**

	Pharmacokinetic I	4
	Bioequivalent studies	4
	Volume of distribution	4
	Plasma half life	4
	Clearance	4
2.	**Dosage form:**	**12**
	Liquid dosage form	6
	Solid dosage form	6
3.	**Pharmacy:**	**28**
	Antipyretic solution	4
	Mist alba suspension	4
	Liquid paraffin emulsion	4
	Calamine lotion	4
	Turpentine liniment	4
	ORS	4
	Whitfield's Ointment	4
	Total	**60**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16, EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi
2. R.S. Satoakar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
3. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi

ACADEMIC SYLLABUS FOR SEMESTER-III

Name of the Programme	**M. SC MEDICAL Pharmacology**
Subject	**Pharmacovigilance (Core Elective)**
Name of the Course	**Medical Pharmacology III Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concept of Pharmacovigilance and drug safety monitoring among learners. Orient learners regarding adverse drug reaction reporting
Course Outcomes (Learning Objectives)	At the end of course learner should be able to • Understand basic concepts of Pharmacovigilance and its importance • Wellwerse with definitions of terminologies used in pharmacovigilance • Able to identify and report suspected drug reactions. Able to perform causality assessemnt • Describe the types of ADRS • Principle of preventability and management of adverse reaction

Unit No.	**Theory Topics**	**Hours allotted No. of-hrs**
1.	**General Consideration and Terminology:**	**8**
	Introduction to Pharmacovigilance and terminology	1
	Historical development of Pharmacovigilance	1
	Safety drug Monitoring	1
	Introduction to ADR, definition and classification, ADR v/s ADE	1
	Types of ADR	1

	ADR with commonly used drugs	1
	Causality Assessment, Assessment of Safety and seriousness	1
	Predictability and preventability assessment and management of ADRs	1
2.	**Pharmacovigilance Practicals**	**5**
	Good Pharmacovigilance practices	1
	Signal detection, Strengthening and Analysis	1
	Risk benefit Assessment	1
	Drug disease classification of daily dose	1
	Defined daily dose and international non proprietary names of drug	1
3.	**Pharmacovigilance methods**	**10**
	Pharmacovigilance methods- Introduction and passive surveillance	1
	Spontaneous ADR reporting system	1
	Case series stimulated reporting	1
	Observational Studies	2
	Targated clinical investigation	1
	Vaccine safety surveillance	1
	ADR with biological	1
	ADR with Herbal preparations	1
	Narrative writing	1
4.	**Pharmacovigilance information resources**	**11**
	Basic drug information resources	1
	Product information sheet	1
	Meta-analysis	1

	Drug safety evaluation in special population	3
	Drug interaction	1
	Food drug interaction	1
	Overdose interaction	1
	Recreational agents	1
	Counterfeit (Fake medicine) products	1
5.	**Regulator guidelines**	**10**
	Electronic reporting ADR	1
	Reporting obligations and time lines	1
	Documents in Pharmacovigilance	1
	PVPI (Pharmacovigilance programme of India)	1
	Global Pharmacovigilance programme	1
	Setting a Pharmacovigilance center	1
	Pharmacovigilance inspection and audit	1
	Safety data exchange arrangements	1
	ADR report analysis and action taken	1
	CIOMS (Council for International Organizations of Medical Sciences	1
	Total	**44**

Unit No.	**Tutorial Topics**	**Hours allotted No. of-hrs**
1.	**Tutorial**	**16**

	ADR reporting	1
	Causality assessment	1
	Treatment failure	1
	ADRs with biological vaccine	1
	Function of PVPI	1
	Regulation in ADR reporting	1
	Electronic data transfer system	1
	CIOMS	1
	ADRs ingeriatic population	1
	Drugs used in pregnancy	1
	PBL- 3 case sceniro discussion	6
	Total	**16**

Unit no.	**Practicals**	**Hours allotted No. of-hrs**
1.	Process of ADR reporting	4
2.	ADR reporting case sceniro	2
3.	Causality Assessment	2
4.	Type of ADR- A case sceniro	2
5.	Assessment of Seriousness and severity	4
6.	Risk benefit assessment	4
7.	Pharmacovigilance audit	4
8.	Drug interaction causing ADR	4
9.	Electronic data entry	2

10	Narrative writing	2
	Total	**30**

Reference books:

1. Textbook of Pharmacovigilance by SK Gupta and Shushma Srivastava, Jaypee publications latest editions
2. Fundamentals of Pharmacovigilance. By Sumit Verma and Yogesh Gulati, Paras medical publisher latest Edition
3. Text book of Pharmacovigilance concept and practise, By Guruprasad Mohanta, Prabal Kumar Manna. Pharma Med Press. Latest Edition

ACADEMIC SYLLABUSFOR SEMESTER-III

Name of the Programme	**M. SC MEDICAL Pharmacology**
Subject	**Drug Development using vertebrate animals (Core Elective)**
Name of the Course	**Medical Pharmacology III Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concept of experimental drug development in pharmacology. • To acquire basic knowledge and skill ofvarious models of drug development. • Should be aware about local regulatory guideline regarding animal experimentation.
Course Outcomes (Learning Objectives)	At the end of course student should be able to • Understand basic concepts of drug development • Describe and should develop skill for drug development pharmacodynamics and pharmacokinetics of essential and commonly used drugs • Aware about regulatory guidelines required for preclinical studies

Unit No.	**Theory Topics**	**Hours allotted No. of-hrs**
1.	**General consideration in drug evaluation**	**10**

	Introduction to experimental pharmacology	1
	Introduction and experimental back ground of drug evaluation in vertebrates	1
	Commonly used experimental animals	1
	Care of lab animals and diet	1
	Dose calculation for experimental animals	1
	Route of drug administration	1
	Methods of blood collection	1
	Anaesthesia and Euthanesia	1
	Biological waste disposal	1
	Zoonotic diseases	1
2.	**Regulation in animal experimentation**	**6**
	Ethical consideration and regulatory guidelines	2
	Good laboratory practices	2
	Requirement for setting animal house for experimental research	1
	Role of CPCSEA in experimental research	1
3.	**Animal models in drug discovery**	**3**
	Introduction and general principles of preclinical drug evaluation	1
	Lead optimization to pharmaceutical drug discovery	1
	Variability of drug response in drug screening	1
4.	**Animal models for evaluation**	**18**
	Antihypertensive agents	2
	Antidiabetic agents	2
	Antidyslipidemic agents	1

	Local anaesthetic	1
	Nephroprotective agents	1
	Anticonvulsants	1
	Sedative and hypnotics	1
	Antianxiety agents	1
	Antipsychotics	1
	Antidepressants	1
	Analgesics	1
	Anti-inflammatory agents	1
	Drugs affecting memory	1
	Drugs acting on eyes	1
	Antiulcer agents	1
	Antidiarrhoeal agents	1
5.	**Toxicity studies:**	12
	Single dose Toxicity studies: Minimum lethal dose and maximum tolerated dose, dose calculation of LD_{50} ,NOAEL, LOAEL	4
	Repeated dose toxicity studies: Sub acute and Chronic studies, Male fertility study, Female reproduction and development toxicity studies	4
	Local toxicity studies: Allerginicity, Genotoxicity, Carcinogenicity,	4
6.	**Preclinical study dosier for regulatory submission**	**3**
7.	**Use of Zebra fish in drug development**	**8**
	Zebra fish – A model for evaluation of drug	2
	Regulatory requirement for setting Zebra fish facility	2
	Zebra fish model for drug safety studies	2

	Zebra fish models for drug screening	2
	Total	**60**

Unit no.	**Practicals**	**Hours allotted** **No. of-hrs**
1.	Handling and feeding of lab animals	1
2.	Blood collection from lab animals	1
3.	Injection techniques	1
4.	Cal Based models for screening of drugs for drugs acting over CNS	1
5.	Planning a acute, sub acute and chronic toxicity studies	2
6.	Experimental models for evaluation of analgesics , antipsychotics, sedative hypnotics, anit-inflammatory agents, anticonvulsants angents, Experimental model for hypertension and non invasive method of estimation of blood pressure and ECG recording	14
7.	Experimental model for evaluation of nephrotoxicity,	2
8.	Experimental models for Diabeties	2
9.	Handling and Feeding of Zebra fish	2
10	Experimental Model of Zebra fish for toxicity studies	2
11.	Use of Zebra fish in drug Screening	2
	Total	**30**

Reference books:

1. Drug Screening methods . By SK Gupta
2. Screening methods in Pharmacology. By NS Parmar, Shiv Prakash Narvosa

ACADEMIC SYLLABUSFOR SEMESTER-IV

Name of the Programme	**M. SC MEDICAL Pharmacology**
Name of the Course	**Medical Pharmacology IV Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concept of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 6. Understand basic concepts of pharmacology 7. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 8. List indication, contraindication, interaction and adverse reaction of commonly used drugs 9. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 10. Explain pharmacological basis for prescribing drug in special medical situation on patient

Unit No.	Theory Topics	Hours allotted No. of-hrs
1.	**Drugs affecting CNS:**	**20**
	Introduction to CNS	1
	Sedative and hypnotics	1
	Antianxiety	1
	Local Anaesthetics	1
	General Anaesthetics	2
	Antiepileptics	2
	Antidepressants	2
	Antipsychotics	2
	NSAIDS	2
	Opioids	2
	Antiparkinsons agents	2
	Drug addiction and poisoning	2
2.	**Endocrinology:**	**20**
	Introduction and hormones of hypothalamus and pituitary	2
	Glucocorticoids	2
	Insulin	2
	Oral hypoglycemic agents	2
	Thyroxine and Antithyroids	2
	Estrogens and antagonists	2
	Progestins and antagonists, .	2

	Oral contraceptives	2
	Testosterone and Anabolic steroids	2
	Calcium metabolism and Vitamin D	2
3.	**Drug development:**	**20**
	Animal ethics	2
	CPCSEA guidelines	1
	Animal care and handling, Zoonotic diseases	2
	Drug toxicity studies	3
	LD_{50} determination	2
	Concept of Screening of drugs (general)	3
	Concept of structure activity relationship (general)	2
	Concept of Bioassay	3
	Transgeneic animals	1
	Alternative animal experimentation	1
	Total	**60**

Unit no.	**Practicals**	**Hours allotted** **No. of-hrs**
1.	**Bioassay:**	**20**
	Introduction of Bioassay	4
	Dose response curve	4
	Methods of bioassay	4
	Direct matching	4

	Interpolation	4
2.	**LD 50 estimation**	**4**
3.	**Experimental pharmacology graphs:**	**36**
	Introduction	4
	Celling effect	4
	Physiological and competitive antagonism	8
	Potentiation, Tachyphylaxis	8
	Nicotinic action of Acetylcholine	8
	Dales vasomotor Reversal	4
	Total	**60**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16, EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi
2. R.S. Satosakar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
3. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi

ACADEMIC SYLLABUS FOR SEMESTER-IV

Name of the Programme	**M. Sc. MEDICAL PHARMACOLOGY**
Name of the Course	**BIOETHICS, BIOSAFETY, IPR & TECHNOLOGY TRANSFER**

Course objective	The students will gain structural knowledge on: 1. To list the routes of exposure for a pathogen to a human being . 2. To demonstrate and assess the proper use of PPE, best practices,biological containment, and be prepared to safely conduct research 3. To identify the role of the Biosafety Professional inBiomedical Research Laboratories

	4. To appreciate the importance of assertion in interpersonal communication and beintroduced to some key assertion strategies 5. To understand the interpersonal nature of giving feedback, receiving criticism and resolving conflicts. 6. To establish attentive listening as an assertion strategy

Unit no.	Topics	Hours allotted 60hrs
1	**Ethics***:* Benefits of Ethics, ELSI of Bioscience, recombinant therapeutic products for human health care, genetic modifications and food consumption, release of genetically engineered organisms, applications of human genetic rDNA research, human embryonic stem cell research.	**15 hrs**
2	**Patenting:** Patent and Trademark, Bioscience products and processes, Intellectual property rights, Plant breeders rights, trademarks, industrial designs, copyright biotechnology in developing countries. Biosafety and its implementation, Quality *control in* Biotechnology.	**15 hrs**
	Introduction to quality assurance, accreditation & SOP writing : Concept of ISO standards and certification , National regulatory body for accreditation, Quality parameters, GMP & GLP, Standard operating procedures, Application of QA in field of genetics, Data management of clinical and testing laboratory	**15 hrs**
3	**Funding of biotech business** (Financing alternatives, funding, funding for Bioscience/ Medical Health Sector in India, Exit strategy, licensing strategies, valuation), support mechanisms for entrepreneurship (Bio-entrepreneurship efforts in India, difficulties in India experienced, organizations supporting growth, areas of scope, funding agencies in India, policy initiatives), Role of knowledge centers and R&D (knowledge centers like universities and research institutions, role of technology and up gradation)	**15 hrs**

Reference Books:

1. www.pdfdrive.net
2. www.khanacademy.org
3. www.acadeicearths.org
4. www.edx.org
5. www.open2study.com
6. www.academicjournals.org

Name of the Programme	**M. SC MEDICAL PHARMACOLOGY**
Name of the Course	**DISASTER MANAGEMENT AND MITIGATION RESOURCES**

Course objective	The course will uplift about: 1. Understand and appreciate the specific contributions of the Red Cross/Red Crescent movement to the practice and conceptual understanding of disaster management and humanitarian response and their significance in the current context. 2. Recognize issues, debates and challenges arising from the nexus between paradigm of development and disasters. 3. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. 4. Respond to disaster risk reduction initiatives and disasters in an effective, humane and sustainable manner.

Course outcomes	At the successful completion of course the student will gain: 1. knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences. 2. Knowledge and understanding of the International Strategy for Disaster Reduction (UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy. 3. Ensure skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.

Unit no.	Topics	Hours allotted 60hrs
1	**Introduction:** Definition of Disaster, hazard, global and Indian scenario, general perspective, importance of study in human life, Direct and indirect effects of disasters, long term effects of disasters. Introduction to global warming and climate change.	**08 hrs**
2	**Natural Disaster and Manmade disasters:**Natural Disaster: Meaning and nature of natural disaster, Flood, Flash flood, drought, cloud burst, Earthquake, Landslides, Avalanches, Volcanic eruptions, Mudflow, Cyclone, Storm, Storm Surge, climate change, global warming, sea level rise, ozone depletion Manmade Disasters: Chemical, Industrial, Nuclear and Fire Hazards. Role of growing population and subsequent industrialization, urbanization and changing lifestyle of human beings in frequent occurrences of manmade disasters.	**15 hrs**
3	**Disaster Management, Policy and Administration:**Disaster management: meaning, concept, importance, objective of disaster management policy, disaster risks in India, Paradigm shift in disaster management. Policy and administration: Importance and principles of disaster management policies, command and co-ordination of in disaster management, rescue operations-how to start with and how to proceed in due course of time, study of flowchart showing the entire process.	**12 hrs**
4	**Financing Relief Measures:**Ways to raise finance for relief expenditure, role of government agencies and NGO's in this process, Legal aspects related to finance raising as well as overall management of disasters. Various NGO's and the works they have carried out in the past on the occurrence of various disasters, Ways to approach these teams. International relief aid agencies and their role in extreme events.	**13 hrs**
5	**Preventive and Mitigation Measures:**Pre-disaster, during disaster and post-disaster measures in some events in general structural mapping: Risk mapping, assessment and analysis, sea walls and embankments, Bio shield, shelters, early warning and communication Non Structural Mitigation: Community based disaster preparedness, risk transfer and risk financing, capacity development and training, awareness and education, contingency plans. Do's and don'ts in case of disasters and effective implementation of relief aids.	**12 hrs**

Reference Books:

1. ShailendraK.Singh : Safety & Risk Management, Mittal Publishers
2. J.H.Diwan : Safety, Security & Risk Management,APH
3. Stephen Ayers &Garmvik: Text Book of Critical Care, Holbook and Shoemaker
4. www.pdfdrive.net
5. www.khanacademy.org
6. www.acadeicearths.org
7. www.edx.org
8. www.open2study.com

9. www.academicjournals.org

Name of the Programme	**M. SC MEDICAL PHARMACOLOGY**
Name of the Course	**HUMAN RIGHTS**

Course objective	Students will comprehend on: 1. A branch of public international law, and relevant juridical mechanisms at global as well as regional levels, 2. Human rights as an object of study in history, philosophy and the social sciences, as well as a practical reality in national and international politics. 3. Different forms of promoting and implementing human rights, domestically as well as on the international level. 4. The role of human rights in contemporary issues relating to terrorism, religion, ethnicity, gender and development. 5. Cholarly values such as transparency, impartiality, clarity, reliance and the importance of sound reasoning and empirical inference.
Course outcomes	Student will be able to virtue: 1. identify, contextualise and use information about the human rights situation in a given country 2. critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies 3. analyse a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies 4. Promote human rights through legal as well as non-legal means. 5. Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way

Unit no.	Topics	Hours allotted 60hrs
1	*Background*: Introduction, Meaning, Nature and Scope, Development of Human Rights, Theories of Rights, Types of Rights	**08 hrs**
2	*Human rights at various level* : Human Rights at Global Level UNO, Human Rights – UDHR 1948 – UN Conventions on Human Rights: International Covenant on civil and Political Rights 1966, International Convent on Economic, Social and Cultural Right, Racial Discrimination - 1966 International, Instruments: U.N. Commission for Human Rights, European Convention on Human Rights.	**15 hrs**
3	*Human rights in India* : Development of Human Rights in India, Human Rights and the Constitution of India, Protection of Human Rights Act 1993- National Human Rights Commission, State Human Rights Commission, Composition Powers and Functions, National Commission for Minorities, SC/ST and Woman	**12 hrs**
4	*Human Rights Violations*: Human Rights Violations against Women, Human Rights Violations against Children, 35 Human Rights Violations against Minorities SC/ST and Trans-genders, Preventive Measures.	**13 hrs**
5	*Political issues*: Political Economic and Health Issues, Poverty, Unemployment, Corruption and Human Rights, Terrorism and Human Rights, Environment and Human Rights, Health and Human Rights	**12 hrs**

Reference Books:

1. JagannathMohanty Teaching of Human sRights New Trends and Innovations Deep & Deep Publications Pvt. Ltd. New Delhi2009
2. Ram Ahuja: Violence Against Women Rawat Publications JewaharNager Jaipur.1998.
3. SivagamiParmasivam Human Rights Salem 2008
4. Hingorani R.C.: Human Rights in India: Oxford and IBA New Delhi.

EVALUATION PATTERN

Evaluation Pattern for III rd and IV th Semester Exam

(Core Subject)

Final Theory Marks will be 120 Marks (100 Marks University Theory Exam + 20 Marks Internal Assessment)

Theory Marks 100 (Time 3 Hours)

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	11	10	10 X 10	**100**

Practical Exam Pattern- Marks 100

Exercise	Description	Marks
Q No 1	Practical exercise	2 x25=50 M
Q No 2	Station exercise	5x5M=25 M
Q No 3	VIVA	25 M
		Total = 100 M

Internal Examination (Mid-Semester Exam)

Theory Marks 50 (Time 1 1/2 Hours)

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	6	5	5 X 10	**50**

Practical Marks 50:

Exercise	Description	Marks
Q No 1	**Practical exercise – 1**	1 x25=25 M
Q No 2	**Station exercise**	5x2M=10 M
Q No 3	**VIVA**	15 M
		Total = 50 M

For Calculation of Internal Assessment

The Marks obtained in Internal Examination out of 50 will be converted to out of 20 for Theory and Practical Internal Assessment.

Evaluation Pattern for III rd and IV th Semester Exam

(Elective Subjects & PG Activity)

Elective Subjects

- III rd Semester students have a choice to select one Core Elective Subject out of the two as mentioned above; for which there will be Internal Evaluation exam for Theory and Practical.
- IV th Semester students have a choice to select one General Elective Subject out of the three mentioned above; for which there will be Internal Evaluation exam for Theory.

Evaluation Pattern for Elective Subject (Theory)- Time 3 Hrs

Section	Question	Marks Distribution	Marks Alloted per section	Marks
Section A	MCQ	10 X 1 M=10	10	10
Section B	SAQ LAQ	3/4 X 5 M= 15 2/3 X10 M= 20	15 20	35
Section C	SAQ LAQ	3/4 X 5 M= 15 2/3 X10 M= 20	15 20	35
				Total 80

Practical Exam Pattern:

Exercise	Description	Marks
Q 1	**Practical Exercise**	1 X 20 = 20 M
Q 2	**Station Exercise**	2 X 5 = 10 M
Q 3	**Viva**	10 M
	Journal	10 M
		Total = 50 M

PG Activities

- The record of Clinical Postings, Dissertation/ Project/ Seminars will be maintained in Logbook. Each of the activity will be evaluated as per the evaluation format given in the Logbook and will be signed by the Departmental Co-ordinator before Semester end Examination.

Allotment of Marks for PG Activities

PG Activity	Marks Allotted
Clinical & Sectional Postings	20
Seminars/ Journal Clubs	20
Dissertation/ Project Work	20

The Marks obtained in the Internal Assessment, Elective Subjects and PG Activities to be sent to MGMIHS before the Semester End Examination as per the date announced by the university.

ACADEMIC SYLLABUS FOR SEMESTER-V

Name of the Programme	**M. SC MEDICAL Pharmacology**
Course Code	_____
Name of the Course	**Medical Pharmacology V Semester**

Course Objective (Teaching Objectives)	• This course is designed to enable students to understand basic concept of pharmacology. • To acquire basic knowledge and skill of pharmacodynamics, principles of therapeutics and pharmacokinetics of commonly used drug and essential medicines
Course Outcomes (Learning Objectives)	At the end of course student should be able to 1. Understand basic concepts of pharmacology 2. Describe pharmacodynamics and pharmacokinetics of essential and commonly used drugs 3. List indication, contraindication, interaction and adverse reaction of commonly used drugs 4. Indicate the use of appropriate drug in particular disease with consideration of efficacy, safety and cost of the therapy 5. Explain pharmacological basis for prescribing drug in special medical situation on patient

Unit no.	Teaching - Lecture	Hours allotted No. of-hrs
1.	**Chemotherapeutic agents:** General consideration, Sulphonamides and cotrimoxazole,Fluroquinolones, Penicillins, Cephalosporins and other beta lactams, Aminoglycosides,Macrolides, Tetracyclines and Chloramphenicol, Antitubercular drugs, Antileproticagents,Antimalarial agents, Antiamoebic agents, Antihelminthics, Antifungal agents, Antiviral agents, Cancer chemotherapy.	20
2.	**Drug discover and Drug development** :Phases of trial, Preclinical studies, Biopharmaceutics, ICH-GCP Guidelines, Pharmacovigilance.	10
3.	Preparation of Disertation: Compilation, Analysis and final report writing.	20
4.	**Ethics and Ethics Committee:** Composition, Belmont report, Nuremberg code, Helsinki Declaration, IPR- Intellectual property Right.	10
	Total	**60**

Unit no.	Practicals	Hours allotted No. of-hrs
1.	**Clinical research: Writing of case record form, Writing of informed consent form, Protocol writing**	**10**
2.	**Instrumentation:** Rota rod, cook's pole climbing apparatus, Eddy's hot plate, Plethesmograph, Actophotometer, Langendroff apparatus, Disintegration time apparatus, dissolution time apparatus, HPLC	**20**
	Total	**30**

ACADEMIC SYLLABUSFOR SEMESTER-V

Unit No.	Theory Topics	Hours allotted No. of-hrs
1.	**Chemotherapeutic agents:**	**20**
	General consideration	1
	Sulphonamides and cotrimoxazole	1
	Fluroquinolones	1
	Penicillins	2
	Cephalosporins and other beta lactams	1
	Aminoglycosides	1
	Macrolides,	1
	Tetracyclines and Chloramphenicol	2
	Antitubercular drugs	2
	Antileprotic agents	1
	Antimalarial agents	2
	Antihelminthics	1
	Antifungal agents	1
	Antiviral agents	1
	Cancer chemotherapy	2
2.	**Drug discovery and Drug development**	**10**
	Preclinical studies	2

	Clinical trial	2
	Biopharmaceutics	2
	ICH-GCP Guidelines	2
	Pharmacovigilance	2
3.	**Dissertation work**	**20**
	Compilation, Analysis and final report writing	
4.	**Clinical research- Guidelines and regulations**	**10**
	Ethics and Ethics Committee	2
	Belmont report	2
	Nuremberg code	2
	Helsinki Declaration and ICH-GCP Guidelines	2
	IPR- Intellectual property Right	2
	Total	**60**

Unit No.	**Practical Topics**	**Hours allotted No. of-hrs**
1.	**Clinical research**	**10**
	Writing of case record form	2
	Writing of informed consent form	2
	Protocol writing	2
	Practice exercises I	2
	Practice exercises II	2

2.	**Instrumentation:**	**20**
	Rota rod	2
	cook's pole climbing apparatus	2
	Eddy's hot plate	2
	Plethesmograph	2
	Actophotometer	2
	Langendroff apparatus	2
	Disintegration time apparatus	2
	Dissolution time apparatus	2
	HPLC	4
	Total	**30**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16, EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi
2. R.S. Satoskar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
3. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi
4. BikasMedhi, Ajay Prakash, Practical Manuals of Experimental and clinical Pharmacology, Jaypee brothers Medical Publishers (P) Ltd.
5. H. Gerhard Vogel, Drug discovery and Evaluation.
6. S.K. Gupta , Drug discovery and Clinical research, Jaypee brothers Medical Publishers (P) Ltd

Evaluation Pattern for V th Sem MSc Medical Courses

(From Batch 2019-20 Onwards)

A. Evaluation Pattern for V th Semester Exam

1. **Theory: Final Theory Marks will be 120 Marks (100 Marks University Theory Exam + 20 Marks Internal Assessment)**

   Theory Marks 100 (Time 3 Hours)

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	11	10	10 X 10	100

2. **Practicals: Final Practical Marks will be 120 Marks (100 Marks University Practical Exam+ 20 Marks Internal Assessment)**

   Practical Exam - Marks 100

Exercise	Description	Marks
Q No 1	Exercise 1	50
Q No 2	Exercise 2	25
Q No 3	VIVA	25
		Total = 100 M

(Exercise 1- Table Exercises / Stations Excercise2- Table Exercise/ Spots

B. Evaluation Pattern for V th Semester Internal Examination

1. **Theory: Theory Marks 50 (Time 1 1/2 Hours)**

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	6	5	5 X 10	50

2. **Practical:** **Practical Marks 50**

Exercise	**Description**	**Marks**
Q No 1	**Exercise -1**	25
Q No 2	**Exercise-2**	15
Q No 3	**VIVA**	10 M
		Total = 50 M

(Exercise 1- Table Exercise/ Stations Exercise 2- Table Exercise / Spots)

C. For Calculation of Internal Assessment

The Marks obtained in Internal Examination out of 50 will be converted to out of 20 for Theory and Practical Internal Assessment.

	Internal Exam Marks	**Internal Assessment Marks**
Theory	**50**	**20**
Practical	**50**	**20**

D. Assessment of PG Activities

- The record of Clinical Postings, Dissertation/ Project/ Seminars will be maintained in Logbook. Each of the activity will be evaluated as per the evaluation format given in the Logbook and will be signed by the Departmental Co-ordinator before Semester end Examination.

Allotment of Marks for PG Activities

PG Activity	**Marks Alloted**
Clinical & Sectional Postings	20
Seminars/ Journal Clubs	20
Dissertation/ Project Work	20

Note: The Marks obtained in the Internal Assessment and PG Activities to be sent to MGMIHS before the Semester End Examination as per the date announced by the university.

VI semester

Unit no.	Teaching - Lecture	Hours allotted No. of-hrs
1.	**Drug screening and evaluation methods**: Angina, hypertension, CCF, Arrhythmias, Bronchial Asthma, Psychosis, Mental Depression, Epilepsy, Diuretics, Diabetes, Inflammation, Pain.	22
2.	**Cardiovascular System:** Antihypertensive Agents, Diuretics and Antidiuretics, Antianginal Agents, Drugs for CCF,	10
3.	**Drugs affecting CNS:** Antiepileptics, Antidepressants, Antipsychotics, NSAIDS, Opioids, .	16
4.	**Pharmacoeconomics, Pharmacoepidemiology, Dermatopharmacology,**	6
5.	**Ethical review of scientific research project/paper**	3
6.	**Writing informed consent form and patient information sheet**	3
	Total	**60**

Unit no.	Practicals	Hours allotted No. of-hrs
1.	**Thesis Presentation**	28
2.	**Animal handling- Rat, mice, Rabbit**	12
3.	**Short procedures:** Oral feeding, Intraperitoneal injection, subcutaneous injection, Tail vein injection, rabbit ear vein	20

	Total	**60**

ACADEMIC SYLLABUS FOR SEMESTER-VI

Unit No.	Theory Topics	Hours allotted No. of-hrs
1.	**Drug screening and evaluation methods**	**22**
	Angina	2
	Hypertension	2
	CCF	2
	Arrhythmias	2
	Bronchial Asthma	2
	Psychosis	2
	Mental Depression	2
	Epilepsy	2
	Diuretics	2
	Diabetes	2
	Pain and Inflammation	2
2.	**Drugs affecting Cardiovascular System**	**10**
	Antihypertensive Agents	4
	Diuretics and Antidiuretics	2
	Antianginal Agents	2
	Drugs for CCF	2
3.	**Drugs affecting CNS:**	**16**

	.	
	Antiepileptics	4
	Antidepressants	2
	Antipsychotics	2
	NSAIDS	4
	Opioids	4
4.	**Miscellaneous**	**6**
	Pharmacoeconomics	2
	Pharmacoepidemiology	2
	Dermatopharmacology	2
5.	**Ethical review of scientific research project/paper**	3
6.	**Writing informed consent form and patient information sheet**	3
	Total	**60**

Unit no.	**Practicals**	**Hours allotted** **No. of-hrs**
1.	**Thesis work and Presentation**	**28**
2.	**Animal handling**	**12**
	Rat	4
	Mice	4
	Rabbit	4
3.	**Short procedures:**	**20**

	Oral feeding	4
	Intraperitoneal injection	4
	Subcutaneous injection	4
	Tail vein injection	4
	Collection of blood from marginal ear veinofrabbit	4
	Total	**60**

Reference Books:

1. K.D. Tripathi, Essentials of Medical Pharmacology, Japyee Brothers, Post 7193, G-16, EMCA house, 23/23, Bansari Road, Daryanganj, New Delhi
2. R.S. Satoskar, A.D. Bhandarkar, S.S. Ainapure, Pharmacology and Pharmacotherapeutics
3. H.L. Sharma and K.L. Sharma, Principles of Pharmacology, Paras Medical Publisher, Hyderabad, New Delhi
4. BikasMedhi, Ajay Prakash, Practical Manuals of Experimental and clinical Pharmacology, Jaypee brothers Medical Publishers (P) Ltd.
5. H. Gerhard Vogel, Drug discovery and Evaluation.
6. S.K. Gupta , Drug discovery and Clinical research, Jaypee brothers Medical Publishers (P) Ltd

Evaluation Pattern for VI th Sem MSc Medical Courses

(From Batch 2019-20 Onwards)

A. Evaluation Pattern for VI th Semester Exam

1. Theory: Final Theory Marks will be 120 Marks (100 Marks University Theory Exam + 20 Marks Internal Assessment)

Theory- Marks 100 (Time 3 Hours)

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	11	10	10 X 10	100

2 Practical Examination

a. Practical Marks will be 70 Marks (50 Marks University Practical + 20 Marks Internal Assessment)

Exercise	Description	Marks
Q No 1	Exercise 1	25
Q No 2	Exercise 2	15
Q No 3	VIVA	10
		Total = 50 M

b. Thesis Evaluation – Marks 70

	Subject Knowledge	Objectives, Concept and Methodology	Result, Discussion and Outcome	External Examiner Viva	Internal Examiner Viva	Total Marks
Marks Alloted	**10**	**10**	**10**	**20**	**20**	**70**

B. Internal Examination (Mid-Semester Exam)

Theory Marks 50 (Time 1 1/2 Hours)

Question Type	Marks Per Question	No. of Questions	Questions to be Answered	Questions X Marks	Total Marks
Brief Answer Questions	10	6	5	5 X 10	50

Practical Marks 50

Exercise	Description	Marks
Q No 1	Exercise 1	15
Q No 2	Exercise 2	25
Q No 3	VIVA	10
		Total = 50 M

(Exercise 1- Table Exercise/ Spots Exercise 2- Thesis Defense/ Stations)

C. For Calculation of Internal Assessment

The Marks obtained in Internal Examination out of 50 will be converted to out of 20 for Theory and Practical Internal Assessment.

	Internal Exam Marks	Internal Assessment Marks
Theory	**50**	**20**
Practical	**50**	**20**

D. Evaluation of PG Activities

- The record of Clinical Postings, Dissertation/ Project/ Seminars will be maintained in Logbook. Each of the activity will be evaluated as per the evaluation format given in the Logbook and will be signed by the Departmental Co-ordinator before Semester end Examination.

Allotment of Marks for PG Activities

PG Activity	**Marks Allotted**
Clinical & Sectional Postings	20
Seminars/ Journal Clubs	20

The Marks obtained in the Internal Assessment and PG Activities to be sent to MGMIHS before the Semester End Examination as per the date announced by the university.

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Academic Year 2019 – 2020

Academic Calendar For M.Sc. (3 Years) Medical Courses

(Anatomy, Physiology, Biochemistry, Pharmacology, Microbiology)

SCHEDULE OF ACTIVITY	DATES
Commencement of First Semester	01.08.2019
Commencement of Third Semester & Fifth Semester	01.08.2019
Receipt of completed Eligibility forms at MGMIHS from Respective college without late fees Receipt of completed Eligibility forms at MGMIHS from Respective college with late fees (Only for new admission)	On or before 30.10.2019 On or before 30.11.2019
Commencement of Internal Exam	3rd Week of November 2019
Winter Vacation for Staff	16.10.2019 to 15.11.2019
Notification of First / Third / Fifth Semester University Examination	As per MGMIHS
Commencement of First / Third / Fifth Semester University Examination	1 Week of January 2020
Conclusion of respective semesters	Last week of February 2020
Declaration of final Result	As per MGMIHS
Commencement of Second / Fourth / Sixth Semester	1st Week of February 2020
Commencement of Internal Examination	3rd Week of April 2010
Notification of Second / Fourth / Sixth Semester University Examination	As per MGMIHS
Summer Vacation for staff	01.05.2020 to 10.06.2020
Commencement of Second / Fourth / Sixth Semester University Examination	1 Week of July 2020
Conclusion of Respective Semesters	Last week of July 2020
Declaration of final Result	As per MGMIHS
Commencement of Next Academic Section	01.08.2020

Resolution No. 2 of Academic Council (AC-42/2022): Resolved to approve the Action Taken Report (ATR) **[ANNEXURE-2]** on the decisions taken in the meeting of Academic Council with the following observations/discussion/decision:

i) Resolved to amend Resolution No. 3.5 of AC-41/2021 dt. 27/08/2021 by including five (05) M.Sc. Medical courses. The amended Resolution is as mentioned below -

Amended Resolution No. 3.5 of AC-41/2021 dt. 27/08/2021 : Resolved to incorporate the changes as per the decisions of the CBCS committee in UG (B.Sc. Medical Dialysis Technology, B.Sc. Medical Laboratory Technology, B.Sc. Medical Radiology & Imaging Technology, B. Optometry, B.Sc. Cardiac Care Technology, B.Sc. Operation Theatre &Anaesthesia Technology, B.Sc. Perfusion Technology) ; PG (M.Sc. Medical Biotechnology, M.Sc. Medical Genetics, M.Sc. Clinical Embryology, M.Sc. Molecular Biology, Master of Public Health, Master in Hospital Administration, M.Sc. Cardiac Care Technology, M.Sc. Biostatistics, M.Sc. Medical Radiology & Imaging Technology, M. Optometry, M.Sc. Clinical Nutrition) and M.Sc. Medical (Anatomy, Physiology, Biochemistry, Microbiology, Pharmacology) courses with effect from the batch admitted in 2020-21 onwards.

Resolution No. 10.4 of Academic Council (AC-42/2022):

i) Resolved to accept “50% eligibility in internal assessment” pattern for all the CBCS programs (UG & PG) running under the constituent units of MGMIHS.(MGM School of Biomedical Sciences, MGM School of Physiotherapy, MGM Medical College (M.Sc. Medical 3 year courses)

~~**Annexure-3**~~

MGM Medical College, Kamothe, Navi Mumbai

MSc Medical Courses

Proposed Duration of Practical Examination for MSc Medical Courses for Navi Mumbai campus only

1st Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days
Anatomy	1 day	2 days
Physiology	1 day	2 days
Microbiology	1 day	2 days
Pharmacology	1 day	2 days

2nd Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days
Anatomy	1 day	2 days
Physiology	1 day	2 days
Microbiology	1 day	2 days
Pharmacology	1 day	2 days
Biostatistics	1 day	2 Days

3rd Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days (If more Than 10 candidates)
Anatomy	1 day	2 days (If more Than 10 candidates)
Physiology	1 day	2 days (If more Than 10 candidates)
Microbiology	1 day	2 days (If more Than 10 candidates)
Pharmacology	1 day	2 days (If more Than 10 candidates)
Elective subjects	1 day	1 day

4th Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days (If more Than 10 candidates)

Anatomy	1 day	2 days (If more Than 10 candidates)
Physiology	1 day	2 days (If more Than 10 candidates)
Microbiology	2 days	3 days (If more Than 10 candidates)
Pharmacology	1 day	2 days (If more Than 10 candidates)

5th Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days (If more Than 10 candidates)
Anatomy	1 day	2 days (If more Than 10 candidates)
Physiology	1 day	2 days (If more Than 10 candidates)
Microbiology	1 day	2 days (If more Than 10 candidates)
Pharmacology	1 day	2 days (If more Than 10 candidates)

6th Semester:

Subject	Existing Duration	Proposed Duration
Biochemistry	1 day	2 days (If more Than 10 candidates)
Anatomy	1 day	2 days (If more Than 10 candidates)
Physiology	1 day	2 days (If more Than 10 candidates)
Microbiology	1 day	2 days (If more Than 10 candidates)
Pharmacology	1 day	2 days (If more Than 10 candidates)

HOD Biochem	HOD Anatomy	HOD Physiology	HOD Microbiology	HOD Pharmacology	HOD Biostatistics

Resolution No. 5.17 of Academic Council (AC-48/2023): Resolved to adhere to the universityregulatory Body norms of maximum students who can be examined in a day for practical examination for M.Sc. Medical Course (All subjects)

MGM MEDICAL COLLEGE, KAMOTHE, NAVI MUMBAI

DEPARTMENT OF Pharmacology

M.Sc. Medical Pharmacology Semester Wise Practical Exam Pattern

For 41 Students

Date: 28.11.23

Semester	Exercise I	Exercise II	Viva	Clinical Posting	Seminar	Progress of Dissertation	Marks
I (40 Marks)	Therapeutic Problems (15 Marks) **(1 ½ Hours)**	Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(4 Hours)**	N. A.	N. A.	N. A.	50 Marks
II (40 Marks)	Therapeutic Problems (15 Marks) **(1 ½ Hours)**	Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(4 Hours)**	N. A.	N. A.	N. A.	50 Marks
III (20 Marks)	Therapeutic Problems (15 Marks) **(1 ½ Hours)**	Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(3 Hours)**	Logbook evaluation & VIVA (10 Marks) **(1 ½ Hours)**	Micro teaching (10 Marks) **(1 ½ Hours)**	Written evaluation of Dissertation (10 Marks) **(1 ½ Hours)**	100 Marks
IV (20 Marks)	Therapeutic Problems (15 Marks) **(1 ½ Hours)**	Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(3 Hours)**	Logbook evaluation & VIVA (10 Marks) **(1 ½ Hours)**	Micro teaching (10 Marks) **(1 ½ Hours)**	Written evaluation of Dissertation (10 Marks) **(1 ½ Hours)**	100 Marks
V (20 Marks)	Clinical Research (15 Marks) **(1 ½ Hours)**	Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(3 Hours)**	Logbook evaluation & VIVA (10 Marks) **(1 ½ Hours)**	Micro teaching (10 Marks) **(1 ½ Hours)**	Written evaluation of Dissertation (10 Marks) **(2 Hours)**	100 Marks
VI (20 Marks)	Minor Experimental Procedures (15 Marks) **(1 ½ Hours)**	Drug Screening & Experimental Pharmacology (25 Marks) **(1 ½ Hours)**	Viva (10 Marks) **(3 Hours)**	Logbook evaluation & VIVA (10 Marks) **(1 ½ Hours)**	Micro teaching (10 Marks) **(1 ½ Hours)**	Thesis Evaluation (60 Marks) **(2 Hours)**	150 Marks

From 3rd Semester to 6th Semester 20 Marks for Internal Assessment

Dr. Savitri Mandavi Katlam
Assistant Professor, Co-Ordinator
Dept of Pharmacology

Dr. P N Khandelwal
Professor & Head
Dept of Pharmacology

Prof. & Head Pharmacology
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MGM INSTITUTE OF HEALTH SCIENCES

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

Grade 'A' Accredited by NAAC

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