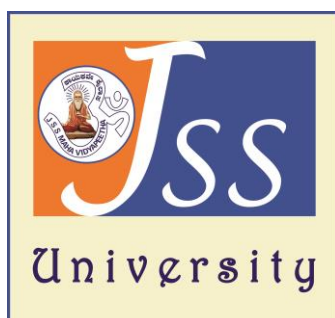


**REGULATIONS AND CURRICULUM  
FOR  
POSTGRADUATE DEGREE AND DIPLOMA COURSES**

**2010**

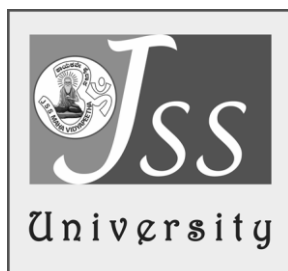


**PHARMACOLOGY**

**JSS UNIVERSITY  
JSS MEDICAL INSTITUTIONS CAMPUS  
SRI SHIVARATHREESHWARA NAGARA, MYSORE 570 015  
KARNATAKA, INDIA**

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KARNATAKA, INDIA**

## **Regulations & curriculum for Postgraduate Degree and Diploma Courses 2010**

### **PHARMACOLOGY**

This book can be had from

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Karnataka

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## **Postgraduate Medical Degree and Diploma Courses 2010**

### **PHARMACOLOGY**

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## **CHAPTER I**

### **Regulations for Postgraduate Degree and Diploma Courses in Medical Sciences**

#### **1. Branch of Study**

##### **1.1 Postgraduate degree courses**

Post Graduate Degree courses may be pursued in the following subjects:

##### **a) MD (Doctor of Medicine)**

- i) Anaesthesiology
- ii) Anatomy
- iii) Biochemistry
- iv) Community Medicine
- v) Dermatology, Venereology and Leprosy
- vi) Forensic Medicine
- vii) General Medicine
- viii) Microbiology
- ix) Pathology
- x) Paediatrics
- xi) Pharmacology
- xii) Physiology
- xiii) Psychiatry

##### **b) MS (Master of Surgery)**

- i) General Surgery
- ii) Obstetrics and Gynaecology
- iii) Ophthalmology
- iv) Orthopedics
- v) Oto-Rhino-Laryngology

##### **1.2 Postgraduate Diploma Courses**

Post Graduate Diploma Courses may be pursued in the following subjects:

- a) Anesthaesiology (DA)
- b) Child Health (DCH)
- c) Clinical pathology (DCP)
- d) Dermatology, Venerology and Leprosy (DDVL)
- e) Obstetrics and Gynaecology (DGO)
- f) Ophthalmology (DO)
- g) Orthopaedics (D Ortho)
- h) Oto-rhino-laryngology (DLO)
- i) Psychiatry (DPM)

## **2. Eligibility for Admission**

**MD / MS Degree and Diploma courses :** A candidate affiliated to this University and who has passed final year MBBS examination after pursuing a study in a medical college recognized by the Medical Council of India, or from a recognized medical college affiliated to any other university recognized as equivalent thereto 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. Obtaining Eligibility Certificate by the University before making admission**

No candidate shall be admitted for any Postgraduate Degree/Diploma courses unless the candidate has obtained and produced the eligibility certificate issued by the University. The candidate has to make an application to the University with the following documents along with the prescribed fee:

- a) MBBS pass/degree certificate issued by the university.
- b) Mark cards of all the university examinations passed before MBBS course.
- c) Attempt certificate issued by the Principal.
- d) Certificate regarding the recognition of the medical college by the Medical Council of India
- e) Completion of internship certificate.
- f) In case internship was done in a non- teaching hospital, a certificate from the Medical Council of India that the hospital has been recognized for internship.
- g) Registration by any state Medical Council.
- h) Proof of ST/SC or Category I, as the case may be.

Candidates should obtain the eligibility certificate before the last date for admission as notified by the university.

A candidate who has been admitted to postgraduate course should register his / her name in the university within a month of admission after paying the registration fee.

## **4. Intake of students**

The intake of students to each course shall be in accordance with the MCI and GOI permissions in this regard.

## **5. Course of study**

### **5.1 Duration**

- a) **MD, MS Degree Courses:** The course of study shall be for a period of 3 years consisting of 6 terms.
- b) **Diploma courses:** The course of study shall be for a period of 2 years consisting of 4 terms.

## **6. Method 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 should be required to 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.

## **7. Attendance, Progress and Conduct**

- 7.1** A candidate pursuing degree/diploma course, should 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.
- 7.2** Each year shall be taken as a unit for the purpose of calculating attendance.
- 7.3** 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.
- 7.4** 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.
- 7.5** Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University Examinations.

## **8. Monitoring Progress of Studies:**

- 8.1 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 may 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 scrutinised and certified by the Head of the Department and Head of the Institution, and presented in the University practical/clinical examination.

- 8.2 Periodic tests:** In case of degree courses of three years duration (MD/MS, DM, M Ch.), the concerned departments may 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 may be held three months before the final examination. The tests may include written papers, practical / clinical and viva voce. Records and marks obtained in such tests will be maintained by the Head of the Department and sent to the University, when called for.
- 8.3** In case of diploma courses of two years duration, the concerned 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.
- 8.4 Records:** Records and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

## **9. Dissertation**

- 9.1** 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.
- 9.2** The dissertation is aimed to train a post graduate 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.
- 9.3** Every candidate shall submit to the Director (Academic) of the 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 University. The synopsis shall be sent through proper channel.
- 9.4** Such synopsis will be reviewed and the dissertation topic will be registered by the University. No change in the dissertation topic or guide shall be made without prior approval of the University.



**9.5** 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

**9.6** 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.

**9.7** Four copies of dissertation thus prepared shall be submitted to the Registrar (Evaluation), six months before final examination, on or before the dates notified by the University.

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

**9.9 Guide:** The academic qualification and teaching experience required for recognition by this University as a guide for dissertation work is as per Medical Council of India, Minimum Qualifications for Teachers in Medical Institutions Regulations, 1998. Teachers in a medical college/institution having a total of eight years teaching experience out of which at least five years teaching experience as Lecturer or Assistant Professor gained after obtaining post graduate degree shall be recognised as post graduate teachers.

**9.10 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 University / Medical Council of India. The co-guide shall be a recognised post graduate teacher of JSS University.

**9.11 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 university.

## 10. 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 DM and M Ch courses shall be held at the end of three years. The examination for the diploma courses shall be held at the end of two academic years (four academic terms). For students who have already passed Post Graduate Diploma and appearing for MD examination, the examination shall be conducted after two academic years (four academic terms, including submission of dissertation) The University shall conduct two examinations in a year at an interval of four to six months between the two examination. Not more than two examinations shall be conducted in an academic year.

## 11. Scheme of Examination

### 11.1 MD / MS Degree

MD / MS Degree examinations in any subject shall consist of dissertation, written paper (Theory), Practical/Clinical and Viva voce.

11.1.1 **Dissertation:** Every candidate shall carryout work and submit a dissertation as indicated in SI NO 9. Acceptance of dissertation shall be a precondition for the candidate to appear for the final examination.

11.1.2 **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 should also be asked.

11.1.3 **Practical / Clinical Examination:** In case of practical examination, it should be aimed at assessing competence and skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretations and inference of laboratory or experimental work relating to his/her subject.

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

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

11.1.4 **Viva Voce.** Viva Voce Examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 100 and the distribution of marks shall be as under:

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

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

11.1.5 **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.

11.1.6 **Criteria for declaring as pass in University Examination\*.** A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including clinical and viva-voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).

11.1.7 **Declaration of class:** A successful candidate passing the 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 University examination in more than one attempt shall be declared as Pass Class irrespective of the percentage of marks.

## 11.2 DM/M Ch

The examination shall consist of theory, clinical/practical and viva voce examination.

11.2.1 **Theory (Written Examination):** The theory examination shall consist of four question papers, each of three hours duration. Each paper shall carry 100 marks. Out of the four papers, the first paper will be on basic medical sciences. Recent advances may be asked in IV Paper.

11.2.2 **Practical / Clinical Examination:** In case of practical examination it should be aimed at assessing competence, skills of techniques and procedures as well as testing student's ability to make relevant and valid observations, interpretations and experimental work relevant to his / her subject.

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

The maximum marks for Practical / Clinical shall be 200.

11.2.3 **Viva-Voce:** Viva Voce examination shall aim at assessing thoroughly, depth of knowledge, logical reasoning, confidence and oral communication skills. The maximum marks shall be 100. This also includes spotters like instruments, anaesthesia machines, drugs, ECG, X – ray.

11.2.4 **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.

11.2.5 **Criteria for declaring as pass in University Examination\*:** A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory (2) Practical including clinical and viva voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).

### **11.3 Diploma Examination:**

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

11.3.1 **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 should also be asked.

11.3.2 **Practical Clinical Examination:** In case of practical examination it should 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 should aim at examining

clinical skills and competence of candidates for undertaking independent work as a specialist. Each candidate should examine at least one long case and two short cases.

The maximum marks for Practical / Clinical shall be 150.

11.3.3 **Viva Voce Examination.** Viva Voce examination should aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The total marks shall be 50. This also includes spotters like instruments, anesthesia machines, drugs, ECG, X-ray.

11.3.4 Criteria for declaring as pass in University Examination\* A candidate shall secure not less than 50% marks in each head of passing which shall include (1) Theory, (2) Practical including clinical and viva voce examination.

A candidate securing less than 50% of marks as described above shall be declared to have failed in the examination. Failed candidate may appear in any subsequent examination upon payment of fresh fee to the Registrar (Evaluation).

11.3.5 **11.3.5 Declaration of distinction.** A successful candidate passing the University examination in first attempt will be declared to have passed the examination with distinction, if the grand total aggregate marks is 75 percent and above. Distinction will not be awarded for candidates passing the examination in more than one attempt.

11.3.6 **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.

## **12. Number of Candidates per day**

The maximum number of candidates for practical / clinical and viva-voce examination shall be as under:

**MD /MS Course:** Maximum of 6 per day.

**Diploma Course:** Maximum of 8 per day.

## **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 speciality, 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 speciality concerned ethically and in step with the principles of primary health care.
3. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
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 speciality.
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 behaviour 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
- Thesis skills.
- Attitudes including communication skills.
- Training in research methodology.

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

## CHAPTER IV

### 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 out comes 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. Trust worthiness 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 IV)
- 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 IV)
- 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 IV).
- 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 IV).
- 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 IV)

**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 IV)

**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 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 IV. 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.

**CHAPTER IV (Contd)**  
**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:**

<b>Sl No</b>	<b>Items for observation during presentation</b>	<b>Poor 0</b>	<b>Below Average 1</b>	<b>Average 2</b>	<b>Good 3</b>	<b>Very Good 4</b>
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					
	<b>Total Score</b>					

## Check List – II

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

**Name of the Student:**

**Name of the Faculty/Observer:**

**Date:**

SI 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					
	<b>Total Score</b>					

### 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					
	<b>Total Score</b>					

### Check List - IV

#### EVALUATION FORM FOR CLINICAL PRESENTATION

**Name of the Student:**

**Name of the Faculty:**

**Date:**

SI 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 ▪ 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					
	<b>Total Score</b>					

### 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:**

<b>Sl No</b>	<b>Points to be considered</b> <b>divine</b>	<b>Poor</b> <b>0</b>	<b>Below</b> <b>Average</b> <b>1</b>	<b>Average</b> <b>2</b>	<b>Good</b> <b>3</b>	<b>Very</b> <b>Good</b> <b>4</b>
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					
	<b>Total Score</b>					



## Check List - VII

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

**Name of the Student:**

**Name of the Faculty:**

**Date:**

SI 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					
	<b>Total Score</b>					

## LOG BOOK

**Table 1:** Academic activities attended

Name:

Admission Year:

College:

[illegible]

## LOG BOOK

**Table 2:** Academic presentations made by the student

Name:

Admission year:

College:

[illegible]

## LOG BOOK

**Table 2:** 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



## Chapter V

### 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, p 189, Rs. 150/-
2. Good Clinical Practices : GOI Guidelines for clinical trials on Pharmaceutical Products in India ([www.cdsco.nic.in](http://www.cdsco.nic.in))
3. INSA Guidelines for care and use of Animals in Research – 2000.
4. CPCSEA Guidelines 2001 ([www.cpcsea.org](http://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 – III**

### **M D PHARMACOLOGY**

#### **OBJECTIVES**

A candidate, who has successfully completed the course in M.D Pharmacology, should become proficient in all aspects concerning drugs, and should have acquired skills and knowledge so as to opt for any of the following fields for his/her future career:

- 1) Teaching profession in a Medical Institution
- 2) Medical Research
- 3) Clinical Pharmacology
- 4) Pharmaceutical Industry

#### **COURSE CONTENT**

##### **Theory**

##### **I. Basic and General Pharmacology**

Basic Principles of Pharmacodynamics and Kinetics, including Molecular Pharmacology, Historical aspects of drug discovery, development of new drugs and its evaluation in animals and man, gene based therapy and drug abuse; Pharmacoepidmiology.

##### **II. Clinical Pharmacology**

Principles of Clinical Pharmacokinetics and their application in drug treatment, clinical trials, therapeutic drug monitoring, adverse drug reaction monitoring, Principles of rational drug use. Essential drugs concept, Adverse drug interactions; Drug information; Role of medicinal plants.

##### **III. Chemical Pharmacology**

Structure activity relationship of important classes of drugs, Basic Principles of Analytical Techniques including Spectrophotometry, Chromatography and Radio Immuno Assay.

##### **IV. Systemic Pharmacology and Therapeutics**

- Drug effects on various organ systems, including Anticancer drugs and immunosuppressants.
- Drug treatment of disease conditions.
- Screening procedures for various drug categories in humans and animals.

##### **V. Toxicology**

- Drug poisoning and their management.
- Environmental, Occupational and Industrial Toxicology.

##### **VI. Biostatistics:-**

- Basic Principles and their application in drug research.

##### **VII. Recent advances in Pharmacology.**

##### **VIII. Special problems related to drug use in different age groups, Pregnancy and Disease conditions.**

## **IX. 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  
a Animals(Control and Supervision) Rules 1998.

## **Practicals**

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

### **A. Experiments on Laboratory Animals**

1. Anaesthetised 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 drugs 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.

## **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.

## **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:

<u>Department</u>	<u>Period of Posting</u>
General Medicine ( OPD & Wards)	1 Months
Clinical Trials In General Medicine or allied subject	1 months
Pediatrics	1 Month
Anaesthesiology & I.C.U.	15 days
Dermatology & Psychiatry	15 days

Total duration of clinical postings - 4 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 :** Search 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. Submission of synopsis to the University for registration.

##### **7<sup>TH</sup> to 10<sup>th</sup> 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, Practicals, 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. 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. The log book shall be scrutinised and certified by head of department every term. (Please see Chapter IV for Model Check lists).

2. The department will conduct periodic tests which may include written paper, practicals and viva - voce. Records and marks obtained in such tests will be maintained by head of department and sent to the university

## **DISSERTATION**

1. Every candidate is required to carry out work on a selected research project under the guidance of a recognised 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. For details regarding registration of dissertation topic, please see Chapter I, SI.No.9
4. The dissertation is to be submitted at least six months before the final examination as notified by the university to the Registrar (Evaluation).
5. The dissertation shall be valued by three examiners. Prior acceptance of the dissertation shall be a precondition for a candidate to appear for the final examination

## **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 and six short essay type of questions each carrying 10 marks. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows \*:

Paper I - Basic and General Pharmacology including Bio statistics, Toxicology, and Use of drugs in special age groups, pregnancy and disease conditions.

Paper II - Systemic Pharmacology - I : (Autonomic Nervous, Central Nervous, Cardio vascular, Respiratory, Gastro intestinal Systems, Diuretics, and Blood. )

Paper III - Systemic Pharmacology - II : (Hormones, Uterus, Antimicrobial agents, Chemotherapy, Anticancer drugs and Immuno-pharmacology).

Part IV - Clinical Pharmacology and Development of New drugs, Screening Methods.

\* 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.

## **B. Practical Examination (Total 200 marks)**

Practicals are to be held on 2 days, along with Viva-Voce.

### **Experimental Pharmacology I**

Blood pressure, respiration and any other possible recordings on anaesthetised animal: rat/rabbit/ guinea pig.

Bioassay: 3 or 4 point assay using various isolated tissues like frog rectus, rat uterus, guinea pig ileum, rabbit duodenum etc.

### **Experimental Pharmacology II**

#### **A. Interpretation of Graphs**

-60 marks

Recordings of— BP/ RS/ GIT for dog/cat &  
(ii) Tracings of Bioassay

- 20 Marks

#### **B. -Demonstration of Technique**

- 20 Marks

Demonstrations of any one technique using small animals —  
rat/mice/rabbit, depending on the availability of equipment.

Eg: Anti-inflammatory drugs/Straub's tail test/Anti-convulsants/ Analgesics/  
Barbiturate sleeping time/ Hebb William's Maze

#### **C. Chemical Testing**

Identification of any one substance by chemical testing for - 20 Marks  
Alkaloids/ Glycosides/ Local Anesthetics/ Iodides/ Steroids/  
Blood sugar estimation/ Urine sample for substance of abuse  
using spectrophotometer/calorimeter etc

### **Clinical Pharmacology I**

Discussion in terms of — Rationality/ Appropriateness/ - 30 Marks  
Correctness in Prescribing using a Clinical Case or a  
Simulated paper case.

### **Clinical Pharmacology II**

- 20 Marks

(i) Clinical Trial Protocol Writing

(ii) PK calculations

- 15 Marks

(iii) Critical evaluation of reviewed/ published article in  
Clinical Pharmacology

- 15 Marks

#### **C. Viva Voce -**

- 100 Marks

1) Viva-Voce Examination: (80 Marks)

Students will be examined by all the examiners together about students

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.

Maximum marks for	Theory	Practicals	Viva-voce	Total
M.D. Pharmacology	400	200	100	700

## RECOMMENDED BOOKS & JOURNALS Books

1. Goodman Gilman, Hardman, Limbird (Eds). The Pharmacological Basis of Therapeutics, 11th Edition, 2005 U.S.A. McGraw Hill Publications.
2. Bertram G. Katzung, 'Basic and Clinical Pharmacology', Lange Medical Book, 9th Edition, McGraw Hill Publications, 2004
3. Rang H.P., Dale M.M., Ritter J.M., et al., 'Pharmacology', 5th Edition, Churchill Livingstone, Edinburgh London 2003.
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', 28th Edition, James E.F. Reynolds (Eds), The Pharmaceutical Society of Great Britain, The Pharmaceutical Press, London 1982
7. Kulkarni, S.K. 'Hand Book of Experimental Pharmacology', Vallabh Prakashan, 3rd 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 Ghosh M.N., 'Fundamentals of Experimental Pharmacology', 2nd 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 Adis 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 Ketat, 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; 424-8
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, 5<sup>th</sup> Ed. New Delhi, Jaypee Brothers Medical Publishers, 1989.
12. Raveendran B Gitanjali, A Practical approach to PG dissertation, New Delhi, J P Publications, 1998.