

Faculty of Medicine



JSS Academy of Higher Education & Research

(Deemed to be University)

Accredited "A" Grade by NAAC

Sri Shivarathreshwara Nagar, Mysuru – 570 015

Regulation & Syllabus

Post Graduate Degree Programs
PHARMACOLOGY 2016

MD

Regulation & Syllabus

MD PHARMACOLOGY

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REGULATION AND SYLLABUS FOR POST GRADUATE DEGREE PROGRAMS 2016

MD PHARMACOLOGY



CONTENTS

		Page No
Chapter I	Regulation	04
Chapter II	Goals and General Objectives	11
Chapter III	Monitoring Learning Process	13
Chapter IV	Ethics	26
Chapter V	Syllabus - Degree	28
	- Diploma	55

CHAPTER I

REGULATION FOR POST GRADUATE DEGREE AND DIPLOMA COURSES

1. Branch of study

Post graduate degree courses

Doctor of Medicine

- a) Anaesthesiology
- b) Anatomy
- c) Biochemistry
- d) Community medicine
- e) Dermatology, venereology and leprosy
- f) Emergency medicine
- g) Forensic medicine
- h) General medicine
- i) Hospital administration
- j) Microbiology
- k) Pathology
- l) Paediatrics
- m) Pharmacology
- n) Physiology
- o) Psychiatry
- p) Tuberculosis and Respiratory Medicine
- q) Radio Diagnosis

Master of Surgery

- a) General surgery
- b) Obstetrics and gynaecology
- c) Ophthalmology
- d) Orthopaedics
- e) Otorhinolaryngology

Post graduate diploma courses

- a) Anaesthesiology (DA)
- b) Child Health (DCH)
- c) Clinical Pathology (DCP)
- d) Dermatology, Venereology & Leprosy (DDVL)
- e) Medical Radio Diagnosis (DMRD)
- f) Obstetrics & Gynaecology (DGO)
- g) Ophthalmology (DO)
- h) Orthopaedics (D Ortho)
- i) Otolaryngology (DLO)
- j) Psychiatric Medicine (DPM)

2. Eligibility for admission

MD / MS Degree and Diploma courses: A candidate who has passed final year MBBS examination after pursuing a study in a medical college recognized by the Medical Council of India and has completed one year compulsory rotating internship in a teaching institution or other institution recognized by the Medical Council of India, and has obtained permanent registration of any State Medical Council, shall be eligible for admission.

3. Admission

A candidate desirous of admission to Post Graduate Medical Programmes MD/MS / PG Diploma Courses is required to complete the application form and submit to the Deemed to be University along with prescribed documents on or before the scheduled date. Eligibility criteria, application form and details of documents to be submitted are available in the Deemed to be University website: www.jssuni.edu.in.

4. Registration

A candidate who has been admitted to postgraduate course shall register in the Deemed to be University within a month of admission after paying the registration fee.

5. Intake of students

The intake of students to each course shall be in accordance with the MCI.

6. Duration of study

MD, MS Degree Courses: The course of study shall be 3 completed years including the period of examination.

Provided that in case of students having a recognized 2 years postgraduate diploma course in the same subject, the period of training including the period of examination shall be 2 years.

Diploma courses: The course of study shall be 2 completed years including the examination period.

7. Methodology of training

The training of postgraduate for degree/diploma shall be residency pattern, with graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, grand rounds, case demonstration, clinics, journal review meetings, CPC and clinical meetings. Every candidate shall participate in the teaching and training programme of undergraduate students. Training should include involvement in laboratory and experimental work, and research studies. Basic medical sciences students should be posted to allied and relevant clinical departments or institutions. Similarly, clinical subjects' students should be posted to basic medical sciences and allied specialty departments or institutions.

8. Attendance, progress and conduct

A candidate pursuing degree/diploma course, shall work in the concerned department of the institution for the full period as full time student. No candidate is permitted to run a clinic/laboratory/nursing home while studying postgraduate course, nor can he/she work in a nursing home or other hospitals/

clinic/laboratory while studying postgraduate course.

Each year shall be taken as a unit for the purpose of calculating attendance.

Every student shall attend symposia, seminars, conferences, journal review meetings, grand rounds, CPC, case presentation, clinics and lectures during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

Every candidate is required to attend a minimum of 80% of the training during each academic year of the post graduate course. Provided, further, leave of any kind shall not be counted as part of academic term without prejudice to minimum 80% attendance of training period every year.

Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the Deemed to be University Examinations.

9. Monitoring progress of study

Work diary / Log Book: Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention shall be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate. The work diary shall be scrutinized and certified by the Head of the Department and Head of the Institution, and presented in the Deemed to be University practical/clinical examination.

Periodic tests: In case of degree courses of three years duration (MD/MS), the concerned departments shall conduct three tests, two of them be annual tests, one at the end of first year and the other at the end of the second year. The third test shall be held three months before the final examination. The tests shall include written papers, practical / clinical and viva voce. Records and marks obtained in such tests shall be maintained by the Head of the Department and sent to the Deemed to be University, when called for.

In case of diploma courses of two years duration, the concerned departments shall conduct two tests, one of them at the end of first year and the other in the second year, three months before the final examination. The tests shall include written papers, practical / clinical and viva voce.

Records: Records and marks obtained in tests shall be maintained by the Head of the Department and shall be made available to the Deemed to be University or MCI.

10. Dissertation

Every candidate pursuing MD/MS degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.

The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions.

Every candidate shall submit to the Controller of Examinations of the Deemed to be University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within six months from the date of commencement of the course, on or before the dates notified by the Deemed to be University. The synopsis shall be sent through proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the Deemed to be University. No change in the dissertation topic or guide shall be made without prior approval of the Deemed to be University.

The dissertation should be written under the following headings:

- a) Introduction
- b) Aims or Objectives of study
- c) Review of Literature
- d) Material and Methods
- e) Results
- f) Discussion
- g) Conclusion
- h) Summary
- i) References
- j) Tables
- k) Annexure
- l) Proof of Paper presentation and publication

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the department and head of the Institution.

Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, six months before final examination, on or before the dates notified by the Deemed to be University.

The dissertation shall be valued by examiners appointed by the Deemed to be University. Approval of dissertation work is an essential precondition for a candidate to appear in the Deemed to be University examination.

Guide: The academic qualification and teaching experience required for recognition as a guide for dissertation work is as per MCI Minimum Qualifications for Teachers in Postgraduate Medical Education Regulations, 2000. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Assistant Professor gained after obtaining post graduate degree shall be recognised as post graduate teachers.

Co Guide: A Co-guide may be included provided the work requires substantial contribution from a sister department or from another medical institution recognised for teaching/training by JSS Deemed to be University / Medical Council of India.

Change of guide: In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the Deemed to be University.

A postgraduate student is required to present one poster presentation, to read one paper at a national/state conference and to present one research paper which should be published/accepted for publication/sent for publication during the period of his postgraduate studies so as to make him eligible to appear at the postgraduate degree examination.

11. Schedule of examination

The examination for MD / MS courses shall be held at the end of three academic years (six academic terms). The examination for the diploma courses shall be held at the end of two academic years.

For students who have already passed Post Graduate Diploma and appearing for MD examination, the examination shall be conducted after two academic years including submission of dissertation. The Deemed to be University shall conduct two examinations in a year at an interval of four to six months between the two examinations. Not more than two examinations shall be conducted in an academic year.

12. Scheme of examination

MD/MS

Dissertation: Every candidate shall carry out work and submit a dissertation as indicated in Sl. No. 10. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

Written Examination (Theory): A written examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the 1st paper in clinical subjects will be on applied aspects of basic medical sciences. Recent advances may be asked in any or all the papers. In basic medical subjects and para-clinical subjects, questions on applied clinical aspects shall also be asked.

Pattern of Theory Examination Question Paper:

Each paper shall consist of two long essay questions each carrying 20 marks, 3 short essay questions each carrying 10 marks and 6 short answer questions each carrying 5 marks. Total marks for each paper shall be 100.

Practical/Clinical Examination: In case of Practical examination for the subjects in Basic Medical Sciences Practical Examination shall be conducted to test the knowledge and competence of the candidates for making valid and relevant observations based on the experimental/Laboratory studies and his ability to perform such studies as are relevant to his subject.

Clinical examination for the subjects in Clinical Sciences shall be conducted to test the knowledge and competence of the candidates for undertaking independent work as a specialist/Teacher, for which candidates shall examine a minimum one long case and two short cases.

The total marks for Practical / clinical examination shall be 200.

Viva Voce: Viva Voce shall be thorough and shall aim at assessing the candidate knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which form a part of the examination.

The total marks shall be 100 and the distribution of marks shall be as under:

- | | | |
|-----|---|----|
| i) | For examination of all components of syllabus | 80 |
| ii) | For Pedagogy | 20 |

If there is skills evaluation, 10 marks shall be reserved for Pedagogy and 10 marks for skill evaluation.

Examiners. There shall be at least four examiners in each subject. Out of

them, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for declaring as pass in Deemed to be University Examination:

A candidate shall pass theory and practical including clinical and viva-voce examination separately and shall obtain 40% marks in each theory paper and not less than 50% marks cumulatively in all the four papers for post graduate degree examination to be declared as pass.

A candidate obtaining less than 40% marks in any paper and obtaining less than 50% of marks cumulatively in all the four papers for postgraduate degree examination shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

Declaration of class: A successful candidate passing the Deemed to be University examination in first attempt and secures grand total aggregate 75% of marks or more will be declared to have passed the examination with distinction, 65% but below 75% declared as First Class and 50% but below 65% declared as Second Class.

A candidate passing the Deemed to be University examination in more than one attempt shall be declared as Pass Class irrespective of the percentage of marks.

Post Graduate Diploma Examinations

Diploma examination in any subject shall consist of theory (written papers), Practical / Clinical and Viva - Voce.

Theory: There shall be three written question papers each carrying 100 marks. Each paper will be of three hours duration. In clinical subjects one paper out of this shall be on basic medical sciences. In basic medical subjects and Para-clinical subjects, questions on applied clinical aspects shall also be asked.

Pattern of Theory Examination Question Paper:

Each paper shall consist of two long essay questions each carrying 20 marks, 3 short essay questions each carrying 10 marks and 6 short answer questions each carrying 5 marks. Total marks for each paper shall be 100.

Practical Clinical Examination: In case of practical examination it shall be aimed at assessing competence, skills related to laboratory procedures as well as testing students ability to make relevant and valid observations, interpretation of laboratory or experimental work relevant to his/her subject.

In case of clinical examination, it shall aim at examining clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate shall examine at least one long case and two short cases.

The maximum marks for Practical / Clinical shall be 150.

Viva Voce Examination: Viva Voce examination shall be thorough and shall aim at assessing the candidate's knowledge and competence about the subject, investigative procedures, therapeutic technique and other aspects of the speciality, which shall form a part of the examination. The total marks shall be 50.

Examiners. There shall be at least four examiners in each subject. Out of

them, two shall be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the Medical Council of India.

Criteria for declaring as pass in Deemed to be University Examination:

A candidate shall pass theory and practical including clinical and viva-voce examination separately and shall obtain 40% marks in each theory paper and not less than 50% marks cumulatively in all the three papers for post graduate diploma examination to be declared as pass.

A candidate obtaining less than 40% marks in any paper and obtaining less than 50% of marks cumulatively in all the three papers for post graduate diploma examination shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Controller of Examinations.

Declaration of class: A successful candidate passing the Deemed to be University examination in first attempt and secures grand total aggregate 75% of marks or more will be declared to have passed the examination with distinction, 65% but below 75% declared as First Class and 50% but below 65% declared as Second Class.

A candidate passing the Deemed to be University examination in more than one attempt shall be declared as Pass Class irrespective of the percentage of marks.

13. Number of candidates per day

The maximum number of candidates to be examined in Clinical/ practical and Oral on any day shall not exceed eight for M.D./M.S. degree, eight for diploma.

CHAPTER II

GOALS AND GENERAL OBJECTIVES OF POSTGRADUATE MEDICAL EDUCATION PROGRAM

GOAL

The goal of postgraduate medical education shall be to produce competent specialists and/or medical teachers:

1. Who shall recognize the health needs of the community and carry out professional obligations ethically and in keeping with the objectives of the national health policy.
2. Who shall have mastered most of the competencies, pertaining to the specialty, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system.
3. Who shall be aware of the contemporary advance and developments in the discipline concerned.
4. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology and
5. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals.

GENERAL OBJECTIVES

At the end of the postgraduate training in the discipline concerned the student shall be able to:

1. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
2. Practice the specialist concerned ethically and in step with the principles of primary health care.
3. Demonstrate sufficient understanding of the basic sciences relevant to the concerned specialty.
4. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.
5. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.
6. Plan and advice measures for the prevention and rehabilitation of patients suffering from disease and disability related to the specialty.
7. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
8. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behavior in accordance with the societal norms and expectations.
9. Play the assigned role in the implementation of national health programme, effectively and responsibly.

10. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
11. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
12. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
13. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
14. Function as an effective leader of a health team engaged in health care, research or training.

STATEMENT OF THE COMPETENCIES: Keeping in view the general objectives of postgraduate training, each discipline shall aim at development of specific competencies which shall be defined and spelt out in clear terms. Each department shall produce a statement and bring it to the notice of the trainees in the beginning of the programme so that he or she can direct the efforts towards the attainment of these competencies.

COMPONENTS OF THE POSTGRADUATE CURRICULUM:

The major components of the Postgraduate curriculum shall be:

- Theoretical knowledge
- Practical and clinical skills
- Dissertation skills.
- Attitudes including communication skills.
- Training in Research Methodology, Medical Ethics and Medicolegal aspects.

(Source: Medical Council of India, Regulations on Postgraduate Medical Education, 2000)

CHAPTER III

Monitoring Learning Progress

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring shall be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Model checklists are given in this chapter which may be copied and used.

The learning outcomes to be assessed should include:

1. Personal Attitudes.
2. Acquisition of Knowledge.
3. Clinical and operative skills and
4. Teaching skills.

1. Personal Attitudes: The essential items are:

- a) Caring attitude.
- b) Initiative.
- c) Organisational ability.
- d) Potential to cope with stressful situations and undertake responsibility.
- e) Trustworthiness and reliability.
- f) To understand and communicate intelligibly with patients and others.
- g) To behave in a manner that establishes professional relationships with patients and colleagues.
- h) Ability to work in a team.
- i) A critical enquiring approach to the acquisition of knowledge.

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

2. Acquisition of Knowledge: The methods used comprise of 'Log Book' which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The log book should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities, if so, desired.

- a) **Journal Review Meeting (Journal Club).** The ability to do literature search, in depth study, presentation skills, and use of audio-visual aids are to be assessed. The assessment is made by faculty members and peers attending the meeting using a checklist (see Model Checklist – I, Chapter III)
- b) **Seminars / Symposia.** The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio-visual aids are to be assessed using a checklist (see Model Checklist-II, Chapter III)

- c) **Clinico-pathological conferences.** This should be a multidisciplinary study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter(s) are to be assessed using a check list similar to that used for seminar.
- d) **Medical Audit.** Periodic morbidity and mortality meeting shall be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

3. Clinical skills:

- a. **Day to Day work:** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates' sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter III).
 - b. **Clinical meetings:** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Chapter III).
 - c. **Clinical and Procedural skills:** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the log book. (Table No.3, Chapter III).
4. **Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Chapter III).
 5. **Periodic tests:** In case of degree courses of three years duration, the department may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. In case of diploma courses of two year duration, the departments may conduct two tests. One of them at the end of first year and the other in the second year, three months before the final examination. The tests may include written papers, practical / clinical and viva voce.
 6. **Work diary:** Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.
 7. **Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the Deemed to be University or MCI.
 8. **Log book:** The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentations and procedures carried out by the candidate. Format for the log book for the different activities is given in Tables 1, 2 and 3 of Chapter III. Copies may be made and used by the institutions.

Procedure for defaulters: Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she/he fails to fulfill the requirements in spite of being given adequate chances to set him or herself right.

Format of Model Check Lists

Check List-I

MODEL CHECK-LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope & objectives of the paper by the candidate					
3.	Whether cross references have been consulted					
4.	Whether other relevant publications consulted					
5.	Ability to respond to questions on the paper / subject					
6.	Audio-visual aids used					
7.	Ability to defend the paper					
8.	Clarity of presentation					
9.	Any other observation					
	Total Score					

Check List – II

**MODEL CHECK-LIST FOR EVALUATION OF
SEMINAR PRESENTATIONS**

Name of the Student:

Name of the Faculty/Observer:

Date:

Sl No	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Whether other relevant publications consulted					
2.	Whether cross references have been consulted					
3.	Completeness of Preparation					
4.	Clarity of Presentation					
5.	Understanding of subject					
6.	Ability to answer questions					
7.	Time scheduling					
8.	Appropriate use of Audio-Visual aids					
9.	Overall Performance					
10.	Any other observation					
	Total Score					

Check List - III

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD / OPD

(To be completed once a month by respective Unit Heads,
including posting in other departments)

Name of the Student:

Name of the Faculty/Observer:

Date:

SI No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance					
2.	Punctuality					
3.	Interaction with colleagues and supportive staff					
4.	Maintenance of case records					
5.	Presentation of cases during rounds					
6.	Investigations work up					
7.	Beside manners					
8.	Rapport with patients					
9.	Counseling patient's relatives for blood donation or Postmortem and Case follow up.					
10.	Overall quality of ward work					
	Total Score					

Check List - IV
EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl No	Points to be considered	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness of history					
2.	Whether all relevant points elicited					
3.	Clarity of Presentation					
4.	Logical order					
5.	Mentioned all positive and negative points of importance					
6.	Accuracy of general physical examination					
7.	Whether all physical signs elicited correctly					
8.	Whether any major signs missed or misinterpreted					
9.	Diagnosis: Whether it follows logically from history and findings					
10.	Investigations required <ul style="list-style-type: none"> • Complete list • Relevant order • Interpretation of investigations 					
11.	Ability to react to questioning Whether it follows logically from history and findings					
12.	Ability to defend diagnosis					
13.	Ability to justify differential diagnosis					
14.	Others					
	Total Score					

Check List - V

MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE

SI No		Strong Point	Weak Point
1.	Communication of the purpose of the talk		
2.	Evokes audience interest in the subject		
3.	The introduction		
4.	The sequence of ideas		
5.	The use of practical examples and/or illustrations		
6.	Speaking style (enjoyable, monotonous, etc., specify)		
7.	Attempts audience participation		
8.	Summary of the main points at the end		
9.	Asks questions		
10.	Answers questions asked by the audience		
11.	Rapport of speaker with his audience		
12.	Effectiveness of the talk		
13.	Uses AV aids appropriately		

Check List - VI

MODEL CHECK LIST FOR DISSERTATION PRESENTATION

Name of the Student:

Name of the Faculty:

Date:

Sl No	Points to be considered divine	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Interest shown in selecting a topic					
2.	Appropriate review of literature					
3.	Discussion with guide & other faculty					
4.	Quality of Protocol					
5.	Preparation of proforma					
	Total Score					

Check List - VII

**CONTINUOUS EVALUATION OF DISSERTATION WORK
BY GUIDE / CO GUIDE**

Name of the Student:

Name of the Faculty:

Date:

Sl No	Items for observation during presentations	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Periodic consultation with guide/co-guide					
2.	Regular collection of case Material					
3.	Depth of analysis / discussion					
4.	Departmental presentation of findings					
5.	Quality of final output					
6.	Others					
	Total Score					

LOG BOOK

Table 3: Diagnostic and Operative procedures performed

Name:

Admission year:

College:

Date	Name	ID No.	Procedure	Category O, A, PA, PI*

*** Key:**

O - Washed up and observed

A - Assisted a more senior Surgeon

PA - Performed procedure under the direct supervision of a senior Surgeon
PI - Performed independently

Model Overall Assessment Sheet

SI No	Faculty Member & Others	Name of Student and Mean Score*												
		A	B	C	D	E	F	G	H	I	J			
1.	Journal Review Presentations													
2.	Seminars													
3.	Clinical work in wards													
4.	Clinical presentation													
5.	Teaching skill practice													
	Total Score													

Note: Use separate sheet for each year.

Signature of HOD

Signature of Principal

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

* KEY:

Mean score : Is the sum of all the scores of checklists 1 to 7.
A, B, Name of the trainees.

Chapter IV

Medical Ethics Sensitisation and Practice

Introduction

There is now a shift from the traditional individual patient- doctor relationship and medical care. With the advances in science and technology and the needs of patients, their families and the community, there is an increased concern with the health of society. There is a shift to greater accountability to the society. Doctors and health professionals are confronted with many ethical problems. It is, therefore necessary to be prepared to deal with these problems. To accomplish the Goal and General Objective stated in Chapter II and develop human values it is urged that ethical sensitisation be achieved by lectures or discussion on ethical issues, clinical discussion of cases with an important ethical component and by including ethical aspects in discussion in all case presentation, bedside rounds and academic postgraduate programmes.

Course Contents

1. Introduction to Medical Ethics

- What is Ethics?
- What are values and norms?
- Relationship between being ethical and human fulfillment.
- How to form a value system in one's personal and professional life.
- Heteronomous Ethics and Autonomous Ethics.
- Freedom and personal Responsibility.

2. Definition of Medical Ethics

- Difference between medical ethics and bio-ethics
- Major Principles of Medical Ethics
 - Beneficence = fraternity
 - Justice = equality
 - Self determination (autonomy) = liberty

3. Perspective of Medical Ethics

- The Hippocratic Oath.
- The Declaration of Helsinki.
- The WHO Declaration of Geneva.
- International code of Medical Ethics. (1993)
- Medical Council of India Code of Ethics.

4. Ethics of the Individual

- The patient as a person.
- The Right to be respected.
- Truth and Confidentiality.
- The autonomy of decision.
- The concept of disease, health and healing.
- The Right to health.
- Ethics of Behaviour modification.
- The Physician – Patient relationship.
- Organ donation.

5. The Ethics of Human life

- What is human life?
- Criteria for distinguishing the human and the non-human.

- Reasons for respecting human life.
- The beginning of human life.
- Conception, contraception.
- Abortion.
- Prenatal sex-determination.
- In vitro fertilization (IVF).
- Artificial Insemination by Husband (AIH).
- Artificial Insemination by Donor (AID).
- Surrogate motherhood.
- Semen Intra-fallopian Transfer (SIFT).
- Gamete Intra-fallopian Transfer (GIFT).
- Zygote Intra-fallopian Transfer (ZIFT).
- Genetic Engineering.

6. The Family and Society in Medical Ethics

- The Ethics of human sexuality.
- Family Planning perspectives.
- Prolongation of life.
- Advanced life directives – The Living Will
- Euthanasia
- Cancer and Terminal Care

7. Profession Ethics

- Code of conduct.
- Contract and confidentiality.
- Charging of fees, Fee-splitting.
- Prescription of drugs.
- Over-investigating the patient.
- Low – Cost drugs, vitamins and tonics.
- Allocation of resources in health care.
- Malpractice and Negligence.

8. Research Ethics

- Animal and experimental research / humaneness.
- Human experimentation.
- Human volunteer research — Informed Consent Drug trials.

9. Ethical workshop of cases

- Gathering all scientific factors.
- Gathering all human factors.
- Gathering all value factors.
- Identifying areas of value — conflict, setting of priorities
- Working out criteria towards decisions.

Recommended Reading

1. Francis C.M., Medical Ethics, 1 Ed, 1993, Jaypee Brothers, New Delhi.
2. Good Clinical Practices:GOI Guidelines for clinical trials on Pharmaceutical Products in India (www.cdsco.nic.in)
3. INSA Guidelines for care and use of Animals in Research – 2000.
4. CPCSEA Guidelines 2001 (www.cpcsea.org.)
5. Ethical Guidelines for Biomedical Research on Human Subjects, 2000, ICMR, New Delhi.
6. ICMR Guidelines on animal use 2001, ICMR, New Delhi.

CHAPTER V - SYLLABUS

M D PHARMACOLOGY

The composition of the department in terms of faculty strength; other staff, laboratory equipment and number of PG students will be as per MCI regulations.

1. Goals

The aims of MD course in Pharmacology are:

- To train a medical postgraduate to be a Pharmacologist who is well versed with the basic principles of Pharmacology and its applications in therapy and also update with the recent advances.
- Acquisition of skills related to teaching, research methodology, industry and corporate world.
- Knowledge of elementary statistics and its applications.
- Overall development of skills and personality of the PG student.
- Broaden the scope of Pharmacology from bench to bed side.

2. Objectives

At the end of the MD course in Pharmacology, the student should be able to:

- Recognize the importance of Pharmacology as a key branch in health sciences.
- Demonstrate sound knowledge of general pharmacological principles, systemic pharmacology and clinical pharmacology.
- Plan and conduct lecture, demonstration, practical and tutorial classes for students of medical and allied disciplines.
- Carry out screening of drugs for pharmacological and toxicological profile.
- Carry out drug related literature search, formulate a research project and undertake the same. Apply appropriate statistical methods for summarizing and analyzing data.
- Present research findings in conferences (oral / poster sessions), communicate research / educational papers in peer reviewed journals, critically review and comment on research papers.
- Use computer and IT tools for teaching, research and presentation / publication of data.
- Monitor adverse drug reactions and perform a number of service activities e.g. therapeutic drug monitoring, pharmacovigilance, pharmacoconomics and pharmacoepidemiology
- Understand the principles of essential drug concept and rational use of drugs including rational pharmacotherapy.
- Provide drug information service to doctors / public
- Demonstrate knowledge of drug rules and regulations existing in the country.
- Be aware of the legal and ethical issues involved in drug development and research.
- Be able to constitute and conduct the proceedings of various committees e.g. IAEC, IEC, etc.
- They should also become a lifetime learner so as to be regularly updated about the advances in the field of Pharmacology

Methods of training

- Group discussions, Seminars, Symposia, Journal Clubs and case discussions.
- Lectures/lecture demonstrations may be arranged for selected topics in pharmacology as well as in allied disciplines.
- Every candidate during his postgraduate studies, shall actively and regularly participate in undergraduate training programme.
- Web based guest lectures.
- Animal simulation experiments.
- Clinical posting to various departments like medicine & its allied wings.
- Training in pharmacological approach to geriatric care.

Theory - The **course contents** should cover the following broad topics:

1. Basic and molecular pharmacology
2. Drug receptors and Pharmacodynamics
3. Pharmacokinetics (Absorption, Distribution, Metabolism and Excretion)
4. Biotransformation
5. Pharmacogenomics and Pharmacogenetics
6. Autonomic Pharmacology
7. Drugs acting on Smooth muscles
8. Clinical pharmacology
9. Drug development and Regulations
10. Clinical Pharmacokinetics
11. Drugs acting on Synaptic and Neuroeffector Junctional sites
12. Drugs acting on Central Nervous System (Sedative, Hypnotics, Antiepileptics, General Anesthetics, Local Anesthetics, Skeletal Muscle Relaxants, Antipsychotic, Antidepressants, Drugs used in Parkinson's disease and other neurodegenerative disorders, opioid agonists and antagonists, Drugs of abuse)
13. Drugs modifying renal function
14. Drugs acting on cardiovascular system and haemostatic mechanisms (Antihypertensive, Antianginal, Antiarrhythmics, Drugs used in heart failure, Drugs used in Dyslipidemias, Fibrinolytics, Anticoagulants, Antiplatelets)
15. Reproductive Pharmacology
16. Agents effecting calcification and bone turnover
17. Autacoids and related pharmacological agents (NSAIDs) and drugs used in Rheumatoid arthritis and Gout
18. Gastrointestinal drugs
19. Pharmacology of drugs affecting the respiratory system (drugs used in Bronchial Asthma and COPD)
20. Antimicrobial, antiparasitics, disinfectants, antiseptics
21. Chemotherapy of neoplastic disease
22. Antiviral drugs
23. Drugs used in autoimmune disorder and Graft versus Host Disease
24. Dermatological pharmacology
25. Ocular pharmacology
26. Use of drugs in pregnancy
27. Immunomodulators - immunosuppressants and immunostimulants
28. Pharmacology of drugs used in endocrine disorders (drugs used in diabetes mellitus, hypothalamic and pituitary hormones, thyroid and antithyroid

- drugs, adrenocorticoid hormones and their antagonists, gonadal hormones and their inhibitors)
29. Drug delivery systems
 30. Heavy metal poisoning
 31. General screening and evaluation of:
 - Analgesics, antipyretics, anticonvulsants, anti - inflammatory drugs,
 - Antidepressants, anti-anxiety and antipsychotics, sedatives, muscle relaxants, antihypertensive, hypocholesterolaemic agents, antiarrhythmic,
 - Diuretics, adrenergic blocking drugs
 - Drugs used in peptic ulcer diseases/Prokinetic agents/ antiemetics
 - Antitussives, /anti-asthma agents
 - Local Anesthetics
 - Oxytocics, antifertility agents
 - Antidiabetics
 - Behavioral pharmacology models and evaluation of drugs affecting learning and memory
 32. Bioassays
 - Bioassay methods
 - Animal experiments: Ethical considerations, ethical approval, applicable
 - Regulatory Guidelines (CPCSEA), humane animal research (principles of 3Rs) and alternatives to animal experimentation. General and statistical considerations
 - Anesthetics used in laboratory animals
 - Principles of EC₅₀, ED₅₀, pD₂ and pA₂ values of drugs
 - Describe methods of bioassay for estimation of : Acetylcholine, skeletal neuromuscular Junction blockers
 - Adrenaline, noradrenaline, histamine, 5 HT, hormones, insulin, vasopressin/oxytocin, estrogen, progestins, ACTH.
 - Competitive antagonism - pA₂ values
 - Immunoassays: Concept, types of bioassays and their applications
 - Animal experiments: Ethical consideration, ethical approval
 - Regulatory Guidelines (CPCSEA) and alternatives to animal experimentation
 33. Biochemical Pharmacology
 - Basic principles and applications of simple analytical methods
 - Principles of quantitative estimation of drugs, endogenous compounds and poisons using Colorimeter, Spectrophotometry, flame photometry, High Performance Liquid Chromatography (HPLC) and enzyme-linked Immunosorbent assay (ELISA).
 34. Recent advances in Pharmacology.
 35. Special problems related to drug use in different age groups, Pregnancy and Disease conditions.
 36. Research Methodology:

(The candidate shall get acquainted with various aspects of biomedical research, so as to enable him to undertake and supervise research projects).

 - (a) Basic Principles and related aspects.
 - (b) Ethical issues related to research on human subjects and animals.
 - (c) Ethical guidelines of ICMR, INSA and Breeding and Experiments Animals (Control and Supervision) Rules 1998.
 37. Perinatal and Pediatric Pharmacology
 38. Geriatric Pharmacology

39. Non-metallic toxicants - air pollutants, pesticides etc.
40. Research methodology and biostatistics
41. Literature search.
42. Pharmacogenomics, Pharmacovigilance (ADR reporting), Pharmacoeconomics (cost-effectiveness study) and pharmacoepidemiology
43. Over the counter drugs
44. Dietary supplements and herbal medicines
45. Pharmacometrics - methods of drug evaluation.

Practicals

Objective: A candidate, after passing the M.D. Pharmacology examination should possess skills in testing the effects of drugs on the various experimental systems specified below. The candidate should also be well versed in interpreting and analysis of the observations and data obtained from studies.

A. Experiments on Laboratory Animals

1. Anaesthetized animals: Dogs, Cats., etc.
2. Small Animals: - Methods of testing for local Anaesthetics, Anti-inflammatory drugs, analgesics, anticonvulsants, Psychopharmacological agents, etc.,
3. Isolated tissue preparations:
 - (a) Rabbits: - Jejunum, heart
 - (b) Rats: - Colon, Uterus, Fundus of stomach, phrenic nerve-diaphragm.
 - (c) Guinea Pigs: - Ileum, tracheal chain.
 - (d) Frogs: - Rectus Muscle, Sciatic Nerve- Gastrocnemius muscle preparation.
4. Demonstration of techniques

B. Chemical Experiments

1. Simple tests for detecting the chemical nature of drugs.
2. Monitoring of drug levels in body fluids candidates should acquaint with the techniques of monitoring drug levels, using systems like chromatography, Spectrophotometry and immunoassays.

C. On Human Volunteers

Simple tests for monitoring of effect of drugs like:

1. Bronchodilators - using peak flow meters.
2. Psychopharmacological agents - Behavioural effects.
3. ECG changes

D. Computer based Animal simulation Experiments.

POSTINGS IN OTHER DEPARTMENTS

A candidate of the M.D Degree Course in Pharmacology, needs to be well versed in the applied aspects of pharmacology and therapeutics. Actual postings in the wards of the Clinical departments will help the candidate get acquainted with the patterns of drug use, rational drug therapy, adverse drug reactions and interactions etc., Such postings will also help him gain confidence in

interacting with the clinicians, which will be needed if he chooses to be a clinical Pharmacologist in his future career.

The following clinical postings are recommended:

- General Medicine (OPD & Wards):1 Month
- Clinical Trials In General Medicine: 1 month
- Pediatrics:1 Month
- Anesthesiology & I.C.U. :15 days
- Dermatology & Psychiatry: 15 days
- Pharmacovigilance: 15 days

Total duration of clinical postings – 4 ½ months.

These postings shall be during the initial phase of the studies. Monitoring postings in clinical departments would be through daily discussions with the faculty during the afternoon session and as part of maintenance of work diary.

Schedule of work time table

I YEAR:

1st to 3rd month: Searching and Identification of topic for dissertation in consultation with guide and use of library, Satellite search etc., and preparation of synopsis.

4th to 6th month:

Study of Methodology of Experiments, Animal Lab, Maintenance of Animals, Study of Instruments for Experimentation, Analytical Chemistry. To get acquainted with methodology of clinical study & submission of synopsis to the Deemed to be University for registration.

7th to 10th month:

Literature Survey, Preparation of Reference Cards, Collection of relevant literature and Journal Work. Apart from this, the students shall attend all the theory classes, Practical, Student Tutorials and other teaching activities. They should also maintain work diary and duly get it countersigned by Head of the Department.

II YEAR & III YEAR

Candidates should do all the experiments mentioned in the course content on weekly basis and also continue the experimental work of the dissertation if any, candidates should participate in seminars, Journal Clubs on weekly basis and file the seminars done to be presented as a book.

They should undergo training in teaching skills.

Deputing the Postgraduates to MEU to undergo training in TOT programme (training of trainers) They should also maintain a daily Log Book of their work in the Department for 3 years.

MONITORING PROGRESS OF P.G STUDENTS

1. Work dairy / Log book: Every candidate shall maintain a work diary and record his/her participation in the training programme conducted by the department such as journal reviews, seminars etc. Special mention be made of the presentations made by the candidate as well as the laboratory experiments conducted.
2. The log book shall be scrutinized and certified by head of department. The department will conduct periodic tests which may include written paper, practical and viva - voce. Records and marks obtained in such tests will be maintained by head of department and sent to the Deemed to be University.

DISSERTATION

1. Every candidate is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such work shall be submitted in the form of a dissertation
2. The dissertation is aimed to train the candidate in pharmacological research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of relevant literature, getting acquainted with recent advances, designing of research study, collection of data, critical analysis of results and drawing conclusions.
3. The dissertation is to be submitted at least six months before the final examination as notified by the Deemed to be University to the Registrar (Evaluation).
4. The dissertation shall be evaluated by three reviewers. Prior acceptance of the dissertation shall be a precondition for a candidate to appear for the final examination.

TEACHING LEARNING ACTIVITIES

1	Post-graduate seminar	Weekly
2	Post-graduate Journal criticism	Weekly
3	Protocol writing	Weekly
4	Clinical Case discussion	Biweekly
5	Pharmacokinetic problem discussion	Biweekly
6	Animal Technique Demonstrations	Monthly
7	Use of Computer simulated animal Techniques	Monthly
8	Clinical postings to various departments of Hospital	4 ½ months
9	Clinical Pharmacology postings (Geriatric Unit)	Weekly
10	Integrated teaching for both UGs and PGs	Intermittently throughout the course

VII. SCHEME OF EXAMINATION

A. Theory written

Examination

There shall be four question papers, each of three hours duration, carrying 100 marks. Each paper shall consist of two long essay questions each carrying 20 marks, three short essay type of questions each carrying 10 marks and

six short answer type questions each carrying 5 marks. Questions on recent advances may be asked in any or all the papers.

2 X 20 = 40 marks

3 X 10 = 30 marks

6 X 05 = 30 marks

Total = 100 marks.

Details of distribution of topics for each paper will be as follows:

Paper I - Basic and General Pharmacology, Bio statistics, Toxicology (Pre Clinical Toxicity studies, Occupational toxicity, heavy metal intoxication, Genotoxicity), Use of drugs in special age groups, pregnancy and disease conditions, Pharmacogenetics and Pharmacogenomics

Paper II - Autonomic Nervous system, Central Nervous system, Cardio vascular system, Respiratory system, Gastro intestinal Systems, Renal system, Haemopoietic system.

Paper III – Hormones, Antimicrobial agents, Cancer Chemotherapy

Part IV- Clinical Trials, Screening Methods, Clinical Pharmacology, Immunopharmacology, Miscellaneous (Vaccines, Vitamins, Drugs acting on skin and mucous membrane)

* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable.

- Students should be prepared to answer overlapping topics.

WEIGHTAGE OF MARKS IN EACH PAPER

Paper I

TOPIC	WEIGHTAGE
Basic and General Pharmacology	40%
Bio statistics	10%
Toxicology (Pre Clinical Toxicity studies, Occupational toxicity, heavy metal intoxication, genotoxicity)	20%
Use of drugs in special age groups, pregnancy and disease conditions	20%
Pharmacogenetics and Pharmacogenomics	10%

Paper II

Autonomic Nervous system	20%
Central Nervous system	20%
Cardio vascular system	20%

Respiratory system	10%
Gastro intestinal Systems,	10%
Renal system	10%
Haemopoietic system	10%

Paper III

Hormones	40%
Antimicrobial agents	40%
Cancer Chemotherapy	20%

Paper IV

Clinical Trials	20%
Screening methods.	30%
Clinical Pharmacology	15%
Immuno Pharmacology	20%
Miscellaneous(Vaccines,Vitamins, Drugs acting on skin and mucous membrane)	15%

B. Practical Examination (Total 200 marks)	
PRACTICAL EXERCISE	MARKS
EXPERIMENTAL PHARMACOLOGY I: • Bioassay	20
EXPERIMENTAL PHARMACOLOGY II: a) Graphs- Interpret the given graph b) i) Techniques demonstration and short procedure ii) Screening methods and instruments c) Chemical testing	20 20 20 10
CLINICAL PHARMACOLOGY I: • Clinical Problems • Prescription audit	20 10
CLINICAL PHARMACOLOGY II: • Clinical trial Protocol writing • PK Problems • Journal Criticism • Drug stations • Therapeutic Guidelines presentation	20 20 20 10 10
TOTAL	200

C. Viva Voce - - 100 Marks

1. Viva-Voce Examination: (80 Marks)

Students will be examined by all the examiners together about student's knowledge and comprehension of the prescribed course contents, analytical approach, expression and interpretation of data. It includes discussion on

dissertation.

2. Pedagogy Exercise: (20 Marks)

A topic be given to each candidate along with the Practical Examination question paper on the first day. Student is asked to make a presentation on the topic on the second day for 8 to 10 minutes.

VIII. RECOMMENDED BOOKS AND JOURNALS TEXTS:

1. Goodman Gilman, Hardman, Lambird (Eds). The Pharmacological Basis of Therapeutics, 13th Edition, 2011 U.S.A. McGraw Hill Publications.
2. Bertram G. Katzung, `Basic and Clinical Pharmacology', Lange Medical Book, 14th Edition, Mc Gram Hill Publications, 2017.
3. Rang H.P., Dale M.M., Ritter J.M., et al., `Pharmacology', 8th Edition, Churchill Livingstone, Edinburgh London 2015.
4. Therapeutic Drugs, Vol 1 and Vol. 2, 2nd Edition, Colin Dollery (Eds), Churchill Livingstone, Edinburgh London 1999.
5. Vogel, G.H., Vogel W.H. (Eds), `Drug Discovery and Evaluation', Pharmacological Assays, Springer-Verlag Berlin Heidelberg Publications, 1997
6. Martindale `The Extra Pharmacopoeia', 30th Edition, James E.F. Reynolds (Eds), The Pharmaceutical Society of Great Britain, The Pharmaceutical-Press, London 1993
7. Kulkarni, S.K. `Hand Book of Experimental Pharmacology', Vallabh Prakashan, 4th Edition 1999
8. Perry, W.L.M. `Pharmacological Experiments on Isolated Preparations', 2nd Edition, Churchill Livingstone, Edinburgh London 1970
9. Perry, W.L.M. `Pharmacological Experiments on intact animals, 2nd Edition, Churchill Livingstone, Edinburgh London 1970
10. Burn J.H. `Practical Pharmacology', Blackwell Scientific Publications Oxford 1956
11. Ghosh M.N., `Fundamentals of Experimental Pharmacology', 3rd Edition, - Scientific Book Agency, Calcutta 2005

Journals

1. Journal of Pharmacology and Experimental Therapeutics.
2. Journal of Pharmacy and Pharmacology.
3. Drugs (Monthly Journal published by Addis International).
4. Clinical Pharmacology and Therapeutics.
5. Indian Journal of Pharmacology.
6. Annual Review of Pharmacology (Last 5 years)
7. Trends in Pharmaceutical sciences.
8. Indian Journal of Physiology and Pharmacology

ADDITIONAL READING

1. Compendium of recommendations of various committees on Health and Development (1943-1975). DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, min. of Health and Family Welfare, Govt. of India, Nirman Bhawan, New Delhi. P - 335.
2. National Health Policy, Min. of Health & Family Welfare, Nirman Bhawan, New Delhi, 1983
3. Santosh Kumar, The elements of Research, writing and editing 1994, Dept.

- of Urology, JIPMER, Pondicherry
4. Srinivasa D Ketal, Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry
 5. Indian Council of Medical Research, "Policy Statement of Ethical considerations involved in Research on Human Subjects", 1982, I.C.M.R, New Delhi.
 6. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi.
 7. Francis C M, Medical Ethics, J P Publications, Bangalore, II edn., 2004
 8. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.
 9. International Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journals, N Engl J Med 1991; 424
 10. Kirkwood B R, Essentials of Medical Statistics , 1" Ed., Oxford: Blackwell Scientific Publications 1988.
 11. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers, 1989.
 12. Raveendran B Gitanjali, A Practical approach to PG dissertation, New Delhi, J P Publications, 1998.

ANNEXURE 1

PHARMACOLOGY POSTGRADUATE TRAINING 'LOG BOOK'

Contents:

1. Personal Data:

- Name
- Institution
- Dates of Post Graduation studies
- Joining
- Completion
- Degree
- Deemed to be University
- Dissertation Title
- Name and Designation of Guide
- Signature of candidate
- Signature of Supervisor
- Signature of Head of Department

2. Clinical Postings:

- Specialty
- Duration
- Dates of Posting
- Remarks by faculty
- Any interesting case/difficult case

3. Seminars: (Presented and attended)

- Date
- Topic of Presentation
- Grade
- Moderator

4. Journal clubs (Presented and attended)

- Date
- Topic of Presentation
- Grade
- Moderator

5. Guest lecturers/ inter departmental teaching:

- Date
- Topic
- Departments involved

6. Paper Presentation: (Local, State, National, International Forum)

- Date
- Title of Paper presented in the conference
- Supervisor

7. Undergraduate Classes taken by MD candidate: (eg. Didactic lecture or clinic)

- Date
- Topic
- Supervisor

8. Academic Meetings, CMEs and Conferences attended : (Extra mural, Local, State, National, International Forum)

- Date
- Title
- Organization



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