KRISHNA VISHWA VIDHYAPEETH

Deemed to be University
Knowledge Innovation Excellence

Accredited by NAAC with 'A+' Grade

DEPARTMENT OF PHARMACOLOGY

Curriculum implemented by statutory body (MCI/NMC)
For M.D. Pharmacology

Krishna Institute of Medical Sciences, Karad

Competency Based Postgraduate Curriculum in

MD (Pharmacology and Therapeutics)

KRISHNA INSTITUTE OF MEDICAL SCIENCES,

KRISHNA VISHWA VIDYAPEETH " DEEMED TO BE UNIVERSITY"KARAD

Revision made in year 2021-22

Implemented for 2021 admission Batch

MD (PHARMACOLOGY AND THERAPEUTICS)

DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS
KRISHNA INSTITUTE OF MEDICAL SCIENCES,
KRISHNA VISHWA VIDYAPEETH " DEEMED TO BE UNIVERSITY"
KARAD

Program Name: MD (Pharmacology and Therapeutics)

Program Code: 1205

SUBJECT SPECIFIC LEARNING OBJECTIVES (GOALS)

At the end of the MD training programme in Pharmacology, the student should meet the following goals:

1. **Acquisition of knowledge -** The student should be able to clearly explain concepts and principles of pharmacology and therapeutics, drug development processes, the drugs and cosmetics act, rational use of drugs, antimicrobial resistance, pharmacovigilance, pharmacy, health economics, clinical trial processes and relevant national programs.

2. **Acquisition of Skills -** The student should be able to develop and apply skills in pharmacology-based services (e.g. rational prescribing), in self-directed learning for evolving educational needs and scientific information, in conduct of research and in managerial assignments in the department/institution.

3. **Teaching and training -** The student should be able to effectively teach and assess undergraduate medical students (MBBS) and allied health science courses (Dentistry, Nursing, Physiotherapy) so that they become competent healthcare professionals and are able to contribute to training of undergraduates (UG) and postgraduates.

4. Research - The student should be able to conduct a research project (in both basic and clinical pharmacology) from the planning to the publication stage and be able to pursue academic interests and continue life-long learning to become a more experienced teacher & mentor in all the above

areas and to eventually be able to guide postgraduates in their thesis, research work and all other academic activities.

5. **Professionalism, Ethics and Communication skills -** The student should be able to learn and apply principles of professionalism, ethics and effective communication in conduct of research, pharmacology-based services, educational activities and day to day work.

Program Objectives:

- To develop qualified postgraduate in field of Pharmacology & Therapeutics
- To inculcate rational thinking and cogent action in him/her to make him/her competent to pursue various activities demanded by the profession as Pharmacologist

Program Outcomes:

The objectives of Programme of MD Pharmacology are to make the post graduate competent in the aspects like

- Pharmacodynamics & pharmacokinetics , Adverse drug reactions, drug interactions of various drugs
- Rational Pharmacotherapy
- Antibiotic stewardship
- New drug development
- Research (Human & Animal)
- Pharmacovigilance
- Pharmacoeconomics
- Pharmacogenomics
- National health programs
- Drug regulations and laws
- Ethics in research
- Teaching
-

Course Name & Course Codes:

1. Paper 1-Basic sciences as applied to Pharmacology-------- 1205-11
2. Paper2- Systemic and Clinical Pharmacology-I---------- 1205-12
3. Paper 3-Systemic and Clinical Pharmacology-II---------- 1205-13
4. Paper 4- Recent Advances----------1205-14

Course Objectives:

- To inculcate basic knowledge of drugs
- To inculcate ability to apply basic principles of pharmacokinetics & pharmacodynamics for rational use of drugs in therapeutics
- To understand history of Pharmacology
- To understand process of new drug development
- To analyse clinical and experimental research data
- To understand pharmacovigilance program
- To develop competence in clinical and preclinical research and clinical trial
- To inculcate ability of teaching using modern technology
- To understand basic biostatistics
- To inculcate ethics in therapeutics, research and publication
- To inculcate good communication skill

Course Outcomes:

At the end of course in Pharmacology and Therapeutics, the trained specialist shall be able to

Cognitive domain:

1. Apply basic principles of pharmacology and therapeutics to practice rational use of existing drugs and evaluation of new drugs.
2. Collect and analyse experimental and clinical data related to drug kinetics or dynamics
3. Interpret the analysed data with reasonable accuracy and derive logicalconclusions.
4. Provide appropriate advice related to selection of drug, drug usage (desirableand undesirable effects, kinetics, interactions), Precautions and measures tobe taken during

administration of drug and treating the ADRs in a givenpatient taking into consideration physiological, psychological & pathologicalfeatures.

5. Audit drug utilization and drug related adverse events.
6. Assess emergency situations while carrying out drug trials and instituteemergency management till appropriate assistance from clinical side is available.
7. Develop the ability for continued self-learning so as to update the knowledgeof recent advances in the field of Pharmacology and allied fields
8. Be competent to teach and train undergraduate and future postgraduatemedical students and junior doctors in Pharmacology and Therapeutics aswell as nurses and paramedical staff in Medical Colleges, Institutions andother Hospitals.
9. Plan and carry out both laboratory and clinical research with adherence toscientific methodology and GLP/GCP guidelines.
10. Be aware of legal and ethical aspects of drug evaluation.
11. Communicate the findings, results and conclusions of scientific research,both verbally and in writings
12. Be aware of regulatory procedures needed to be carried out prior to themarketing of a new drug in India.

Psychomotor domain:

1. Perform common experimental techniques required for evaluation of new drug with competence
2. Perform common clinical procedures required for evaluation of drug in normal volunteers and patients with competence
3. Organize and manage administrative responsibilities for routine day to day work as well as new situations
4. Carry out necessary resuscitative measures in emergency situations arising during drug evaluation
5. Use teaching-learning media effectively.

Affective domain:

1. Appreciate socio-psychological, cultural and environmental factors affecting health and drug usage.
2. Appreciate the importance and implementation of National health programmes in context to rational drug utilization
3. Be aware of the importance of cost-effectiveness in patient management
4. Be aware of service activities which a pharmacologist can undertake viz.therapeutic drug monitoring, ADR monitoring, drug information services, poison control center, drug auditing etc.
5. Adopt ethical principles while conducting animal experimental and human research
6. Develop communication skills to interact with patients, peers and paramedical staff
7. Realize the importance of team work
8. Develop attitudes required for professional responsibilities.

COURSE DETAILS

Duration of the course -36 months [6 semesters]

First year

1. Introduction to pharmacology and its branches.
2. Attending lectures on General Pharmacology, ANS, CVS, PNS, Chemotherapy
3. Selection of dissertation topic
4. Research Methodology Workshop
5. Rotation in labs –Biochemistry , Microbiology ,Drug store (During vacations)
6. Teaching duties
7. Short Project, attending workshop, conference, poster/ oral paper presentation
8. Journal clubs/ seminars
9. Compulsory ADR reporting : By 1 visit/ week to Krishna Hospital
10. References collection for dissertation

Second year

1. Teaching duties
2. Attending lectures on RS, GIT, Endocrine, CNS, Haemopoietic,
3. Dissertation work
4. Prescription scrutiny, clinical case presentation.
5. Practice Isolated tissue bioassay, injection techniques, evaluation techniques
6. Journal club/ seminars
7. Short project, attending conference, workshop, poster/oral paper presentation
8. Rotational clinical postings during vacations

Third year

1. Dissertation completion
2. Teaching duties
3. Practice of Experimental Pharmacology techniques
4. Paper on dissertation work to be sent for publication in indexed journal
5. Oral paper presentation on dissertation topic in Interdisciplinary Research Conference of KIMSDU.

TEACHING LEARNING OPPORTUNITIES

Learning and teaching opportunities will essentially be self-directed and will involve

1. Experimental Pharmacology

- Animal experiments-ethics, CPCSEA guidelines, research insights, animal house maintenance(Knowledge of feeding, breading,handling,rehabilitation and euthanasia in experimental animals)
- Blood collection techniques, oral, intravenous and intraperitoneal drug administration procedures
- Screening methods for drug evaluations and experimental models-general and specific screening
- Drug bio assays: Rat colon, Rat uterus

- Methods of assays
- Toxicological screening
- Pharmacokinetics: Calculation of volume of distribution, steady state concentration, plasma half life, dose in critical conditions, drip rate for intravenous infusion.
- Biostatistics
- Principles of analytical instrumentation
- Basics of Computers in pharmacology, data base creation

2. Clinical Pharmacology:

- All aspects related with drug trial (ICH –GCP , ICMR/DCGI guidelines)
- Role of DCGI, sponsor, monitor, CRO, Principal Investigator
- Protocol designing
- Laws related to drug research including herbal drugs
- Taking informed consent.
- Ethics in human research
- ADR Monitoring and PVPI
- Therapeutic Drug monitoring
- Pharmaco-epidemiology, Drug utilization studies
- Drug estimations in biological fluids
- Chemical analysis tests for alkaloids, steroids, glycosides etc.
- Sources of drug information, Data Interpretations
- Advances in clinical pharmacology
- Essential drug listing, Steps in rational Pharmacotherapy and P drug concept

1. Drug store management

1. Functions of drug store,
2. Role of pharmacologist in drug store
3. ABC/VED classification of drugs

d. Use of computers in drug store, routine administration

2. **Teaching/Academics/personality development related topics:**
    1. Microteaching/ TOS (teachers oriented sessions)
    2. Teaching experiences: The candidate will be regularly involved in the teaching of undergraduate medical and nursing students
    3. Presentation skills /group discussions.
    4. Knowledge about patents, IPRS etc
    5. Computer aided learning (CAL).
    6. Web searching for medical literature.
    7. Scientific paper writing, knowledge of indexing, ethics in research paper writing, methods of referencing.

5. **Clinical case discussions**:

    Post diagnosis discussions on 5 cases from clinical side.

    Documentation of these cases in logbook

6. **Computer simulated dog BP exercise**:

    Identification of unknown drug on Computer simulated dog BP exercise.

7. **Using software of isolated tissue experiments**

8. **Log book write-ups: (To be filled by student as provided in the format)**

- Main purpose of the log book should be to document the work done (Experiments, journals, thesis work, seminars)
- Document attendance in conferences, workshops, CME
- Dissertation review meeting dates and progress of dissertation work
- List of oral paper, poster presentations, publications
- Log Book should be regularly signed by PG Guide/PG Teacher Incharge regularly
- Log Book should be signed by HOD before student appears for final examination

Term wise distribution of seminar topics:

Year	Topics
1st	General Pharmacology Systemic Pharmacology
2nd	Systemic / clinical / experimental pharmacology
3rd	Recent advances in pharmacology.

Journal Clubs: The student should also present articles from Journals regularly

- Presentation of Journal article/Seminar should be evaluated by teachers on 4 points eg completeness, use of A. V aids, understanding, overall performance. The purpose of this exercise should be to make the student aware of his/her progress.

Experimental Training

- Experimental evaluation system (to be evaluated by guide, signed and pasted in the log book) Example of evaluation sheet format given below.

Headings	**Comments**			
Assembly				
Cleanliness				
Instruments used				
Technique				
Results/Interpretation				
Discussion: Theory				
Discussion: Practical				
Overall remarks	Excellent	Good	Fair	Poor

Student should acquire following experimental skills:

- **Injection Techniques:** Rat tail vein, rabbit marginal ear vein, intraperitoneal in rat/mice
- **Blood collection :** Rat tail vein, marginal ear vein in rabbits, retro orbital sinus in rats
- **Oral feeding** in rats/ mice by using cannula
- **Evaluation/ screening Methods: (Intact Animals):**
  Evaluation of analgesics by using radiant heat analgesiometer, Hot Plate
  Evaluation of hypnotics and skeletal muscle relaxants by Rota Rod Apparatus
  Evaluation of sedative hypnotics by Acto Photo meter
  Evaluation of antiepileptics by Convulsiometer
  Evaluation of diuretic activity by Metabolic cage
  Evaluation of mydriatic and miotic activity by using rabbit
  Evaluation of antidepressants by using Despair test
  Demonstration of catalepsy, stereotypy in rats
  Demonstration of surface anaesthesia in rabbits
- **Bioassay (Matching, interpolation. Three point and Four point)**
  Rat Colon
  Rat uterus
  Guinea pig ileum

Dissertation

Objectives:

1. To make aware the post graduate student about every aspect of research. This involves finding research topic, searching literature, research methodology, Statistics, analysis, scientific writing and many other aspects involved. The topic or project taken need not necessarily bring out /explore something very novel, very big or breakthrough in medical science. The main aim is to train post graduate students for taking up such challenges in the future and learn maximum about the research development during their curriculum.

- Dissertation topic along with plan of work is to be allotted by the guide within six months of joining course.
- The study could be prospective or retrospective and to be cleared by appropriate protocol and Institutional ethic committee/ Institutional Animal Ethics Committee.
- Topics not to be repeated for three years.
- If the topic is changed, it should be communicated to university within one and half year of registration for getting approved
- Six monthly review of dissertation work will be taken in departmental meeting
- Before printing - Work will be presented before external experts. After considering suggestions of experts corrections can be made and then final printing and binding done.
- Four copies of completed dissertation all signed by PG Guide and HOD will be submitted to KIMSDU in fifth term.
- At least one research paper based on dissertation work should be sent for publication to indexed journal for being eligible for appearing for final university examination.
- Oral paper on dissertation work should be presented in IRC, of KIMSDU

Four examiners will examine these dissertations and report acceptance or otherwise, [three out of four have to accept the dissertation for its final acceptance by the university]. If two examiners accept the dissertation, Chairman BOS will take final decision. Non acceptance should be justified with reasons thereof.

Rotational postings –

The postings schedule with duration is given below:

- Medicine -2 weeks
- Anaesthesia -2 weeks
- Dermatology -1 week
- Medical oncology -2 weeks (if available)
- Microbiology/ Infection control unit or Department -2 weeks

- Biochemistry -2 weeks
- Hospital Pharmacy -1 week (if available)
- Clinical trial unit/Research unit/Pharmaceutical industry -2-8 weeks (as per availability)
- Medical Education Unit (MEU) orDepartment of Medical Education (DOME) -1 week (optional)

Project Work – Students will complete one short term project each in first & second year of course, in addition to dissertation work.

Posting under "District Residency Programme" (DRP):

All postgraduate students pursuing MD in Pharmacology in all Medical Colleges/Institutions shall undergo a compulsory rotation of three months in District Hospitals/District Health System as a part of the course curriculum, as per the Postgraduate Medical Education (Amendment) Regulations (2020). Such rotation shall take place in the 3rd or 4th or 5th semester of the Postgraduate programme and the rotation shall be termed as "District Residency Programme" and the PG medical student undergoing training shall be termed as "District Resident". Every posting should have its defined learning objectives. It is recommended that the departments draw up objectives and guidelines for every posting offered in conjunction with the collaborating department/s or unit/s. This will ensure that students acquire expected competencies and are not considered as an additional helping hand for the department / unit in which they are posted. The PG student must be tagged along with those of other relevant departments for bedside case discussion/basic science exercises as needed, under the guidance of an assigned faculty.

Opportunities to present and discuss infectious disease cases through bedside discussion and ward/grand rounds with specialists / clinicians in different hospital settings must be scheduled to address antimicrobial resistance issues and strategies to deal with it.

Teaching research skills

Writing a thesis should be used for inculcating research knowledge and skills. All postgraduate students shall conduct a research project of sufficient depth to be presented to the University as a postgraduate thesis under the supervision of an eligible faculty member of the department as guide and one or more co-guides who may be from the same or other departments.In addition to the thesis project, every postgraduate trainee shall participate in at least one additional research

project that may be started or already ongoing in the department. It is preferable that this project will be in an area different from the thesis work. For instance, if a clinical research project is taken up as thesis work, the additional project may deal with community/field/laboratory work. Diversity of knowledge and skills can thereby be reinforced.

I. Training in teaching skills - Medical Education Unit (MEU)/ Department of Medical education (DOME) should train PG students in education methodologies and assessment techniques. The PG students shall conduct UG classes in various courses and a faculty shall observe and provide feedback on teaching skills to the student.

Log book - During the training period, the postgraduate student should maintain a Log Bookindicating the duration of the postings/work done in Wards, OPDs, Casualty and otherareas of posting. This should indicate the procedures assisted and performed and theteaching sessions attended. The log book entries must be done in real time. The logbook is thus a record of various activities by the student like: (1) Overall participation& performance, (2) attendance, (3) participation in sessions, (4) record of completionof pre-determined activities, and (5) acquisition of selected competencies.

The purpose of the Log Book is to:

a. help maintain a record of the work done during training,

b. enable Faculty/Consultants to have direct information about the workdone and intervene, if necessary

c. Provide feedback and assess the progress of learning with experiencegained periodically.

The Log Book should be used in the internal assessment of the student, should be checked and assessed periodically by the faculty members imparting the training. The PG students will be required to produce completed log book in original at the time of final practical examination. It should be signed by the Head of the Department. A proficiency certificate from the Head of Department regarding the clinical competence and skillful performance of procedures by the student will be submitted by the PG student at the time of the examination. The PG students shall be trained to reflect and record their reflections in log book particularly of the critical incidents. Components of good teaching practices must be assessed in all academic activity conducted by the PG student and at least two sessions dedicated for assessment of teaching skills must be conducted

every year of the PG program. The teaching faculty are referred to the MCI Logbook Guidelines uploaded on the Website.

Course in Research Methodology: All postgraduate students shall complete an online course in Research Methodology within six months of the commencement of the batch and generate the online certificate on successful completion of the course.

Other aspects

- The postgraduate trainees must participate in the teaching and training program of undergraduate students and interns attending the department.
- Trainees shall attend accredited scientific meetings (CME, symposia, and conferences) at least once a year.
- Department shall encourage e-learning activities.
- The postgraduate trainees must undergo compulsory training in Basic Cardiac Life Support (BCLS) and Advanced Cardiac Life Support (ACLS).
- The postgraduate trainees must undergo training in information technology and use of computers.
- The postgraduate trainees should preferably undergo training in Good Clinical Practice (GCP)

During the training program, patient safety is of paramount importance; therefore, relevant clinical skills are to be learnt initially on the models, later to be performed under supervision followed by independent performance. For this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT, i. e., assessment to improve learning

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self-directed learning and ability to practice in the system.

General Principles

The Internal Assessment should be conducted in theory and practical/clinical examination,should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills.

The Internal Assessment should include quarterly assessment.

Quarterly assessment during the MD training should be based on:

- ✓ Case presentation, case work up, case handling/management : once a week
- ✓ Laboratory performance : twice a week
- ✓ Journal club : once a week
- ✓ Seminar : once a fortnight
- ✓ Case discussions : once a fortnight/month
- ✓ Interdepartmental case or seminar : once a month
- ✓ Attendance at Scientific meetings, CME programmes (at least 02 each)

Important instructions:

- ✓ The feedback should be given to students timely and frequently so that they get a chance to improve.
- ✓ All teachers of the Department should be involved in assessment.
- ✓ The records and Log book shall be checked and assessed periodically by the faculty members imparting the training.

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT, i.e., assessment at the end of training

Essential pre-requisites for appearing for examination include:

1. Log book of work done during the training period including rotation postings, departmental presentations, and internal assessment reports should be submitted.
2. At least two presentations at national level conference. One research paper should be published / accepted in an indexed journal. (It is suggested that the local or University Review committee assess the work sent for publication).

   The summative examination would be carried out as per the Rules given in the latest POSTGRADUATE MEDICAL EDUCATION REGULATIONS. The theory examination shall be held in advance before the Clinical and Practical examination, so that the answer books can be assessed and evaluated before the commencement of the clinical/Practical and Oral examination.

The postgraduate examination shall be in three parts:

1. **Thesis -** Thesis shall be submitted at least six months before the Theory and Clinical / Practical examination. The thesis shall be examined by a minimum of three examiners; one internal and two external examiners, who shall not be the examiners for Theory and Clinical examination. A post graduate student in broad specialty shall be allowed to appear for the Theory and Practical/Clinical examination only after the acceptance of the Thesis by the examiners.
2. **Theory examination** -The examinations shall be organized on the basis of ‘Grading ‘or ‘Marking system ‘to evaluate and to certify post graduate student's level of knowledge, skill and competence at the end of the training, as given in the latest POSTGRADUATEMEDICAL EDUCATION REGULATIONS. Obtaining a minimum of 50% marks in ‘Theory’ as well as ‘Practical’ separately shall be mandatory for passingexamination as a whole. The examination for M.D./ M.S shall be held at the end of 3rd academic year.

There shall be four theory papers (as per PG Regulations).

3. Practical/clinical and Oral/viva voce examination - Practical examinationshould be spread over two days and include various major components of the syllabus focusing mainly on the psychomotor domain.

Oral/Viva voce examination on defined areas should be conducted by eachexaminer separately. Oral examination shall be comprehensive enough to test the postgraduate student's overall knowledge of the subject focusing on psychomotor and affective domain.

Practical Examination Exercises:

A. LONG EXERCISES:

- Protocol design for a given scenario
- Case audit for a given case
- Perform experiments or simulated experiments (as per PG Regulations) - The exercises should be observed, response of student noted and assessed. The question related to these exercises can be asked

B. SHORT EXERCISES:

- Interpretation of results of a previous tracing - Table exercise
- Demonstration of effects of drugs/interpretation of results in human
- Demonstration of effects of drugs/interpretation of results in small, animals - optional (as per Regulations notified)The exercises should be observed and assessed.

C. OSPE exercises: Objective Structured Practical Examination (OSPE)-OSPE should have 10-15 stations. Stations should be mixture of observed (observer present) and unobserved stations (without an observer). Few examples are given below:

- Various drug delivery systems
- Calculating pharmacokinetic parameters
- Pharmaceutical calculations
- Statistical exercise
- Pharmacoeconomics
- Critical appraisal of a published paper
- Abstract writing of a published paper
- Evaluation of drug promotional literature.

- Adverse Drug Reaction (ADR) reporting and causality assessment
- Assessment of preclinical toxicity data
- Analysis of rational and irrational formulations
- Selecting a P-drug and writing rational prescriptions
- Analytical instruments - use and interpretation
- Identifying ethics related dilemmas / mistakes in clinical trial documents

D. Assessment of teaching/presentation skills

- e.g., presentation of a UG lecture, making Question paper, LearningObjectives
- Discussion on dissertation

RECOMMENDED READING:

Journals

- Annual review in Pharmacology Annual Review in Medicine
- British Journal of Clinical Pharmacology
- British Journal of Pharmacology
- Clinical Pharmacology & Therapeutics
- Drugs
- ICMR bulletin
- Indian Journal of Experimental Biology
- Indian Journal of Medical research
- Indian Journal of Pharmacology
- Lancet
- New England Journal of Medicine
- Pharmacological Reviews
- Trends in Pharmacological Sciences
- WHO Reports & Bulletin

Text Books:

1. Goodman & Gilman's The Pharmacological Basis of Therapeutics. Hardman JG&LimbirdLE(Ed), Publisher: McGraw-Hill, New York.
2. Basic & Clinical Pharmacology. Katzung BG (Ed), Publisher: Prentice hall International Ltd., London.
3. Avery's Drug Treatment. TM Speight & NHG Holford (Eds), Adis International.
4. Principles of Drug Action. The Basis of Pharmacology. WB Pratt & P Taylor (Eds), Churchill Livingstone, Edinburgh.
5. Pharmacology &Pharmcotherapeutics. Satoskar RS, Bhandarkar SD(Ed), Publisher: Popular Prakashan, Bombay Essentials of Medical Pharmacology.
6. Tripathi KD (Ed), Jaypee Brothers, Publisher: Medical Publishers (P) Ltd.
7. Clinical Pharmcology. Bennet PN, Brown MJ (Ed). Publisher: Churchill Livingstone
8. A Textbook of Clinical Pharmacology. Roger HJ, Spector RG, Trounce JR (Ed), Publisher: Hodder and Stoughton Publishers.
9. Harrison's Principles of Internal Medicine. AS Fauci, JB Martin, E Braunwald, DL
10. Kasper, KJ Isselbacher, SL Hauser, JD Wilson, DL Longo (Eds), McGraw Hill, New York.
11. Guide to Good Prescribing. TPGM de vries, RH Henning, HV Hogerzeil, DA Fresle, Who Geneva.
12. Critical appraisal of epidemiological studies and clinical trials- Mark Elwood Oxford Press.
13. Pharmacology. Rang HP, Dale M, Ritter JM. Edinburgh, Churchill Livingstone, 1999.
14. Basic Principles of Clinical Research & Methodology. Editor S.K. Gupta Jaypee Brothers Publications.

Pertaining to Evaluation of Drugs

1. Evaluation of Drug Activities: Pharmacometrics. DR Laurence & AL Bacharach (Eds), Academic Press, London
2. Selected Topics in Experimental Pharmacology. UK Sheth, NK Dadkar& UG Kamat. Kothari Book Depot, Mumbai

3. Fundamentals of Experimental Pharmacology. MN Ghosh (Ed), Scientific Book Agency, Calcutta
4. Drug screening methods. Editor S.K. Gupta. Jaypee Brothers Publications

Pertaining to Biostatistics

1. Introductory Medical Statistics. Mould RF (Ed), Adam Hilger, Bristol andPhiladelphia, 1989.

EXAMINATION PATTERN:

Terminal Examinations: 100 marks theory (one paper) and 100 marks practical examination at the end of every term.

Preliminary Examination: Exactly as University examination. Self-study period of 30 days between Prelim and University will be given.

Final Examination:

Theory
There will be four question papers of 3-hour duration, each of 100 marks. **Scope of each paper:**

Question paper I – History of Pharmacology, Screening and evaluation of drugs (Animal and Clinical), General pharmacology, biostatistics, Pharmacoeconomics.

Question Paper II – Basic Pharmacology, therapeutics and clinical pharmacology of drugs in ANS, CVS, CNS ,Haemopoietic system & diuretics.

Question Paper III – Basic Pharmacology, therapeutics and clinical Pharmacology of drugs in RS, GIT, Immunopharmacology, Endocrine system, Uterine relaxants and stimulants, antimicrobial & antimalignant drugs ,

Question Paper IV – Recent advances about all systems.

Note: S.A.R not expected in any paper

Each Theory Paper

1. **Long Answer Questions – 2 – 20 marks each – 40 Marks**
2. **Short Answer Questions – 6/7 – 10 marks each – 60 Marks**

FINAL MARKING SCHEME: Passing in Practical and Theory separately at a time is necessary to declare the candidate passed in M.D. Pharmacology Examination.

Heads of Passing	'Maximum Marks'	Minimum Marks for passing
Theory	400	200
Practical and Viva voce	400	200
Total Marks	800	400

LOGBOOK (FORMAT)

KRISHNA INSTITUTE OF MEDICAL SCIENCES "DEEMED TO BE" UNIVERSITY, KARAD

M.D. (PHARMACOLOGY ANDTHERAPEUTICS)

PERSONAL BIODATA

PASSPORT

SIZE
PHOTOGRAPH

NAME OF THE CANDIDATE –

NAME OF THE INSTITUTE –

YEAR AND MONTH OF REGISTRATION –

NAME OF THE P.G.TEACHER –

FATHER'S NAME –

MOTHER'S NAME-

PERMANENT ADDRESS OF THE CANDIDATE –

DATE OF BIRTH OF THE CANDIDATE –

EDUCATIONAL QUALIFICATIONS

SR.NO	DEGREE	INSTITUTE/UNIVERSITY	YEAR OF PASSING
1			
2			
3			

DISSERTATION DETAILS –

NAME OF THE TOPIC –

COGUIDE IF ANY –

DATE OF CLEARANCE BY ETHICAL COMMITTE-

POSTING SCHEDULES

Sr No	Title of Posting	Period	Signature of HOD
1			
2			
3			
4			
5			
6			

JOURNAL CLUB

Sr No	Title of Paper	Date	Presented/Attended	Sign of PG Teacher

MICROTEACHING /SEMINARS CONDUCTED BY THE CANDIDATE

NO	TOPIC	DATE	Signature of PG Teacher
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

List of ADRs reported

ADR	Date	ADR	Date

Sign of PG Teacher

EXPERIMENTS CONDUCTED BY THE CANDIDATE
[GRAPHS IF ANY TO BE PRESERVED]

NO	NAME OF THE EXPERIMENTS	DATE	RESULTS	REMARKS OF GUIDE

CONFERENCES/WORKSHOPS/ CME/ ATTENDED

1.

2.

3.

4

5

6

Posters/ Oral papers presented in conferences:

1.

2

3

4

SHORT PROJECTS COMPLETED:

PUBLICATION IF ANY

1.

2.

EXAMINATIONS:

	THEORY	PRACTICAL
TERMINAL		
TERMINAL		
TERMINAL		
TERMINAL		
TERMINAL		
PRELIMINARY		

OVERALL PERFORMANCE IN COURSE

SIGN. OF GUIDE. **SIGN. OF HOD**

Postgraduate Students Appraisal Form

Nameof theDepartment/Unit:

NameofthePGStudent :

PeriodofTraining :FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	MoreThan Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based/recent Advances learning				
2.	Patient based/Laboratory Or Skill based learning				
3.	Self-directed learning and teaching				
4.	Departmental and inter departmental Learning activity				
5.	External and Outreach Activities/CMEs				
6.	Thesis/Research work				
7.	Log Book Maintenance				

Publications Yes/No

Remark_____

_____

_____

_____

PG GUIDE
DEPARTMENT OF PHARMACOLOGY
KIMS, KARAD

PROFRSSOR & HEAD
DEPARTMENT OF PHARMACOLOGY
KIMS, KARAD